Sac 50 Phase 2 High Occupancy Vehicle Lanes Project

SACRAMENTO COUNTY, CALIFORNIA
DISTRICT 3 – SAC – 50 (PM L0.2/R6.1)
3F360/0312000216

Draft

Initial Study [with Proposed Mitigated Negative Declaration]/ Environmental Assessment with Finding of No Significant Impact

Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 USC 327.

September 2016

General Information about This Document

What's in this document:
The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study/Environmental Assessment (IS/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Sacramento County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the lead agency under the California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- Additional copies of this document and related technical studies are available for review at Caltrans District 3 office (2379 Gateway Oaks Drive, Suite 150, Sacramento, CA 95833) and at the following Sacramento Public Libraries:

    - Central Library, 828 I Street
    - Ella K. McClatchy Branch, 2112 22nd Street
    - McKinley Public Library, 601 Alhambra Blvd.
    - Rancho Cordova Public Library, 9845 Folsom Blvd.
    - Colonial Heights Public Library, 4799 Stockton Blvd.
    - Valley Hi - North Laguna, 6351 Mack Road

This document may also be downloaded at the project website http://www.dot.ca.gov/d3/projects/subprojects/00216/index.html.

- Attend one of the public workshops:

  Monday, October 17, 2016, 5:00 PM to 7:00 PM
  Caltrans Farmer's Market Building #3
  1st floor, Room #102, 1727 30th Street, Sacramento

  Tuesday, October 18, 2016, 5:00 PM to 7:00 PM
  Isador Cohen Elementary School, 9025 Salmon Falls Dr., Sacramento

- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public workshop and/or send your written comments to Caltrans by the deadline.
- Send comments via postal mail to:
  Kendall Schinke, Environmental Branch Chief,
  ATTN: Ken Lastufka, Associate Environmental Planner
  Department of Transportation, Environmental Planning
  2379 Gateway Oaks Drive, Suite 150, Sacramento, CA 95833
- Send comments via email to: ken_lastufka@dot.ca.gov
- Be sure to send comments by the deadline: October 28, 2016

What happens next:
After comments are received from the public and reviewing agencies, Caltrans, as assigned by FHWA, may: (1) give environmental approval to the proposed project, (2) do additional

environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Kendall Schinke, Office of Environmental Management, 2379 Gateway Oaks Dr, Suite 150, Sacramento, CA 95833-93401; (916) 274-0610 Voice, or use the California Relay Service by dialing 711, or (800) 735-2929 (TTY to Voice) or (800) 735-2922 (Voice to TTY).

SCH#
03-SAC-50-PM L0.2/R6.1
3F360
0312000216

Sac 50 Phase 2 High Occupancy Vehicle Project
From the Sacramento River to Watt Avenue (postmile L0.2 to R6.1)

INITIAL STUDY with Proposed Mitigated Negative Declaration/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C))

THE STATE OF CALIFORNIA
Department of Transportation

Responsible Agencies: California Transportation Commission

9-28-16
Date of Approval

Suzanne Melim, Chief
North Region Environmental Services – District 3
California Department of Transportation

The following person may be contacted for more information about this document:

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PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to construct high occupancy vehicle (HOV) lanes in both directions on US 50 from the Sacramento River to Watt Avenue in Sacramento, California.

Determination

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt a MND for this project. This does not mean that Caltrans' decision regarding the project is final. This MND is subject to change based on comments received by interested agencies and the public.

Caltrans has prepared an Initial Study for this project, and pending public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on agriculture and forest products, cultural resources, geology and soils, land use and planning, mineral resources, population and housing, recreation, transportation/traffic, and utilities and service system.

In addition, the proposed project would have less than significant effects to aesthetics, air quality, biological resources, hazards and hazardous materials, hydrology and water quality, noise, and public services.

With the following mitigation measures incorporated, the proposed project would have less than significant effects to paleontological resources:

- Due to the presence of sensitive formations within the project limits, a Preliminary Paleontological Mitigation Plan was prepared to address potential discoveries during construction of the proposed project (Appendix F). A final Paleontological Mitigation Plan will be prepared by a qualified paleontologist near completion of the final design. The plan will be implemented during project construction. Please refer to Appendix F for specific measures.

_____ _____

Suzanne Melim, Chief Date
North Region Environmental Services – District 3
California Department of Transportation

DRAFT

Summary

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007 and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6th, 2012, amended 23 USC 327 to establish a revised and permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a memorandum of understanding pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The NEPA Assignment MOU became effective October 1, 2012 and terminates eighteen months from the effective date of FHWA regulations developed to clarify amendments to 23 USC 327 or on January 1, 2017. The NEPA Assignment MOU incorporates by reference the terms and conditions of the Pilot Program MOU. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions. Refer to the Standard Environmental Reference (SER), Vol. 1, Chapter 38, “NEPA Assignment” for detailed guidance on the policy and procedures for compliance with NEPA and other federal environmental laws, regulations, and executive orders for projects assigned to Caltrans.

Below is a summary table that highlights potential impacts and avoidance/minimization measures.

Table S-1. Summary of Potential Impacts and Avoidance/Minimization/Mitigation Measures

Affected Resource	Potential Impacts	Mitigation Measure
Paleontology	Alternatives 1 and 2: • Potential impacts to paleontological resources during construction at structures. Alternative 3: • None anticipated.	A final Paleontological Mitigation Plan will be prepared by a qualified paleontologist near completion of the final design. The plan will be implemented during project construction. Please refer to Appendix F for specific measures.

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
Land Use	Alternatives 1 and 2: • Temporary removal of leased uses under the viaduct sections of US 50 between 5th Street and 26th Street. • The lease for the mini-storage business expires in 2019, prior to project construction. Either not renew the lease, terminate the lease prior to 2019, or rebuild access. • Alternative 3: • None anticipated.	• Possible phased construction of viaduct sections. This measure, if feasible, may allow current uses to move to areas under the freeway either not in construction or where construction is completed.
Growth	All alternatives: • None anticipated.	• None required.
Community Impacts	All alternatives: • None anticipated.	• None required.
Environmental Justice	All alternatives: • None anticipated.	• None required.
Utilities, Emergency Services	Alternatives 1, 2, and 3: *Emergency Services* • Possible temporary disruption of emergency services.	• Coordinate with emergency service providers prior to construction.

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
	Alternatives 1 and 2: *Utilities* • Utility relocation and possible temporary utility disruption. Alternative 3: • None anticipated.	• Coordinate with utility companies regarding utility relocations and temporary disruptions. • Coordinate with Regional Transit regarding the light rail electrical supply line at 65th Street. • Prepare and implement a Transportation Management Plan. • Implement a public participation plan.
Traffic and Transportation/Pedestrian and Bicycle Facilities	Alternatives 1 and 2: • Temporary construction-related impacts (lane closures, lane shifts, ramp disruptions, disruption of bus and light rail service, pedestrian/bicycle disruptions). • Temporary relocation of bus stops during construction, • Temporary suspension of light rail service as a result of de-energizing the line. • Temporary closure of sidewalks during construction. Alternative 3: • Temporary construction-related impacts (lane closures, lane shifts, ramp disruptions, disruption of bus and light rail service, pedestrian/bicycle disruptions).	• Coordinate with Regional transit to minimize bus and light rail disruptions (temporary relocation of bus stops, temporary suspension of light rail service) • Maintain pedestrian/bicycle access during construction. • Prepare and implement a Transportation Management Plan. • Implement a public participation plan.
Visual/Aesthetics	Alternatives 1, and 2: • Temporary visual changes during construction and minor effects to the visual character of locations within the project limits. • Potential visual impacts associated with construction of sound walls east of the Oak Park Interchange. • Blocking of motorist's elevated views of nearby commercial/residential along with brief distant views of the Sacramento City Skyline along the viaduct portion of US 50. • Loss of trees and vegetation. Alternative 3:	• Use materials similar to those incorporated into other sound walls within the US 50 corridor. • Use transparent sound walls along the W-X freeway only if cost-effective and supported by the community • Restore all areas of ground disturbance related to construction activities. • Limit vegetation removal for sound wall construction. • Develop highway planting and irrigation plan.

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
	• Potential visual impacts associated with construction of sound walls east of the Oak Park Interchange.	
Cultural Resources	Alternatives 1, 2, and 3: • None anticipated	• If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. • If buried archaeological deposits are revealed at the column installation locations, further review by a Caltrans PQS Archaeologist is required to assess and evaluate the nature of the find. • If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendent. At this time, the person who discovers the remains will contact the project's District environmental construction liaison and cultural resources specialist so that they may work with the Most Likely Descendent, when designated, on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable
Floodplain/Hydrology	Alternatives 1, 2, and 3: • None anticipated.	• None proposed.
Water Quality	Alternatives 1, 2, and 3: • None anticipated.	• All temporary equipment and material storage areas on State property must be accounted for and included in the total disturbed soil area (DSA) estimate, unless a stabilization method has been implemented, reviewed, and approved by NPDES or Storm Water staff.

Affected Resource	Potential Impacts	Avoidance/Minimization Measures

		• Caltrans' Storm Water Management Plan (SWMP), Project Planning and Design Guide Section 4, and Evaluation Documentation Form provide detailed guidance in determining if a specific project requires the consideration of permanent Treatment best management practices (BMPs). Line Item BMPs may be required during the PS&E phase of the project.
		• The project shall adhere to the conditions of the Caltrans Statewide NPDES MS4 Permit CAS No. 000003 (Order No. 2012- 0011-DWQ).
		• Projects with DSA equal to or exceeding 1 acre must adhere to the compliance requirements of the NPDES Construction General Permit CAS No. 000002 (Order No. 2009-0009-DWQ) for General Construction Activities (see special considerations within the SWDR). Under certain conditions, a rainfall erosivity value can be calculated to determine if a project qualifies for a waiver and exemption from CGP requirements. In which case, a Storm Water Pollution Prevention Plan (SWPPP) would not be necessary and the project could be covered under a Water Pollution Control Plan (WPCP). Both of these (SWPPP and WPCP) specify the level of temporary pollution control measures required for a project.
		  • Follow all applicable guidelines and requirements in the 2015 Caltrans Standard Specifications (2015 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.
		  • Attention and focus (by the Contractor and field staff) should be given to 2015 CSS, Section 13-4 (Job Site Management), to control and manage potential sources of water pollution, such as material pollution, waste products and non-storm water related pollutants before they encounter storm water conveyance systems or receiving waters within the project limits.
		• Additional scrutiny should also include 2015 CSS, sections 13-9.02C and 13-9.02D (when and where applicable) for

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
		requirements related to the handling and disposal of concrete waste during construction operations. • The Contractor prepared and Department approved SWPPP (or WPCP, if a construction general permit (CGP) exemption is pursued) shall incorporate and describe appropriate strategies to address the effective implementation, handling, storage, use and disposal practices of temporary construction site BMPs during the course of construction operations and project activities. • Shoulder backing areas should be stabilized by temporary construction site BMPs, or rolled and compacted in place, by the end of each day and prior to the onset of any precipitation. • Existing drainage facilities should be identified and protected by the application of appropriate construction site BMPs.
Hazardous Materials	Alternatives 1 and 2: • Potential hazardous materials exist (ADL, groundwater and soil contamination, ACM, treated wood waste, lead, and chromium). Alternative 3: • Potential hazardous waste impacts will be less than for Alternatives 1 and 2 because Alternative 3 will only involve re-striping and soil disturbance.	• Groundwater and soil contamination: Potential hazardous materials in soil and groundwater will be avoided to the extent feasible by design provisions. If infeasible soil and groundwater will be controlled and discharged pursuant to regulatory and permit requirements during construction. • Treated wood waste: The project will be designed to avoid removal of metal beam guard rail posts and other treated wood and otherwise minimize the quantity requiring removal. Any metal beam guardrail posts and other treated wood removed will be disposed consistent with Caltrans Standard Special Provision 14-11.09 (Treated Wood Waste). The quantity will be determined during design. • Asbestos Containing Material (ACM): ACM will be avoided to the extent practicable. Any ACM on bridges requiring removal will be removed and disposed by a licensed and certified asbestos abatement contractor implementing an Asbestos Compliance Plan to prevent or minimize exposure to asbestos. Non-Standard Special

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
		Provisions addressing ACM will be included in the project specifications. • Aerial Deposited Lead (ADL): The quantity of ADL soil requiring special handling will be minimized during design by identifying and restricting special handling areas to those above regulatory limits. Any ADL soil requiring removal will be managed pursuant to Standard Special Provision 7-1.02K(6)(j)(iii) when non-hazardous or SSP 14-11.03 when hazardous. • Yellow Traffic Stripes Grindings (which consist of the roadway material and the yellow color traffic stripes) will be removed and disposed of in accordance with Caltrans Standard Special Provision 15-1.03B (Residue Containing High Lead Concentration Paints). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings shall be removed and disposed of in accordance with the same specification.
Air Quality	Alternatives 1,2, and 3: • Temporary construction-related dust and vehicle emissions would occur during site preparation and project construction.	• Construction contractors would comply with Caltrans Standard Specification Provisions which uses newer/retrofit engines for construction equipment; • Comply with District's Rule 403 for fugitive dust emissions; • Prohibit truck idling in excess of 10 minutes, whenever practical; • Use only well-maintained equipment • Utilize proper planning to reduce rework and multiple handling of earth materials.
Noise	Alternatives 1, 2, and 3: • Temporary construction noise anticipated.	• Evaluate sound walls) at nine locations (note that some of the walls were not feasible (5dBA reduction), and none of the walls was reasonable ($71,000 per benefited receptor) under FHWA noise criteria). • Include Caltrans' standard specification 14.8-02.
Biological Resources	Alternatives 1 and 2:	

Affected Resource	Potential Impacts	Avoidance/Minimization Measures
	• Affect nesting migratory birds and roosting bats during construction. Alternative 3: • None anticipated.	• Install exclusionary devices between September 1 and January 31 in order to prevent nesting and roosting. • If necessary, daily scraping of partially completed nests between February 1 and September 1.
Cumulative Impacts	Alternatives 1, 2, and 3: • Concurrent construction of other road and highway projects within or near the project limits.	• Develop Transportation Management Plan. • Implement BMPs for water quality and hazardous waste. • Coordinate with emergency service providers. • Incorporate Caltrans' standard specifications. • Implement landscape planting plan.

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Chapter 1 Proposed Project

INTRODUCTION

California Department of Transportation (Caltrans) is the lead agency under the National Environmental Policy Act (NEPA) and the lead agency under the California Environmental Quality Act (CEQA). Caltrans proposes to extend the existing high occupancy vehicle (HOV) lanes on US 50 7.8 miles west from the existing HOV lanes at the Watt Avenue interchange (I/C) to the eastern approach of the Sacramento River Viaduct (I-5 I/C) in downtown Sacramento. Figure 1-1 shows project location and vicinity. Note that all Chapter 1 figures follow this chapter.

The project development is funded by Sacramento Measure A Transportation Sales Tax Program for $13 million for the preliminary engineering, environmental studies, design, and right-of-way work. The project is included in the 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and the 2015/18 financially-constrained Metropolitan Transportation Improvement Program (MTIP), CAL18838.

NEED AND PURPOSE

The purpose of the project is to reduce congestion on US 50 from Sacramento County at the Watt Avenue I/C to the I-5 I/C in downtown Sacramento. Additional objectives to this project are as follows:

- allow connectivity and consistency with the planned HOV system in the Sacramento Region
- enhance mobility and provide incentives for ridesharing during peak period travel
- achieve the goals of the current SACOG MTP by promoting ridesharing
- improve US 50 to meet the growing travel demand in the Sacramento Region
- provide an option for reliable peak period travel time
- use the highway facilities as efficiently as possible
- improve general traffic operations by reducing congestion and travel time
- improve bicycle and pedestrian access

The US 50 corridor is experiencing recurring congestion during peak commute periods. The amount and duration of congestion is expected to increase in the future as suburban development continues in the eastern portions of Sacramento County and in El Dorado County.

In the 2016 MTP-SCS, the Sacramento Area Council of Governments (SACOG) found that area HOV lanes convey more people during commute times than any of the adjacent mixed-flow lanes. HOV lanes carry 2-3 times the passenger volume as a comparable mixed-flow lane. As a result, studies have correlated HOV lanes to improvements in air quality due to vehicle emissions.

The benefits of a comprehensive HOV network cannot be realized until all segments are connected and fully functional. HOV lanes on US 50 would improve connectivity with the existing network and provide consistency with the existing US 50 HOV lane corridor. Figure 1-2 includes a map showing the HOV plan and status for Sacramento County and the neighboring counties.

State Planning:
The current 2014 Transportation Concept Report and District System Management Plan for Caltrans District 3 includes the addition of a HOV lane in each direction from I-80 in Yolo County to Missouri Flat Road in El Dorado County.

Regional Planning:
The proposed regional network of high occupancy vehicles is included in 2016 MTP/SCS, which is based upon the principles of the Preferred Blueprint Scenario. The MTP/SCS identified HOV lanes on US 50 within the project limits that express buses can use the HOV lanes with higher frequencies. Sacramento County voters approved funding for HOV lanes, including those on US 50 in 2004 as part of the package of transportation improvements in the Measure A sales tax initiative. The proposed project is included in the 2016 MTP/SCS

Transit Operator Planning:
The HOV lanes would benefit transit routes that would use US 50 in the project limits. HOV lanes would provide reduced travel time and improved travel time reliability due to reduced congestion. The Sacramento Regional Transit District has bus routes that use US 50 in the study area and an express bus during peak hour times on US 50 with no near term plans for expansion along this corridor.

Traffic

Current and Forecasted Traffic:
Capacity is defined as the maximum amount of traffic that can accommodate a uniform segment of freeway under prevailing conditions. If vehicular demand exceeds capacity, vehicle density will increase and speeds will decrease until breakdown occurs, resulting in queuing and congestion. Much of this segment of US 50 has reached or exceeded its capacity and congestion is occurring in the AM and PM peak periods. Additionally, travel demand is forecasted to increase significantly by year 2040.

According to the 2012 Caltrans traffic count data, US 50 carries Annual Average Daily Traffic (AADT) ranging between approximately 171,000 to 246,000 vehicles and peak month Average Daily Traffic (ADT) of 178,000 to 256,000 vehicles through various segments in the project limits. According to 2011 Caltrans Truck traffic data, truck composition varies between 2.3% to 5.5% of the average daily traffic on US 50.

Wood Rodgers Inc. (traffic analysis consultant) obtained additional 2013 traffic volumes using a combination of machine/automated counters (including radar and video technology) as well as manual counters in the data collection process. The consultant then forecasted more detailed ADT volumes and other statistics.

ADT volumes in the project limits for eastbound (EB) US 50 range from 90,300 to 149,800 vehicles. Westbound (WB) US 50 ADT volumes range from 85,800 to 135,900 vehicles.

Table 1-1 provides a summary of performance measures based on fall 2013 data (also referred to as Base Year) and projected 2040 year data in the traffic report.

Table 1-1. Existing and Year 2040 4-hour Peak Period Network Summary

	Performance Measure	Existing (2013)	No Build
AM	Vehicles Served (veh)	251,196	312,352
	Vehicle Miles of Travel (mi)	934,768	1,256,171
	Persons Served (per)	304,262	412,493
	Person Miles of Travel (per-mi)	1,132,239	1,658,902
	Average Travel Time (h)	25,128	44,046
	Average Travel Speed (mph)	39	32
	Vehicle Hours of Delay (h)	4,932	11,495
	Person Hours of Delay (per-h)	5,974	15,180
PM	Vehicles Served (veh)	302,433	360,625
	Vehicle Miles of Travel (mi)	1,011,698	1,270,674
	Persons Served (per)	376,709	476,465
	Person Miles of Travel (per-mi)	1,260,165	1,678,841
	Average Travel Time (h)	26,823	68,749
	Average Travel Speed (mph)	39	19
	Vehicle Hours of Delay (h)	5,486	24,363
	Person Hours of Delay (per-h)	6,833	32,189

Notes: 1. Data shown in this table is compiled from Wood Rodgers Consulting US 50 Travel Demand Modeling & Traffic Micro-Simulation Analysis.

2. Corridor performance assumes that the I-5 HOV lanes, EB US 50 Hornet Drive Off-Ramp/Intersection Improvements, and WB US 50 Auxiliary Lane between Stockton Blvd ramps are completed by 2030.

The traffic data summarized in Table 1-1 shows the performance between existing and future (2040) traffic during the AM and PM peak periods. The performance measures for both the AM and PM peak periods will be worse in 2040 without the project.

Tables 1-2 and 1-3 show the existing and future year (2040) AM and PM peak period travel times (in minutes) in the WB and EB directions between various locations.

Table 1-2. Existing and Year 2040 (No Build) WB US 50 4-hour Peak Period Travel Times (Minutes)

Travel Time Route	AM		PM	
	Existing	No Build	Existing	No Build
WB US 50 at Watt Ave to NB I-5 at Richards Blvd	11.0	15.1	11.5	28.4
WB US 50 at Watt Ave to WB I-80 at West Sacramento	10.5	14.6	10.5	28.5
WB US 50 at Watt Ave to SB I-5 at Sutterville Rd	12.0	15.4	12.0	31.1
WB US 50 at Watt Ave to SB SR 99 at 12th Ave	8.5	11.9	8.5	24.8
WB US 50 at Watt Ave to NB US 51 at E St	9.0	13.0	8.5	23.8

Table 1-3. Existing and Year 2040 (No Build) EB US 50 4-hour Peak Period Travel Times (Minutes)

Travel Time Route	AM		PM	
	Existing	No Build	Existing	No Build
SB I-5 at Richards Blvd to EB US 50 at Watt Ave	11.5	15.8	13.5	26.5
EB I-80 at West Sacramento to EB US 50 at Watt Ave	10.5	10.7	11.0	12.0
NB I-5 at Sutterville Rd to EB US 50 at Watt Ave	11.5	14.1	12.5	23.8
NB SR 99 at 12th Ave to EB US 50 at Watt Ave	8.5	10.7	8.5	13.0
SB US 51 at E St to EB US 50 at Watt Ave	8.5	9.4	8.5	10.2

Travel times in 2040 will be longer than existing during the AM and PM peak periods, in both directions. These differences are more pronounced for the WB PM peak period.

According to the City of Sacramento, the 65th Street Bicycle/Pedestrian Improvements is needed because as the Transit Village South develops, south of US 50, the amount of pedestrians and bicyclists using 65th Street to cross US 50 to get to the California State University, Sacramento campus or the 65th Street light rail station is anticipated to increase.

Please refer to the Traffic and Transportation section of this document for a more detailed discussion.

Independent Utility and Logical Termini

FHWA regulations (23 CFR 771.111 [f]) require that the proposed action evaluate:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope.
2. Have independent utility or independent significance (be usable and require a reasonable expenditure even if no additional transportation improvements in the area are made).
3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Operational improvements to the US 50 corridor were initially identified in the Sacramento Area Council of Governments (SACOG)'s *High Occupancy Vehicle Planning Study for the Sacramento Metro Area* (1990). The study recommended adding HOV lanes to US 50 between downtown Sacramento and Shingle Springs in El Dorado County. A chronology of this project's development follows:

1996: SACOG updates the MTP to include HOV lanes within these project limits.
1997: SACOG completed the *Major Investment Study of the US 50 Corridor* that included these project limits.
1998: A Project Study Report was approved.
2001: A Supplemental PSR was approved.
2006: SACOG's MTP was updated and included HOV lanes on US 50.
2006: Draft Project Report was approved that included alternatives that were rejected due to funding. Alternative 10D-1 in the DPR is Alternative 1 in this document.
2012: SACOG's MTP was updated and included HOV lanes on US 50 within the project limits

2015: SACOG's MTP was amended to include the extended project limits to the Sacramento River

The project has logical termini and independent utility.

Logical termini are defined as (1) rational end points for a transportation improvement, and (2) rational end points for a review of the environmental impacts. Independent utility, or independent significance, is defined as being a usable and reasonable expenditure even if no additional transportation improvements in the area are made. The project has two rational end points, the US 50 – I-5 interchange and Watt Avenue, and will function independent of other transportation projects. US 50 – I-5 is a major interchange with high traffic volumes; Watt Avenue is the end/start of the existing bus/carpool lane that extends from Sacramento County into El Dorado County.

PROJECT DESCRIPTION

The proposed project involves extending HOV lanes 7.8 miles west from the existing HOV lanes at the Watt Avenue I/C to the eastern span of the Sacramento River Viaduct (US 50 - I-5 I/C) in downtown Sacramento (see Figure 1-1). Four alternatives are proposed: Alternative 1, HOV Lanes; Alternative 2, Mixed Flow Lanes; Alternative 3, Take-A-Lane; and Alternative 4, No Build.

Project alternatives are described in more detailed below.

An agreement made between the City of Sacramento and Caltrans in 2012 involved including the scope of the City of Sacramento's 65th Street Bicycle/Pedestrian Improvement Project in the environmental approval of this project. This partnership is intended for Caltrans to meet its commitment to American Disabilities Act (ADA) and Complete Streets design since this project could not be included with the HOV project due to schedule and funding. There is no construction funding available for the HOV lanes project and the Sacramento Regional Transportation Agency will not fund any work not directly related to the HOV lanes construction. Even though the City's project is included in this environmental document, Caltrans will not construct these elements as part of the HOV Project; the City will be responsible for the construction of the 65th Street improvements. Alternatives 1, 2, and 3 include the 65th Street improvement.

Figure 1-3 shows these improvements. The City's project, which extends from Folsom Boulevard on the north to Broadway on the south, includes:

- Overlaying 65th Street and re-striping the pavement with narrower traveled lanes and new bike lanes.
- Constructing new pedestrian "pork chop" islands at the WB US 50 off-ramp terminus, including signal modifications.
- Interconnecting the WB off-ramp, EB off-ramp, 4th Avenue, and Broadway traffic signals.
- Reconstructing the curb and gutter to provide bifurcated sidewalks with landscaped planters.
- Constructing a concrete barrier with hand railing and raising the sidewalk above the roadway level underneath the US 50 undercrossing structure.
- Replacing the existing 5-foot wide sidewalks with 8-foot wide sidewalks where existing right of way permits. These sidewalks will be Americans with Disabilities Act (ADA) compliant.
- Reconfiguring the ramp connections to 65th Street to encourage slower speeds.
- Providing landscaping and irrigation in the medians and sidewalk planters along 65th Street.
- Widening the US 50 EB off-ramp (1-right, 2-left turns) to improve ramp queuing.

PROJECT ALTERNATIVES

Alternative 1, HOV Lanes

Alternative 1 involves constructing one HOV lane in each direction, connecting to the existing HOV lanes at the Watt Ave I/C and extending west to the Sacramento River Viaduct. The HOV lanes will be constructed in both directions onto the existing structural section by re-striping and signing the facility. The eastbound HOV lane would begin at the Sacramento River Viaduct and terminate east of Watt Avenue. The westbound HOV lane would begin at the existing HOV at Watt Avenue and terminate at the Sacramento River Viaduct by converting to a mixed flow lane. The estimated cost to build Alternative 1 is $149 million.

Alternative 2, Mixed Flow Lanes

Adding mixed flow lanes (lanes that allow all traffic) would require the same design features as Alternative 1, except the additional lanes are utilized as mixed flow vehicle lanes to add vehicle capacity. The estimated cost to build Alternative 2 is $149 million.

Alternative 3, Take-a-Lane

This alternative would convert an existing mixed flow lane in each direction to an HOV lane by re-striping and signing to prohibit non-HOV traffic during peak periods. The estimated cost to build Alternative 3 is $54 million.

Alternative 4, No Build

The No-Build alternative proposes no modifications to US 50 other than routine maintenance and rehabilitation, and future programmed projects. Alternative 4 does not meet the purpose and need of the project.

Common Design Features of the Build Alternatives

<u>Alternatives 1 and 2</u>

Proposed Freeway Engineering Features
The existing paved 36-foot median between the Sacramento River Viaduct and Watt Avenue I/C has capacity to add HOV or mixed flow lanes with minor deviations from design standards. The proposed median shoulder width would be 8 feet, the HOV/mixed flow lane width would be 11 feet, and the width of the number 1 and 2 mixed flow lanes would be restriped for 11 ft.

Twelve structures will be widened within the project limits (a discussion of structure work is included later in this section).

A combined drainage report and floodplain evaluation was performed for this project in January 2007. There are no direct storm water outfalls to water bodies within the project limits. All of the highway drainage discharges into local systems and is conveyed to the American River, north of the project limits. The existing local systems are at or near capacity. There will be no substantial increase to impervious drainage areas as a result of the proposed project. Drainage work was installed during the 2008 State Highway Operation and Protection Program (SHOPP) project that constructed the paved median and concrete barrier.

Minor drainage improvements will be included as part of the structure widening and to existing drainage facilities where sound walls are proposed along the edge of pavement.

Edge drains were placed next to the PCC pavement in the early 1970s. These are no longer functioning and are not being maintained. They will not be perpetuated in areas of outside widening where proposed sound wall along the edge of pavement is proposed.

Two sign structures must be relocated to meet worker safety requirements, as per Caltrans policy. Selected roadside signs along the edge of pavement in areas where proposed sound walls will be replaced. New signs will be added, as appropriate, including HOV lane signage.

Ramp Metering and other Intelligent Transportation Systems (ITS)
All on-ramps within the projects limits have operational ramp meters. Other ITS components are being evaluated to better monitor traffic conditions and report real-time information to vehicles in the corridor. These components would include additional fiber optic cable, CCTV, EMSs and CMSs.

A fiber optic communication system project is programmed for the 2014 SHOPP within the project limits. The current system is leased and consist of both wireless and DSL services. Performance and maintenance requirements would be improved. Project cost is estimated at $6.8 million. A Rehabilitation project is also planned that would impact all ITS elements within the PCC lanes on mainline. Both projects are included on Table 2-42. Coordination with these projects is on-going.

Utility Involvement
There are existing utilities within the project limits, including several high risk electric lines. Positive location (potholing) work for the high risk facilities and other facilities where there are potential conflicts will be done early in the Plans, Standards & Estimates (PS&E) phase once the preferred alternative is selected.

PS&E includes the contract drawings which show the locations, character, and dimension of the prescribed work, including layouts, profiles, cross sections, and other details (Plans), the predicted project cost at the time of receipt of bids developed from a knowledge of the costs for materials, labor, and equipment required to perform the necessary items of work (Estimate), and the compilation of provisions and requirements for the performance of prescribed work (Specifications).

Railroad & Light Rail Involvement
Two Union Pacific Railroad tracks and two Sacramento RT light rail tracks cross under US 50 at the Camellia City Viaduct between 19th St and 20th St downtown and at the Brighton OH just east of 65th St. Coordination with the railroads will be required to maintain construction clearances while widening the Camellia City Viaduct. Brighton OH will be widened in the median, spanning two active mainline tracks and relocating spur lines. No new crossings are being proposed.

Sacramento RT operates light rail in the corridor, generally paralleling Folsom Boulevard. The light rail is elevated as it crosses under US 50 at the Brighton OH. The system of overhead wires that supply electricity to light rail is referred to as a messenger wire and is attached directly to the soffit of this structure. The messenger lines for the Sacramento Regional Transit light rail crossing under US 50 east of 65th Street is attached to the soffit of the overhead structure and will be affected by the proposed structure widening. The messenger wire requires relocation since the new structure depth will be greater than the existing depth and conflicts with the existing messenger line. Cal OSHA clearance requirements also restrict workers in the vicinity of the active messenger line's existing alignment during construction.

Noise Barriers
There are existing state-built sound walls within the project limits as well as several private walls on residential properties along the State right of way (ROW). Caltrans recognizes the strong desire for

noise abatement and is working actively with local agencies/groups to respond to any noise concerns. The project analyzed nine proposed sound walls. However, most were not acoustically feasible and none met the reasonable allowance cost requirements set by FHWA requirements and thus are not eligible for federal re-imbursement or state funding. In determining whether sound walls will be built, factors such as existing sound wall replacement, public perception, local funding, and ultimate build requirements are will also considered. This environmental document analyzes potential environmental impacts resulting from sound walls, since the aforementioned factors may ultimately allow construction to occur as part of the project.

Highway Planting

If any of the proposed sound walls are constructed, new and replacement plantings, such as vines, are planned on proposed sound walls along the ROW. The single row of irrigated vines at some of the proposed sound wall locations will discourage graffiti and will be planted as part of this HOV Lane project. A revegetation plan would be required for the trees and miscellaneous landscaping along the ROW that would be removed for construction access to build sound walls. A one-year plant establishment will be included for the sound wall plantings. Landscaping scope would be dependent of the Governor's water reduction mandate that could restrict all new irrigation facilities in state ROW included on this project.

Structure Rehabilitation and Upgrading

The decks of the existing structures throughout the project area are generally in fair to poor condition. The Sacramento River Viaduct and the Camellia City Viaduct have had deck rehabilitations since this project was initiated in 2012. The proposed project includes a 0.1 foot concrete polyester overlay to extend the service life of the bridge decks and match the new overlay profile. The table below lists each structure, their location, work proposed, and which alternative includes the work.

Table 1-4. Structures within the project limits.

Bridge Number	Bridge Name	Post Mile	Proposed Work
24-04 R/L	Sacramento River Viaduct	L0.20	Widen Median (westbound span only)
24-0243R/L	Southside Park Viaduct	L0.66	Widen Median and Place Sound Wall on North Side
24-0244R/L	9th St UC	L0.89	Widen Median and Place Sound Wall on North Side
24-0245R/L	10th St UC	L0.96	Widen Median and Place Sound Wall on Both Sides
24-0246R/L	Riverside Blvd UC	L1.06	Widen Median and Place Sound Wall on Both Sides
24-0247R/L	15th-16th St Separation	L1.36	Widen Median and Place Sound Wall on Both Sides
24-0248R/L	Camellia City Viaduct	L1.59	Widen Median and Place Sound Wall on Both Sides
24-0223R/L	26th St UC	L2.20	Widen Median
24-222G	East Connector OC	R0.13	Place Sound Wall
24-228R/L	Elmhurst Viaduct	R0.38	Widen Median and Place Sound Wall on Both Sides
24-0313	39th Street UC	R0.85	Place Sound Wall on Right Side
24-0289R/L	Brighton OH	R2.88	Widen Median
24-0288R/L	Folsom Blvd UC	R3.13	Widen Median
24-0286R/L	State College UC	R3.47	Widen Median

Right of Way

Temporary construction easements (TCE) are required for most of the proposed sound wall construction and grading along the State ROW. TCEs would be required for 20 properties to

construct the proposed sound walls. Four properties will not require disturbance to occupied property since the utility easement along the ROW is clear. A small section of new right of way (ROW) may be required for sound wall SW WB1, located along the westbound SR 99/SR 50 connector, if this sound wall is constructed. The area involves existing roadway; no structures or land would be involved.

Existing Caltrans ROW fence and private property fencing/walls will be permanently removed to eliminate "double" fencing and in some cases "triple" fencing if sound wall was otherwise constructed next to the existing fencing.

Alternative 3

Potential sound walls, along with TCEs and replanting of disturbed areas related to the construction of sound walls, are the only features of Alternative 1 or 2 that will be included with Alternative 3.

Unique Features of Build Alternatives

Alternative 1

Alternative 1 involves the construction of HOV lanes in both directions. HOV lanes allow vehicles carrying the required minimum number of people (2) to travel in the HOV lane during posted operational hours. Certain plug-in-hybrid, alternative fuel and clean-air vehicles, motorcycles, mass transit, and para-transit are exempted from the occupancy requirement. Outside of posted hours, all vehicles may use the HOV lanes.

Alternative 2

Adding mixed flow lanes (lanes that allow all traffic) would require the same design features as Alternative 1, except the additional lanes are utilized as mixed flow vehicle lanes to add vehicle capacity. There is no time restriction for vehicles to use the additional mixed flow lane.

Alternative 3

Alternative 3 would convert an existing mixed flow lane to HOV use during the peak AM and PM commutes.

Transportation System Management (TSM) and Transportation Demand Management (TDM)

Transportation System Management (TSM) strategies consist of actions that increase the efficiency of existing roadways; they are actions that increase the number of vehicle trips a roadway can carry without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. Transportation Demand Management (TDM) focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy.

Regarding TSM strategies, on-ramps within the projects limits have operational ramp meters. Nine out of the nineteen on-ramps provide an HOV bypass lane. HOV bypass lanes on the remaining ramps are not proposed due to limited funding and other geometric constraints. However, various ramps are being evaluated for widening to provide an HOV bypass lane in the future, pending funding and schedule.

Caltrans Design is also evaluating Intelligent Transportation Systems (ITS) components to better monitor traffic conditions and report real-time information to vehicles in the corridor. These

components would include additional fiber optic cable, closed-circuit television (CCTV), extinguishable message signs (EMSs), and changeable message signs (CMSs). Note that a fiber optic communication system is programmed for the 2014 SHOPP within the project limits. Coordination with these projects and the development of ITS scope is on-going.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Alternatives 1 and 3 provide HOV lanes, a TDM measure, throughout the project limits. TDM recognizes that as urban areas continue to grow, opportunities for investments in transportation infrastructure ("supply" or capacity side) become limited and that urban transportation corridors increasingly lack the physical space to accommodate more lanes. Thus, typical TDM strategies focus on the "demand" side to make existing transportation facilities work better (Association for Commuter Transportation, et al. 2004). Demand-side strategies are designed to better balance people's need to travel a particular route at a particular time with the capacity of available facilities to efficiently handle this demand. General TDM activities can range from infrastructure investments like high occupancy vehicle lanes and preferential parking spaces, to more programmatic investments like tax-based incentives and marketing. More targeted strategies can include guaranteed ride home programs for carpoolers, transit pass programs, flexible work schedules, and real-time route information.

FINAL DECISION MAKING PROCESS

After the public circulation period, all comments will be considered, and Caltrans will select a preferred alternative and make the final determination of the project's effect on the environment. Under CEQA, if no unmitigable significant adverse impacts are identified, Caltrans will prepare a Negative Declaration (ND) or Mitigated ND. Similarly, if Caltrans determines the action does not significantly impact the environment, Caltrans, as assigned by the Federal Highway Administration (FHWA), will issue a Finding of No Significant Impact (FONSI) in accordance with the National Environmental Policy Act (NEPA).

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION

Transit-Only Alternative

This alternative constructs a lane for the dedicated use of transit. Although this alternative would meet some of the project objectives, such an alternative would not be consistent with the goals of SACOG's 2016 MTP/SCS. The proposed project is part of a larger network of existing and planned HOV lanes in the Sacramento region. A map of existing HOV lanes is available at www.dot.ca.gov/hq/traffops/trafmgmt/hov/. A list of planned HOV lane projects in the area are included in Appendix A of the 2016 MTP/SCS on the SACOG website (http://www.sacog.org/general-information/2016-mtpscs).

The 2016 MTP/SCS, and the preferred blueprint on which it is based, focuses upon providing a balance of transportation investments in order to offer alternatives for travelers. The Traffic Report shows the proposed project is expected to improve travel time for high occupancy vehicles and all other exempted vehicles from the occupancy requirement. Additionally it is expected to have a positive increase in commuter transit usage. Previous HOV lane projects have shown a positive correspondence between carpooling and bus ridership after implementation (Caltrans 2008). Information on HOV lanes can be found at www.dot.ca.gov/hq/traffops/trafmgmt/hov/hov_sys/index.html.

The Transit Only Alternative was considered because of the regional air quality benefits. It was rejected because the microsimulation traffic model showed it could not compete with other alternatives (even in a low growth scenario) and does not meet the purpose and need of this project.

PROJECT SCHEDULE

Currently, the project is scheduled to begin construction in 2019 and finish in three years.

PERMITS AND APPROVALS NEEDED

No permits and approvals would be required for project construction.

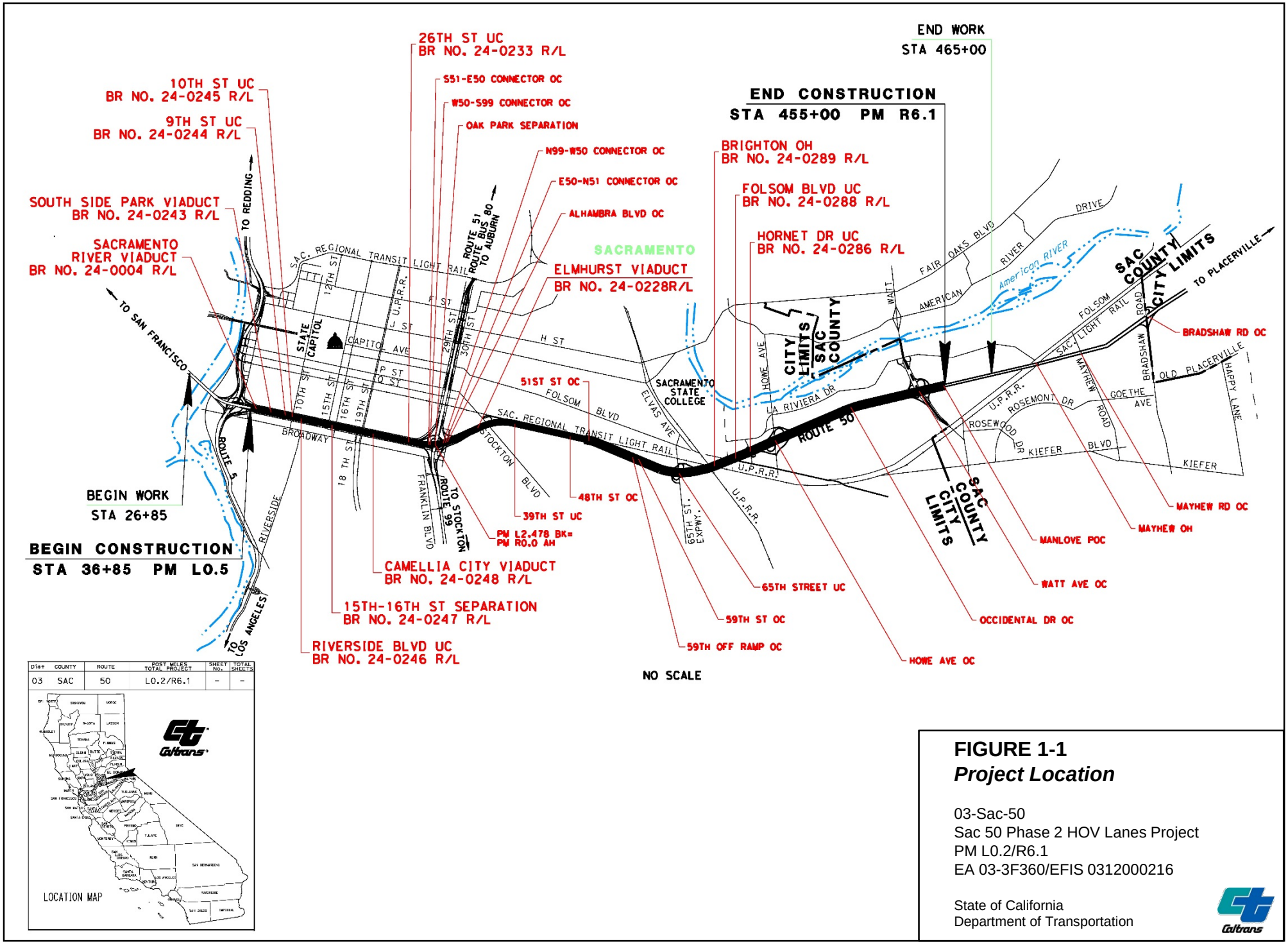

FIGURE 1-1
Project Location

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

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FIGURE 1-2
HOV Network Map

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
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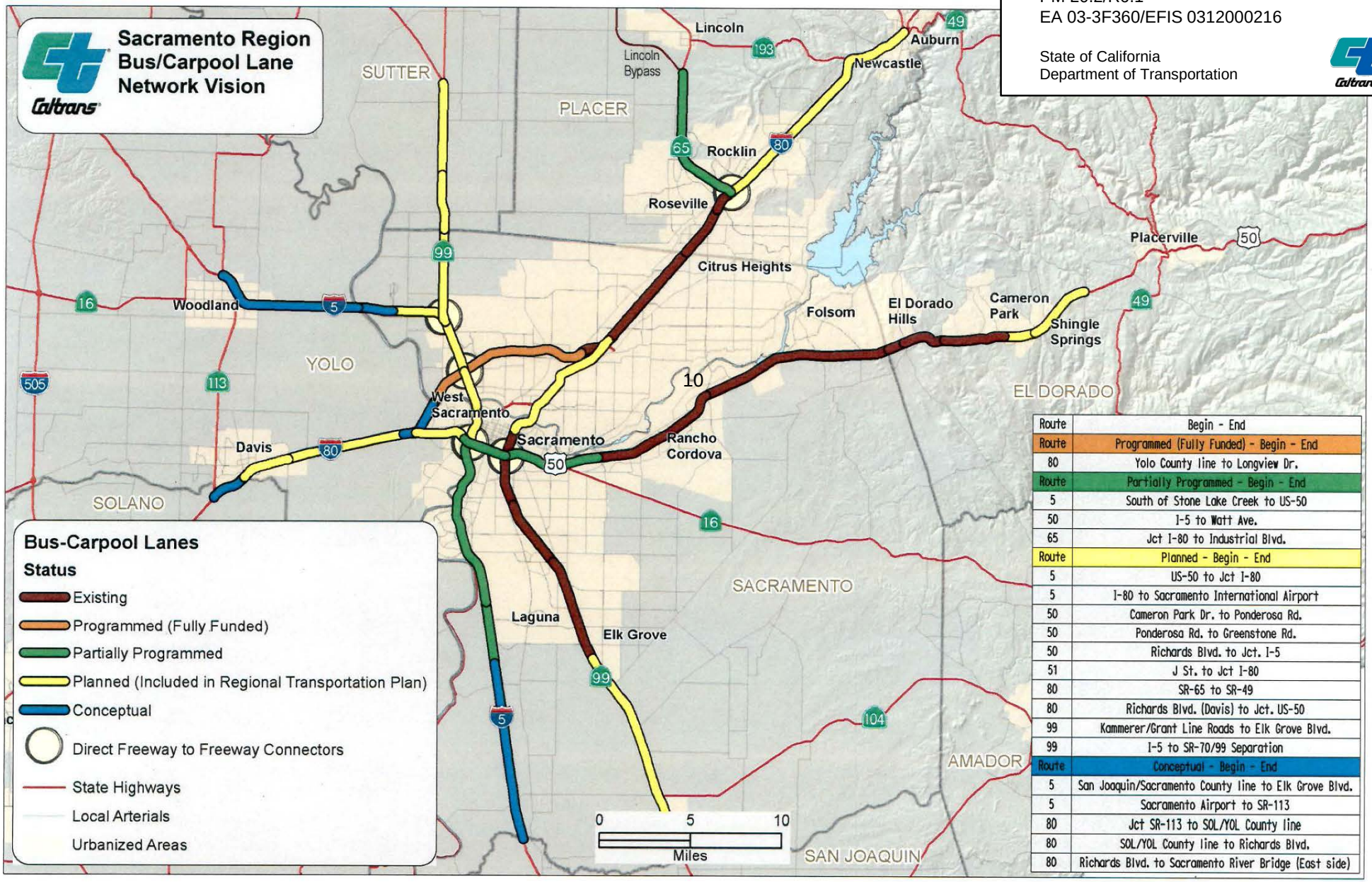

Route	Begin - End
Route	Programmed (Fully Funded) - Begin - End
80	Yolo County line to Longview Dr.
Route	Partially Programmed - Begin - End
5	South of Stone Lake Creek to US-50
50	I-5 to Watt Ave.
65	Jct I-80 to Industrial Blvd.
Route	Planned - Begin - End
5	US-50 to Jct I-80
5	I-80 to Sacramento International Airport
50	Cameron Park Dr. to Ponderosa Rd.
50	Ponderosa Rd. to Greenstone Rd.
50	Richards Blvd. to Jct. I-5
51	J St. to Jct I-80
80	SR-65 to SR-49
80	Richards Blvd. (Davis) to Jct. US-50
99	Kammerer/Grant Line Roads to Elk Grove Blvd.
99	I-5 to SR-70/99 Separation
Route	Conceptual - Begin - End
5	San Joaquin/Sacramento County line to Elk Grove Blvd.
5	Sacramento Airport to SR-113
80	Jct SR-113 to SOL/YOL County line
80	SOL/YOL County line to Richards Blvd.
80	Richards Blvd. to Sacramento River Bridge (East side)

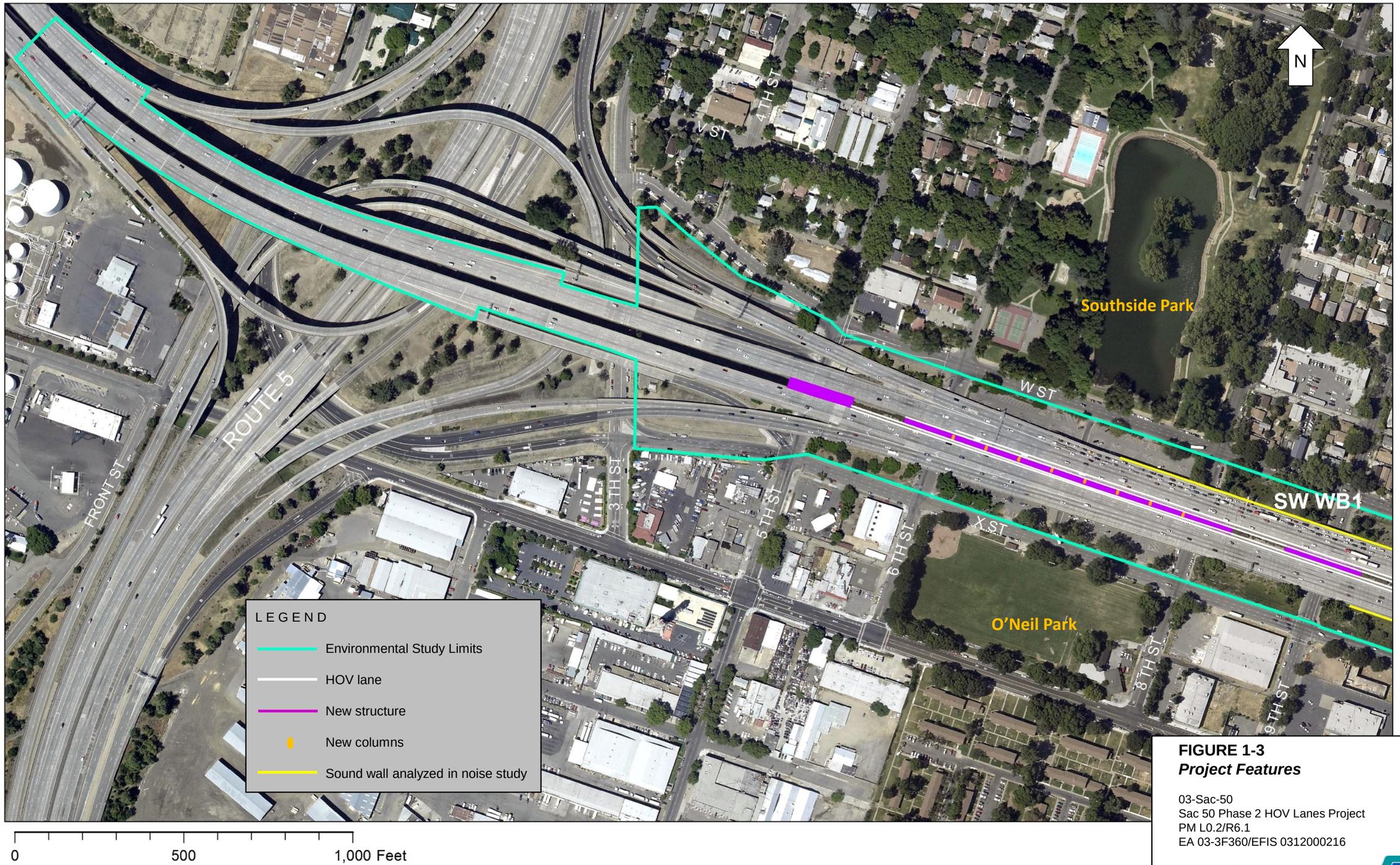

FIGURE 1-3
Project Features

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
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FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
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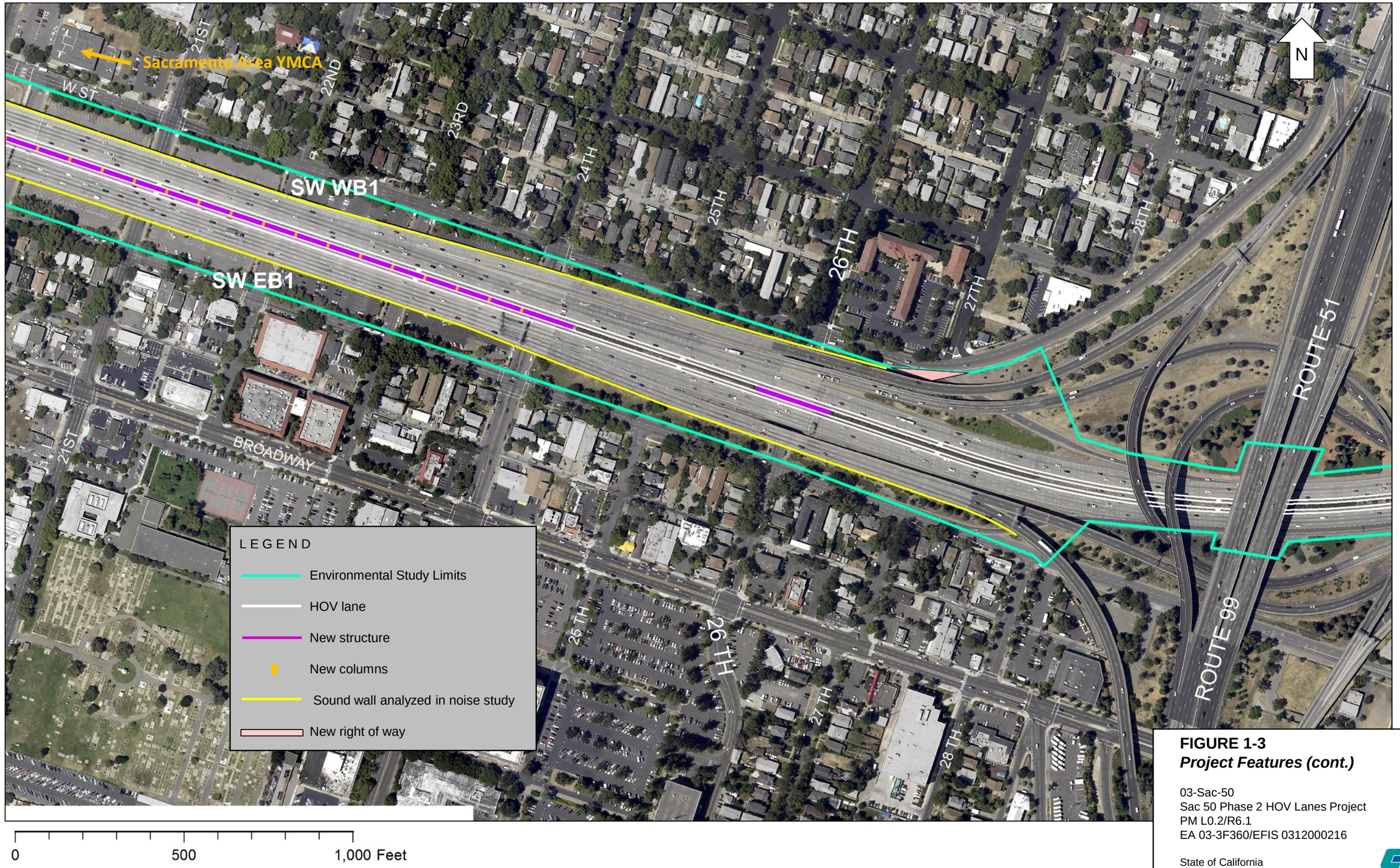

FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

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FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

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FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
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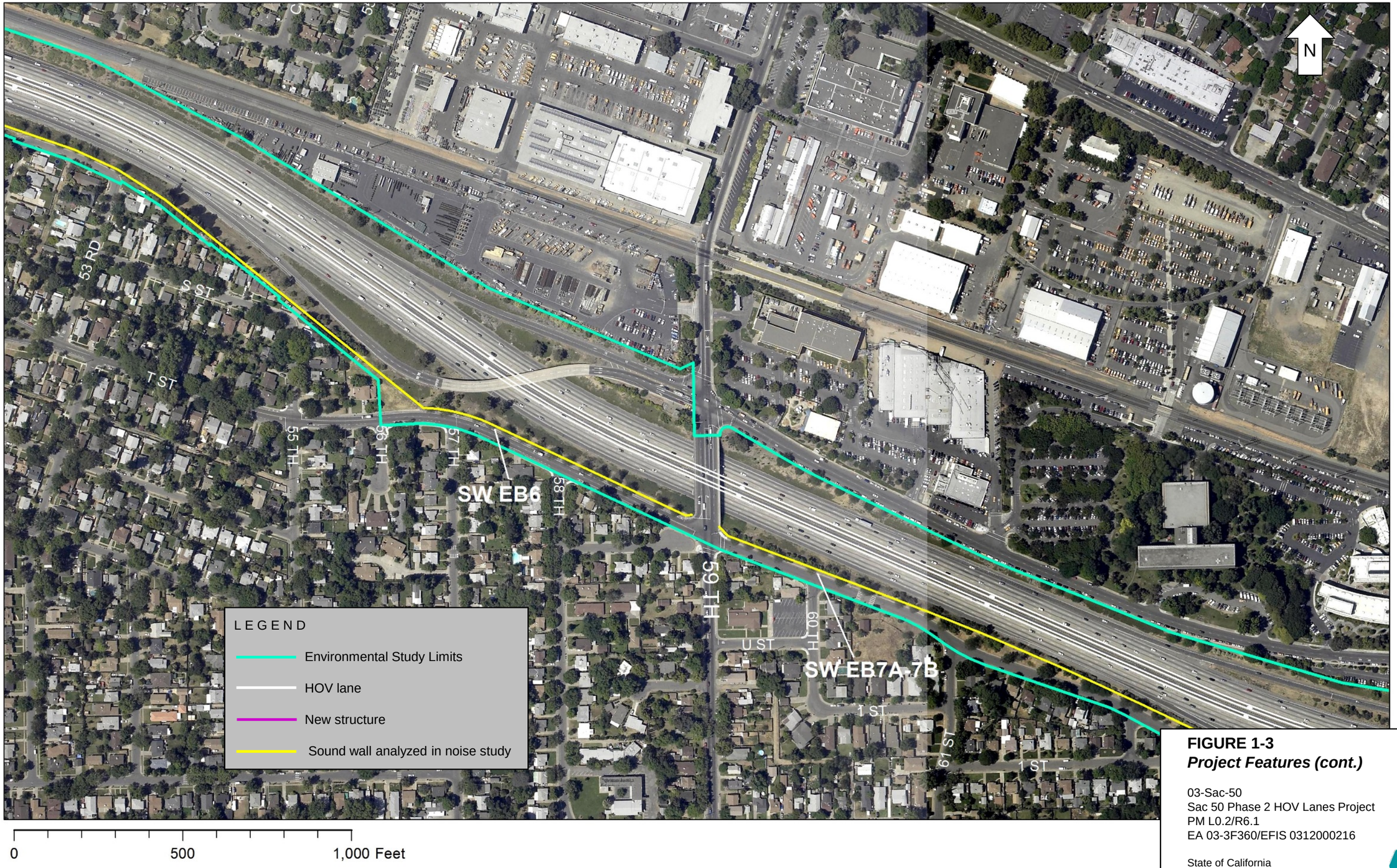

FIGURE 1-3
Project Features (cont.)

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Sac 50 Phase 2 HOV Lanes Project
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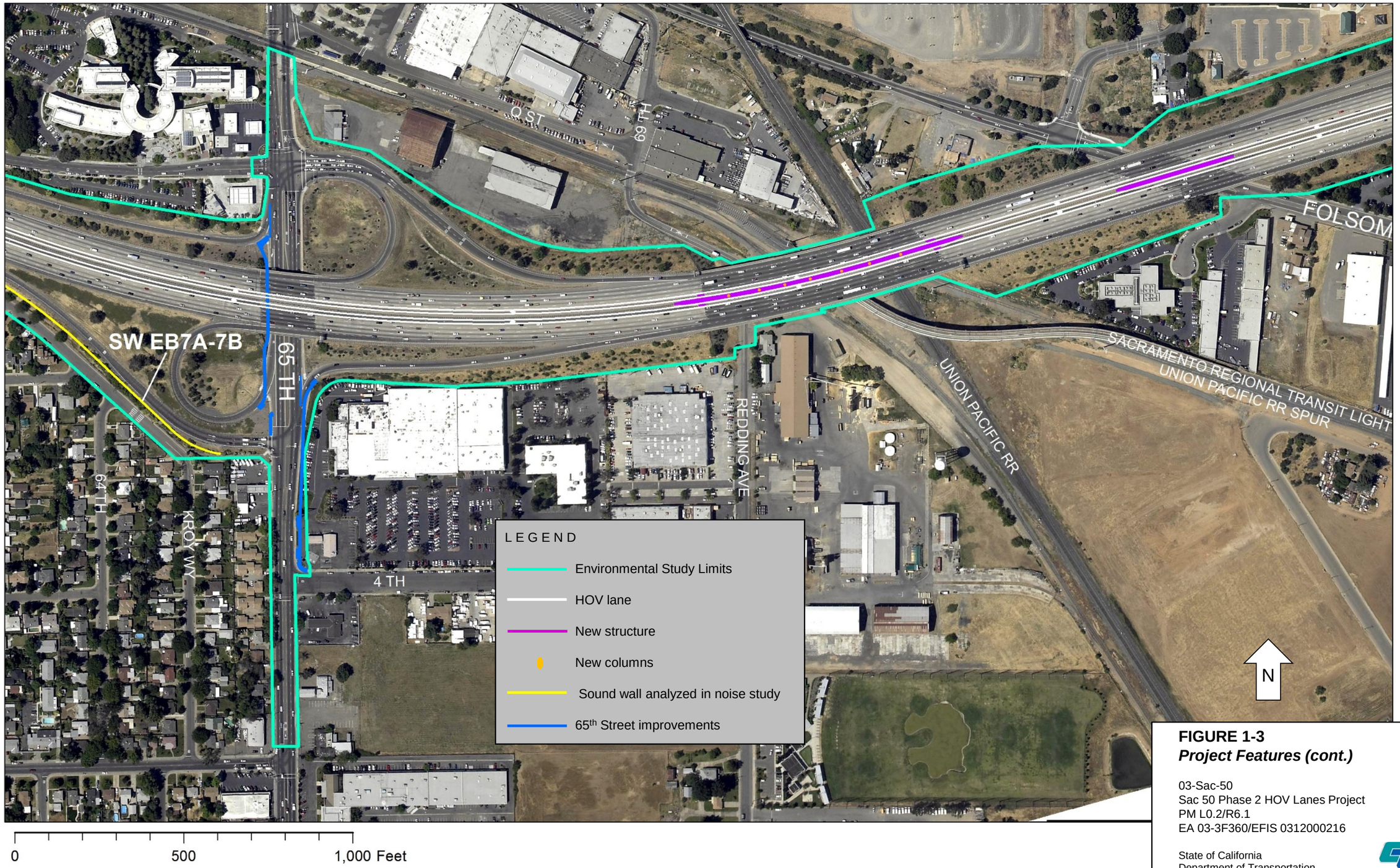

FIGURE 1-3
Project Features (cont.)

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Sac 50 Phase 2 HOV Lanes Project
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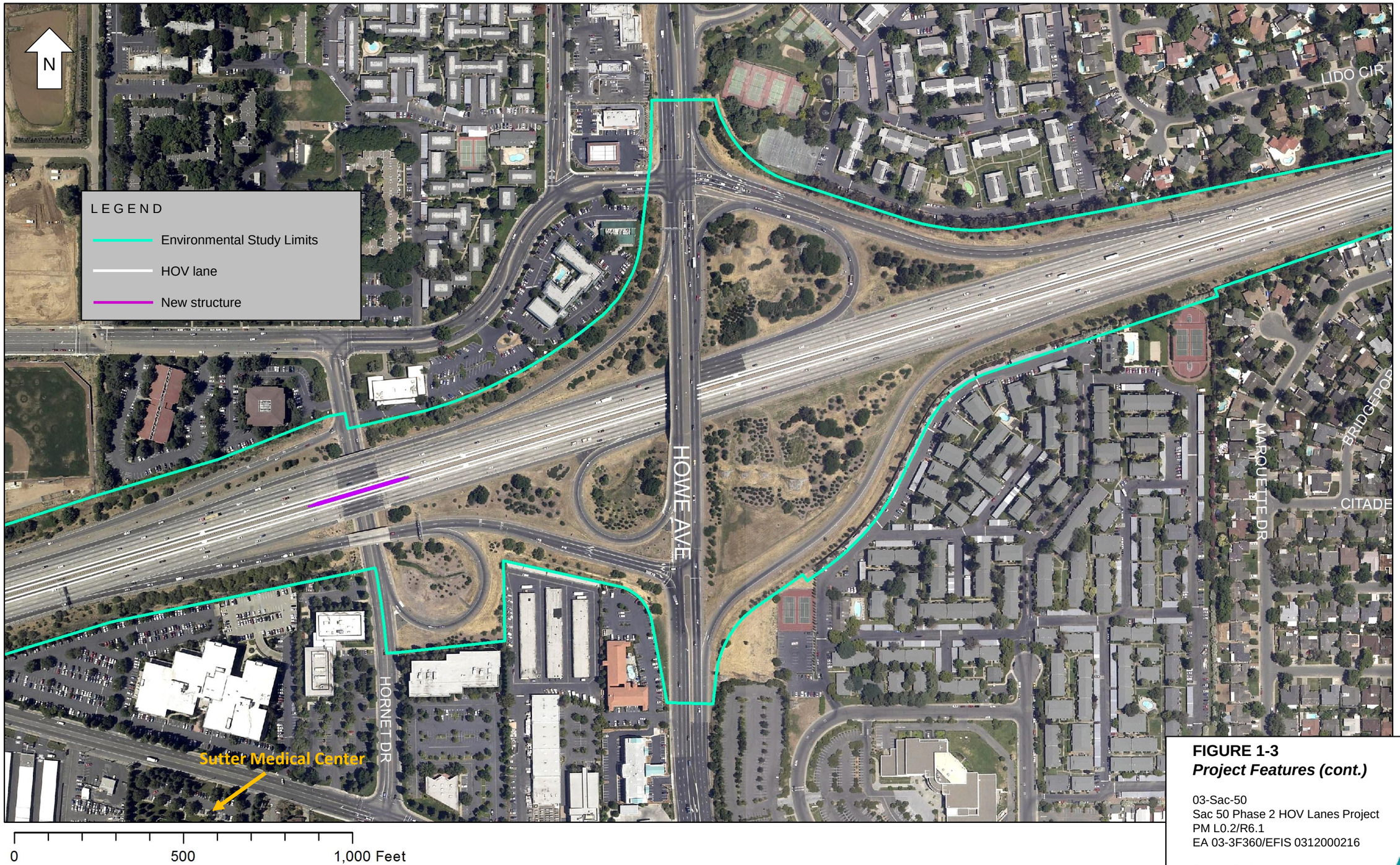

FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

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FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
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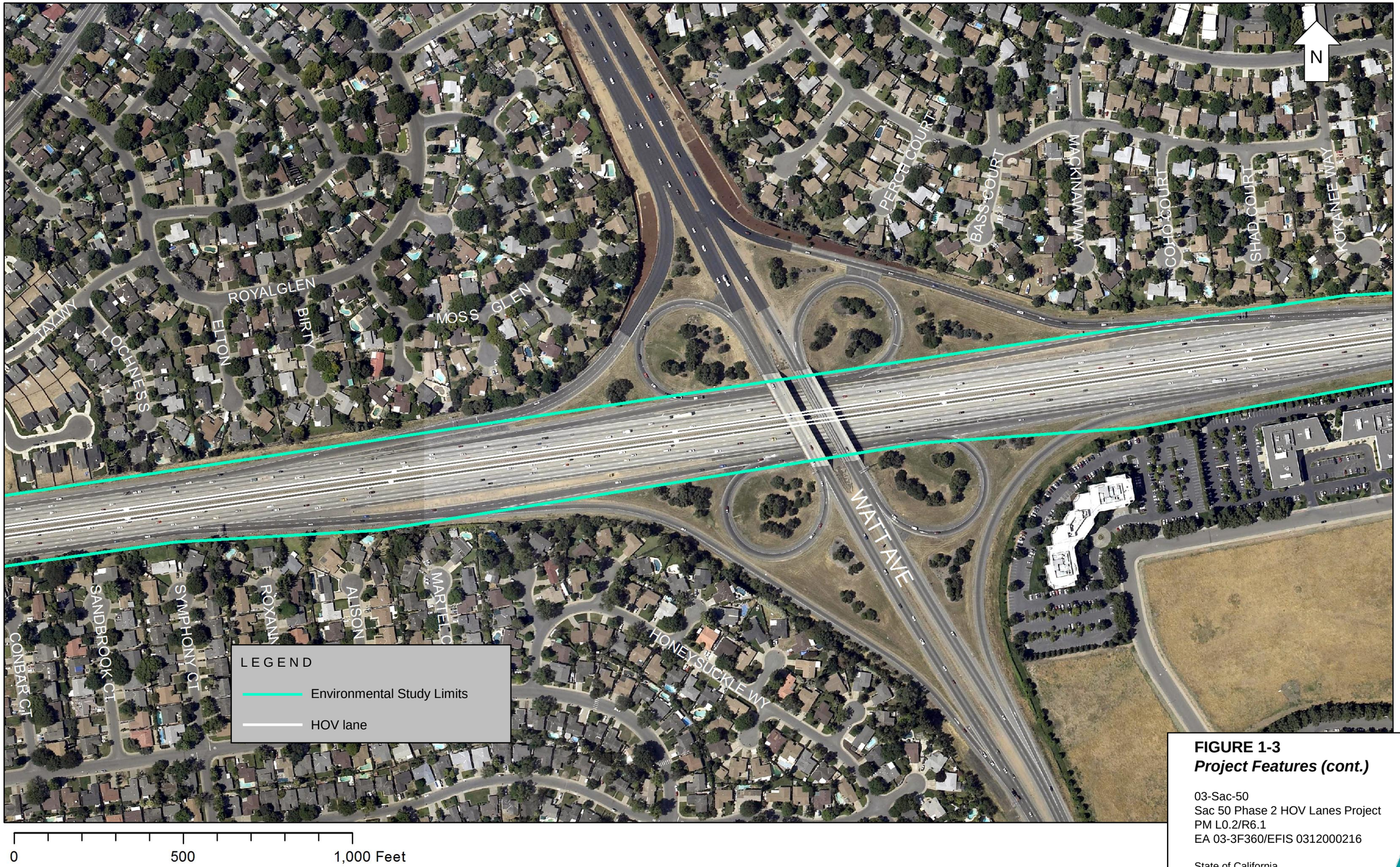

FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

State of California
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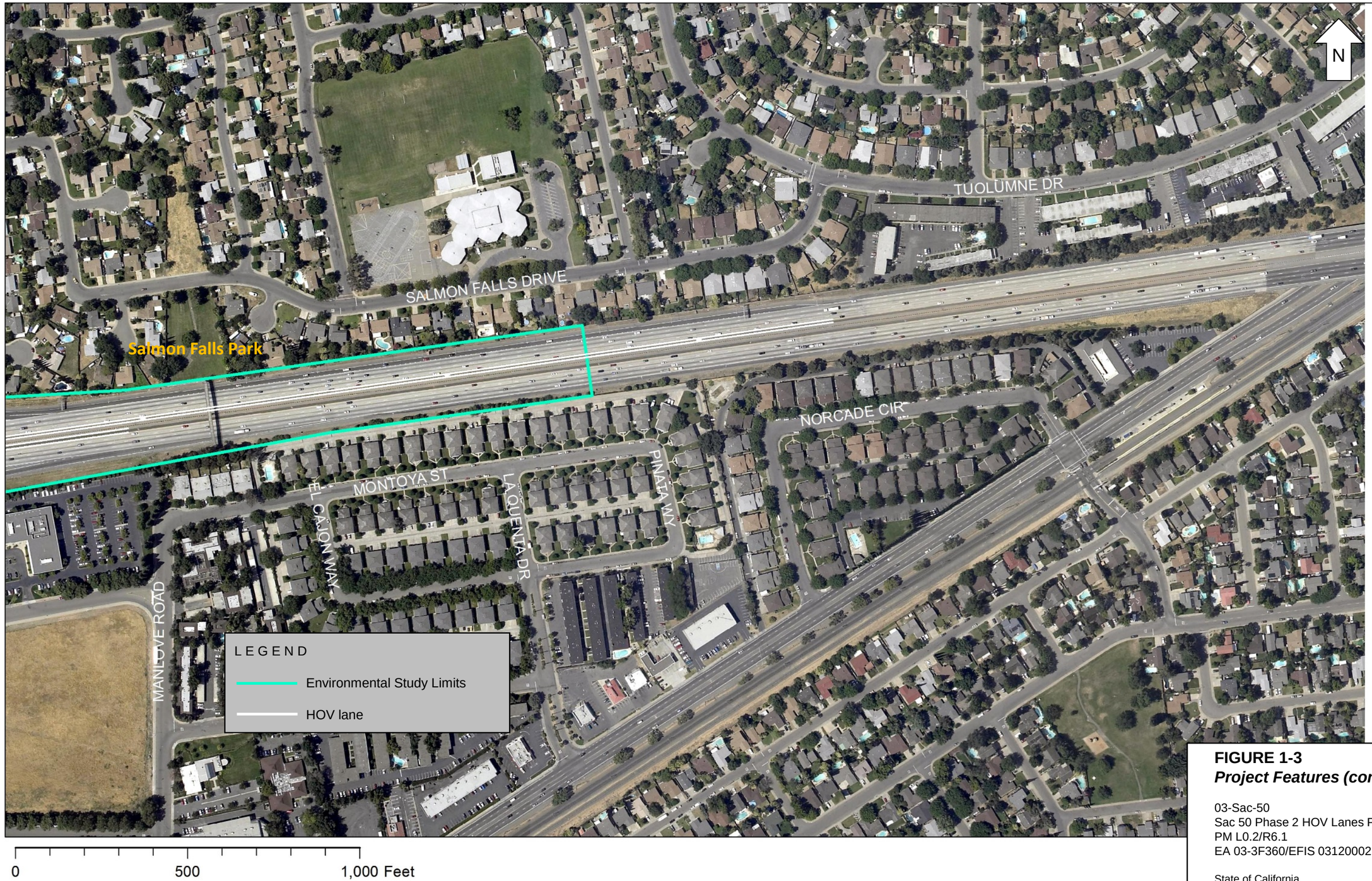

FIGURE 1-3
Project Features (cont.)

03-Sac-50
Sac 50 Phase 2 HOV Lanes Project
PM L0.2/R6.1
EA 03-3F360/EFIS 0312000216

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Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance and Minimization Measures

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document, with the exception of avoidance and minimization measures discussed at the end of the document and in Appendix E.

- Biology (except nesting birds and bats) – no biological resources, with the exception of potential nesting birds and roosting bats, were identified within the project limits (even though there are no impacts, a discussion regarding threatened and endangered species is included in the biology section).
- Farmland/Timberland – no farmlands or timberlands are within the project limits.
- Geology/Soils/Topography – no geologic, soil, or topographic features are affected.
- Mineral Resources – no mineral resources were identified within the project limits.
- Recreational Facilities – no recreational facilities will be affected by the project.
- Wetlands – no wetlands were identified within the project limits.

HUMAN ENVIRONMENT

2.1 Land Use

Affected Environment

The project area is located within a highly urbanized section of Sacramento. Land use patterns in the project area are shaped by the locations of the major roads that cross the corridor. There are a total of eight interchanges (I/C) within the project limits: I-5/US 50, SR99/I-80/US 50 (Oak Park I/C), Stockton Boulevard, 59th Street, 65th Street, Hornet Drive, Howe Avenue, and Watt Avenue. Several other streets cross below US 50, including 6th to 8th Streets, 9th Street, 10th Street, Riverside Boulevard, 15th to 16th Streets, 18th to 26th Streets, 34th Street, 39th Street, 48th Street, 51st Street, and Folsom Boulevard. Land uses along the US 50 corridor are primarily residential, with commercial and industrial near the major intersections.

The area considered for potential effects ("Study Area") covers approximately one-half-mile area around the Project Area, where direct impacts are most likely to occur. The Study Area is located within the City of Sacramento. Although not part of the Study Area, the cities of Rancho Cordova and West Sacramento were included in the population, employment, and commuting.

Land use designations in the Study Area include residential, commercial, office, retail, industrial, private, public, institutional, recreational, parks/open space, transportation/utility, and urban vacant. Land uses from I-5 to SR-99 is a mix of developed residential, commercial, and office. From SR-99 to Watt Avenue land use is primarily residential and commercial. Other major land uses near US 50 include the California State University at Sacramento and U.C. Davis Medical Center, which are located adjacent to the US 50/Howe Avenue I/C.

Zoning from I-5 to the Oak Park I/C consists of R-1 (Standard Single Family Residential), R-3A (Multi-Family), and C-2 (Standard Commercial). Zoning from the Oak Park I/C to 59th Street is mainly R-1. From 59th Street to Howe Avenue, zoning is mixed, including R-1, C-2, EC (Employment Center), and OB (Office Building). From Howe Avenue to Watt Avenue, zoning consists mainly of R-1, with R-2B (Multi-Family) just east of the Howe Avenue I/C.

The City manages the Coloma Community Center located south of US 50 at 48th Street.

The area underneath the elevated portion of the freeway in downtown Sacramento (viaducts) is owned by Caltrans and is currently leased and under airspace agreements with the State, including the City of Sacramento, various State agencies, and several local businesses. The current leases include parking, a monthly antiques fair, a weekly farmer's market, and a self-storage facility (see Table 2-1, below).

Table 2-1. Current tenants under the downtown viaducts.

Street Address	Tenant	Comments
Between 6th and 8th Street	City of Sacramento	The City of Sacramento is now responsible for this lease until 2025. Use activities include parking, weekly Farmers Market and the SactoMoFo (mobile food trucks) twice per year.
Between 14th & 15th Street	Mini Storage	Lease expires in July 2019.
Between 18th & 19th Street	City of Sacramento	Lease with City of Sacramento, just extended 10 years to 2025. Used for parking.
Between 19th & light rail	City of Sacramento	Lease with the City of Sacramento until 2062. Possible location of the Sacramento Streetcar Maintenance yard.
Between Light rail & 20th Street	Vacant	Vacant dirt lot.
Between 20th & 22nd Street	City of Sacramento	Lease with City of Sacramento until 2025. Activities include parking and the Sacramento Antiques Faire.
Between 22 & 23rd Street	City of Sacramento	Lease with the City of Sacramento until 2026. Activities include parking.
Between 23rd & 24th Street	DMV	Lease with DMV until 12/31/16 with 2 five year options to extend. Activities include parking.

Consistency with State, Regional, and Local Plans and Programs

Sacramento Area Council of Governments (SACOG)

Regional Blueprint
The SACOG Board of Directors adopted the Preferred Blueprint Scenario in December 2004, a vision for growth that promotes compact, mixed-use development and more transit choices as an alternative to low density development. The Preferred Blueprint Scenario depicts a way for the region to grow through the year 2050 in a manner generally consistent with the Blueprint growth principles. The Preferred Blueprint Scenario is part of SACOG's 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy, the long-range transportation plan for the six-county region. It also serves as a framework to guide local government in growth and transportation planning through 2050.

2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)
The proposed regional network of high occupancy vehicles is included in 2016 MTP/SCS, which is based upon the principles of the Preferred Blueprint Scenario. The proposed project is included in the 2016 MTP/SCS (see Appendix J).

City of Sacramento General Plan, 2030

The current City of Sacramento General Plan was adopted on March 3, 2015 (City of Sacramento 2015). The City of Sacramento's 2035 General Plan supports the development of programs that increase vehicle occupancy:

Goal M 1.2
Multimodal System. Increase multimodal accessibility (i.e., the ability to complete desired personal or economic transactions via a range of transportation modes and routes) throughout the city and region with an emphasis on walking, bicycling, and riding transit.

Policies

M 1.2.1 Multimodal Choices. The City shall develop an integrated, multimodal transportation system that improves the attractiveness of walking, bicycling, and riding transit over time to increase travel choices and aid in achieving a more balanced transportation system and reducing air pollution and greenhouse gas emissions.

Goal M 1.3
Barrier Removal. Improve accessibility and system connectivity by removing physical and operational barriers to safe travel.

M 1.3.7 Regional Transportation Planning. The City shall continue to actively participate in Sacramento Area Council of Government's (SACOG's) regional transportation planning efforts to coordinate priorities with neighboring jurisdictions and continue to work with all local transit providers and the California Department of Transportation (Caltrans) on transportation planning, operations, and funding.

Goal M 1.4
Transportation Demand Management. Decrease the dependence on single-occupant use of motor vehicles through Transportation Demand Management.

Policies

M 1.4.1 Increase Vehicle Occupancy. The City shall work with a broad range of agencies (e.g., SACOG, SMAQMD, RT, Caltrans) to encourage and support programs that increase vehicle occupancy including the provision of traveler information, shuttles, preferential parking for carpools/vanpools, transit pass subsidies, and other methods.

M 1.4.2 Automobile Commute Trip Reduction. The City shall encourage employers to provide transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education, and preferential parking for carpools/vanpools.

Sacramento County General Plan

Sacramento County adopted its General Plan in December 1993 and amended in November 9, 2011 and in May 28, 2014. The Circulation Element of the 1993 General Plan supported the construction of a regional network of bus/carpool lanes (County of Sacramento 2014a):

> Bus/Carpool lanes, also known as High Occupancy Vehicle (HOV) lanes, is a system of exclusive lanes signed and striped for use by vehicles, buses, motorcycles, and vanpools with multiple occupants (two or more or three or more persons). Bus/Carpool lanes are designed to reduce traffic congestion, improve safety, reduce fuel consumption, and improve air quality. Sacramento County supports the development of a regional network of Bus/Carpool lanes.

GOAL: Provide mobility for current and future residents of Sacramento County through complete streets and through a balanced and interconnected transportation system which includes all modes of travel - automobile, transit, pedestrian and bicycling.

Policies:

CI-3. Travel modes shall be interconnected to form an integrated, coordinated and balanced multi-modal transportation system, planned and developed consistent with the land uses to be served.

CI-4. Provide multiple transportation choices to link housing, recreational, employment, commercial, educational, and social services.

GOAL: Provide a balanced and integrated roadway system that maximizes the mobility of people and goods in a safe and efficient manner.

Policies:

CI-7. Plan and construct transportation facilities as delineated on the Transportation Plan of the Sacramento County General Plan. Transportation facilities shall be consistent with the Sacramento County, Municipal Services Agency Improvement Standards and Construction Specifications, and supplemented by the California Department of Transportation (Caltrans) design standards. The County may deviate from the adopted County Improvement Standards and Construction Specifications in circumstances where conditions warrant special treatment.

Sacramento Regional Transit District's Strategic Plan, 2015 - 2020

The Sacramento Regional Transit District (RT) produced its current Strategic Plan in 2015. RT Board of Directors adopted the last Strategic Plan in 2004. In the decade since the previous Strategic Plan was approved, the region has experienced tremendous change. This update to RT's Strategic Plan provides a current framework to evaluate and prioritize potential services and efforts included in various agency plans. (Sacramento Regional Transit 2015).

The mission of the 2015-2020 plan is to promote and improve access in the Sacramento region by providing safe, reliable**,** and fiscally responsible transit service that links people to resources and opportunities. The vision of the plan is to connect people to resources and opportunities while stimulating livable communities and supporting economic development by providing an efficient and fiscally sustainable transit system that attracts and serves riders by offering an appealing transportation choice.

The proposed project is consistent with local plans and policies.

Environmental Consequences

Land Use
No permanent direct or indirect effects to land use are anticipated. The proposed project is consistent with local plans and policies.

A small section of new ROW would be required for soundwall SW WB1, located along the westbound SR 99/SR 50 connector. The area involves existing roadway; no buildings or land would be involved. Temporary construction easments may be required for storage and movement of equipment and materials through and around the construction zone and for the construction of sound walls.

Under Alternatives 1 and 2, the airspace leases for the uses under the W-X freeway will be relieved during the time of construction (see Table 2-1). The tenants will vacate the space during the duration of construction for safety reasons. After construction has ended, most tenants will be invited back after construction. The tenants would be responsible for finding an alternate location to conduct business until these sites are made available again. The airspace leases stipulate that

in the event of work on all or a part of the freeway structures which are situated on, above or adjacent to the leased area or be required to use all or a portion of the leased area in connection with the protection, maintenance, reconstruction, and operation of the state highway system, Caltrans has the right to impose restrictions on the leasee's right to enter, occupy, and use the leased area.

The lease for the mini-storage business expires in 2019, prior to project construction. Caltrans may either not renew the lease, terminate the lease, or rebuild access.

Alternatives 3 and 4 do not require any tenants under the W-X freeway to relocate.

Construction Impacts

Temporary construction impacts would not affect local or regional land use or development plans.

For Alternatives 1 and 2, the airspace leases under the viaducts of the W-X freeway will be affected by project construction. Caltrans will terminate the tenancy and require these uses to vacate during the duration of construction for safety reasons. After construction has ended, tenants will be invited back.

The tenants would be responsible for finding an alternate location to conduct business until these sites were made available again.

Avoidance and/or Minimization Measures

For Alternatives 1 and 2, Caltrans will consider phased construction in the W-X freeway section as a possible strategy to reduce impacts to the airspace lease tenants beneath US 50 (see Table 2-1). Phased construction would involve constructing one viaduct segment at a time, so that not all the tenants would be affected concurrently. This would reduce potentially parking issues for events at the new downtown arena.

CEQA Considerations

As discussed above, the project alternatives would not physically divide an established community, conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or conflict with any applicable habitat conservation plan or natural community conservation plan. No permanent direct or indirect effects to land use are anticipated. The proposed project is consistent with local plans and policies. Regarding uses under the W-X freeway, the airspace leases under the viaducts of the W-X freeway will be affected by construction of Alternatives 1 and 2. Caltrans will terminate the tenancy and require these uses to vacate during the duration of construction for safety reasons. After construction has ended, tenants will be invited back.

2.2 Growth

Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with NEPA, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project's potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

Affected Environment

This analysis was prepared using Caltrans' *Guidance for Preparers of Growth-Related, Indirect Impact Analysis (Growth-Related Guidance)* (Caltrans, 2006a). This guidance specifically addresses the subset of indirect effects associated with highway projects that encourage or facilitate land use or development that changes the location, rate, type or amount of growth—and are referred to in the *Growth-Related Guidance* as "growth-related impact."

The study area selected for growth-related impacts consisted primarily of the project limits and the cities of Rancho Cordova and West Sacramento, which house the expected trip origins and destinations most likely to be affected by the proposed project.

Previous project information reviewed for this analysis included the relevant planning documents outlined in Chapter 2 of this document, as well as the Preliminary Environmental Assessment Report (PEAR) and the Supplemental Project Study Report (PSR) prepared by Caltrans for the original Sac 50 HOV project in August 2001. The project limits in the PEAR and Supplemental PSR were Sunrise Boulevard to 9th Street in downtown Sacramento; however, the limits were changed to Watt Avenue and Sunrise Boulevard.

Assessing the Need for a Growth-Related Impact Analysis

Accessibility is the most direct link between transportation and land use and refers to the project's potential to reduce cost of travel, either in terms of money or time, potentially enhancing the attractiveness of surrounding land to developers and consumers. When changes in accessibility provided by a transportation project facilitate land use change, one outcome can be growth-related impacts to environmental resources.

Project type is another important factor to consider when evaluating the need for a growth-related analysis. According to the *Growth-Related Guidance*:

> Adding high occupancy vehicle (HOV) lanes or mixed flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. These projects warrant closer consideration to determine whether an analysis of growth-related impacts will be necessary.

Project location is another element of growth-related impacts. The proposed project is located within the city of Sacramento. Within the project limits, there is very little area for new development. The area is highly urbanized, with new development limited to reclaimed land or small in-fill.

Finally, growth pressure must be considered when evaluating the potential for growth-related impacts. Growth pressure is influenced by circumstances such as land availability and price, existing infrastructure, the regional economy, vacancy rates, and land use controls, although the degree to which growth is influenced by these circumstances will vary from project to project.

Based on the project's potential to reduce time-of-cost travel for users of the bus/carpool lanes, it was determined that an analysis of the project's potential for growth-related impacts was warranted. The growth-analysis is included in the Community Impacts Assessment (CIA) prepared for the proposed project.

The study area selected for growth-related impacts consists primarily of the project limits and to a lesser extent Sacramento County, the City of Rancho Cordova, and the City of West Sacramento—which house the expected trip origins and destinations most likely to be affected by the proposed project.

In 2013, Sacramento County had a population of just over 1.4 million, the City of Sacramento had a population of about 471,500, the City of Rancho Cordova had a population of 66,000, and the City of West Sacramento 49,000. By 2035, SACOG projects that Sacramento County's population will increase by 511,400 (27% increase), City of Sacramento by 181,400 (29% increase), City of Rancho Cordova by 66,100 (52% increase), and the City of West Sacramento by 43,500 (49%) (SACOG 2012). SACOG also projects that by 2035, employment will increase by 211,500 (25%) in Sacramento County, 77,100 (21%) in the City of Sacramento, 25,500 (35%) in the City of Rancho Cordova, and 20,800 (39%) in West Sacramento (SACOG 2012). Please refer to Table 2-6 at the end of this section. Although construction of new homes slowed in the region due to a weak housing market starting 2008, this market has picked up in the last several years and over the long run, new housing construction is expected to continue in the Sacramento area.

Potential for Growth and Local Plans

Community comprehensive plans and planning laws, such as land use and zoning regulations, are most often the primary means of controlling growth and development. County and local governments use these plans and regulations to encourage or discourage growth in their communities as they see appropriate. Any changes to these plans or regulations involve public review and input. Other constraints to growth can include a lack of public utility infrastructure and services such as water, gas and electric, and sewage.

As stated above, the proposed project is consistent with regional planning efforts, including SACOG's Preferred Blueprint Scenario and the 2016 MTP/SCS. The population distribution anticipated in SACOG's planning area is based on a future transportation network that includes the proposed project.

Potential for Growth and Accessibility Improvements

The existing development in Sacramento along the US 50 corridor has resulted in congestion and travel delays during peak hours. Even though the current Level of Service (LOS) along the US 50 corridor is currently at "D" (minimal delays), according to the Traffic Report prepared for the proposed project, the current LOS at key portions of US 50 within the study area during peak hours is " F," meaning traffic experiences forced or breakdown flow and more vehicles are arriving than are leaving. This congestion will only worsen with development anticipated outside the project area in Sacramento County, City of Sacramento, Rancho Cordova, and West Sacramento for the years ahead, as noted in the SACOG Blueprint.

The proposed project would provide a benefit to intercity commuters. The proposed project, and a regional network of high occupancy vehicle lanes, is included in both the SACOG Blueprint and the 2016 MTP/SCS. The 2016 MTP/SCS is based upon the SACOG Preferred Blueprint Scenario —a planning framework that is expected to improve jobs/housing balance in the communities in the region, when compared to future conditions without the Blueprint.

Environmental Consequences

Alternative 1

Alternative 1 seeks to reduce congestion and encourage alternative means of commuting by extending existing HOV lanes on US 50 between downtown Sacramento and Watt Avenue. This alternative would provide greater connectivity within the HOV lane system in the Sacramento

region, which consists of existing and planned bus/carpool lanes on I-80, I-5, US 50, and SR 99. These improvements are being proposed because of demands put on the region's transportation system due to the existing rates of growth in the greater Sacramento area. The projects are also part of a long-term Caltrans effort to encourage the use of transit and multi-passenger occupied vehicles.

Alternative 1 would increase vehicle capacity of an existing freeway that is currently heavily congested. The alternative would improve travel times for bus and carpool users, particularly when compared to the No Build Alternative (please refer to the Traffic and Transportation section in this document). The capacity increasing potential of Alternative 1 would be insufficient to ensure a freeway with no delays given the level of residential and non-residential development that has already occurred and is planned for eastern Sacramento County. The areas next to the project are already built-out, with little opportunity for new development. Thus, the proposed build alternatives, including Alternative 1, are not expected to have a growth-inducing impact on the study area or its surrounding communities. City and regional plans indicate that Sacramento County as well as the City of Sacramento are preparing for relatively rapid growth in the near future, and the most current data indicate that this growth is occurring and is likely to continue to occur according to planned build-out with or without the proposed project.

The HOV lane is designed to provide an alternative to single-occupancy vehicle travel and encourage drivers to combine vehicle trips, thus removing some cars from the freeway. Although new capacity would be added under Alternative 1, it is not expected to result in new, unplanned growth. The design of Alternative 1 does not create any new access points or alter current ramp locations nor would Alternative 1 remove any key restraints to growth—it would not change any land use designations or open any new areas to development.

Alternative 2

Impacts to growth from Alternative 2 are similar to Alternative 1. Alternative 2 would also add vehicle capacity, but this increase in capacity is not expected to result in new, unplanned growth. The areas next to the project are already built-out, with little opportunity for new development. Thus, the proposed build alternatives, including Alternative 2, are not expected to have a growth-inducing impact on the study area or its surrounding communities. City and regional plans indicate that Sacramento County as well as the City of Sacramento are preparing for relatively rapid growth in the near future, and the most current data indicate that this growth is occurring and is likely to continue to occur according to planned build-out with or without the proposed project.

Alternative 3

With development already planned and in progress, Alternative 3 (Mixed Flow to Bus/Carpool Lane Conversion) is equally unlikely to result in growth-related indirect impacts to resources. Development would be expected to continue as planned and congestion would worsen. Alternative 3 would not be expected to constrain growth, as no data was found that would suggest that this alternative would prevent or reduce the amount or type of development outlined in local planning documents because this alternative does not add capacity to US 50.

Alternative 4

With development already planned and in progress, Alternative 4 (No-Build) is equally unlikely to result in growth-related indirect impacts. Without the proposed project, development would be expected to continue as planned and congestion would worsen. Alternative 4 would not be expected to constrain growth, as no data was found that would suggest that this alternative would prevent or reduce the amount or type of development outlined in local planning documents.

Avoidance and/or Minimization Measures

As discussed above, growth impacts are not anticipated. No avoidance and/or minimization measures are required.

CEQA Considerations

As discussed above, it is not anticipated that the project alternatives will induce substantial population growth, either directly or indirectly. Alternatives 1 and 2 would increase vehicle capacity. This increased capacity is not expected to result in new, unplanned growth. The proposed build alternatives are not expected to have a growth-inducing impact on the study area or its surrounding communities. City and regional plans indicate that Sacramento County as well as the City of Sacramento are preparing for relatively rapid growth in the near future, and the most current data indicate that this growth is occurring and is likely to continue to occur according to planned build-out with or without the proposed project. Alternatives 3 and 4 would not be expected to constrain growth, as no data was found that would suggest these alternatives would prevent or reduce the amount or type of development outlined in local planning documents because these alternatives do not add capacity to US 50. No growth-related impacts are anticipated.

2.3 Community Impacts

Regulatory Setting

NEPA, as amended, established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). The FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider change to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

Caltrans prepared a Community Impact Assessment in March 2015.

Regional Overview

Sacramento County encompasses approximately 994 square miles. The City of Sacramento is approximately 98 square miles. The Study Area is made up of the Census Tracts within a half-mile of US 50 between I-5 in downtown Sacramento and Watt Avenue. US 50 in this area is relatively flat and straight; the American River lies to the north and the Sacramento River to the west. The Study Area is located entirely within an urban and built environment.

US 50 is one of the most important regional routes serving the Sacramento Metropolitan Statistical Area (MSA), which is made up of Sacramento, El Dorado, Yolo, and Placer counties. In 2014, Sacramento County was the 8th fastest growing County in the State, according to the California Department of Finance (Finance 2014), and the City of Sacramento is its largest city and the seat

of the State government. As commercial growth in Sacramento and surrounding cities continues, workers are commuting from farther and farther away, straining US 50 and the existing transportation network's capacity.

US 50 accommodates intercity traffic and provides local access to a variety of large and small businesses located adjacent to the US 50 corridor, as well as recreational opportunities in the region. The highway is part of a transportation hub of interstate and U.S. highways that converge in West Sacramento. The transportation network provides direct access to the San Francisco Bay Area, and other northern California markets and key ports.

Population

In 2000, the population for Sacramento County was about 1.2 million, 407,000 for the City of Sacramento, and 59,800 for the Study Area. By 2013, the population for the county increased to approximately 1.4 million and 471,500 for the city, but decreased to 54,000 for the Study Area (see Table 2-2). Based on 2000 and 2013 Census data, the population grew 16% in Sacramento County, 16% in the City of Sacramento, 20% in the City of Rancho Cordova, and 55% in the City of West Sacramento. The population decreased in the Study Area census tracts by nearly 10%.

SACOG projects that the County's population will increase 27% by 2035, from 1.4 million to 1.9 million. The City of Sacramento is expected to continue to be the region's largest city. Sacramento is expected to grow by nearly 181,400 residents (29% growth) to a 2035 population of 629,000. SACOG projects that Rancho Cordova will grow 52% by 2035, from a 2008 population of 60,000 to a 2035 population of 126,100. For West Sacramento, the population is projected to increase 49% (45,000 in 2008 to 88,700 in 2035).

Population projection data is not available for census tract. For the study area, projection data was obtained from zip codes (SACOG-08-20-35_forecast%20-%20ZCTA.xlsx). As such, SACOG estimates that the population for the zip codes in the study area in 2035 will increase 39% and employment by 23% (Table 2-2).

Ethnicity

2013 U.S. Census data indicates that percentages of minorities located in the study area was less than for the City of Sacramento as a whole. The ethnic composition in the Study Area was different than for both the county and city of Sacramento, especially the white population:

	White	Black	Hispanic	Other
Sacramento County:	49%	10%	21%	20%
City of Sacramento:	35%	13%	27%	25%
Study Area	62%	9%	21%	8%

As seen above, the Study Area had a higher percentage of whites than either the city or county.

Income

The neighborhoods within the project area range from low-income to high-income; the median income levels within the Study Area varied greatly, from $18,413 to $79,706. In 2013, median household income in the county was $55,064, $49,753 in the City of Sacramento, and $48,248 in the Study Area overall (Table 2-4). Low income is defined based on the Department of Health and Human Services poverty guidelines. In 2014, this was $23,850 for a family of four. Two of the 16 census tracts within the Study Area were at or below this level: Tracts 27 ($22,895), and 52.01 ($18,413).

In 2010, the percentage of families with incomes below poverty level for the population ages 18 to 64 was approximately 21.8% in Sacramento County and 18.4 % in the City of Sacramento, both slightly higher than the national average of 14.8%. The poverty level within the Study Area varied

from 1.7% to 34.8%, with an overall rate of 16.8%, lower than the City and County of Sacramento, but higher than the national average. Eight Census Tracts within the study area—19, 20, 21, 22, 26, 27, 52.01, and 52.04—had poverty levels higher than the City of Sacramento. (Table 2-4).

SACOG projects that by 2035 the number of jobs in the County will increase 25% to 854,000. The City of Sacramento is expected to continue to be the region's largest employment center, although within the US 50 corridor, Rancho Cordova is also projected to add large numbers of jobs by 2035. Sacramento is expected to add 77,100 jobs during this period, a 21% increase. SACOG projects that the number of jobs in Rancho Cordova will increase 35%, from 47,400 to 72,900. For West Sacramento, the employment is projected to increase 39% (32,700 to 53,600) (Table 2-6).

Housing

The project is located in an urban area of the City of Sacramento that is built-out, with little opportunity for new development. Most of the housing is located within older residential areas, including homes constructed prior to World War II.

Established neighborhoods surround the project. Neighborhood areas along the Study Area includes: Southside Park, Upper Land Park, Land Park, Richmond Grove, Newton Booth, Curtis Park, Alhambra Triangle, North Oak Park, Med Center, Elmhurst, East Sacramento, Tahoe Park, Tahoe Park East, CSUS, College Town, Ramona Village, and College/Glen.

Property values for residences in the vicinity of any major freeway are generally negatively affected by roadway traffic noise but positively affected by their proximity to freeway access. Because no substantial increase is anticipated in traffic noise, property value changes are not likely to occur. However, the addition of sound walls may improve property values for some homes.

The Study Area's housing stock includes a combination of multi-story apartment buildings and single-family homes. Neighborhoods in downtown Sacramento include single-family homes, multi-family dwellings, and local businesses.

Table 2-3 provides data on the housing stock in the Study Area, the County, and the City of Sacramento based on the 2010 and 2013 Census data. In 2010, the County's housing supply was about 556,000 dwelling units. The vacancy rate in 2010 was 7.6%. The median home value in the County was $234,200 in 2010. The median household income was $55,000. According to the National Association of Realtors, the median value of homes in the Sacramento metropolitan area was $268,700 as of the fourth quarter 2014. In 2006, prior to the recession, the median home value in the Sacramento area was $383,000. By 2012, the value dropped to $201,000 (www.jparsons.net/housingbubble/sacramento.html).

In 2010, there were about 190,900 housing units in the City of Sacramento. At that time, the vacancy rate was 8.5%. The median home value in 2010 was $225,900 and the median household income was about $49,700.

The Study Area had approximately 29,000 housing units in 2010 with a vacancy rate of 8.7%. The median home value was about $305,200, and median household income was $48,200.

According to SACOG, housing units in Sacramento County are projected to increase by 24.5% from 554,400 in 2008 to 734,200 in 2035. For the City of Sacramento, housing units are projected to increase 26.5%. For the zip codes within the Study Area, it's a 37% increase (Table 2-3).

Parks and Recreational Facilities

The Study Area has a total of 15 parks within the City of Sacramento that are managed by the City of Sacramento's Parks and Recreation Department. The parks that fall within the Study Area include:

- East Lawn Children's Park, 1510 42nd Street, Sacramento
- Fremont Park, 1515 Q Street, Sacramento
- Glenbrook Park, 8500 La Riviera Drive, Sacramento
- Oki Park (Magoichi), 2715 Wissemann Drive, Sacramento
- Coloma Park, 4623 T Street, Sacramento
- Granite Regional Park, Ramona Avenue, Sacramento
- Little League Park, Redding Avenue and San Joaquin Street, Sacramento
- Greenfair Park, 2950 57th Street, Sacramento
- Sierra Vista Park, 5104 T Street, Sacramento
- Sunset Park, 4208 T Street, Sacramento
- Tahoe Park, 3501 59th Avenue, Sacramento
- Tahoe Tallac Park; 7400 San Joaquin Street, Sacramento
- Sierra 2 Park, 2795 24th Street, Sacramento
- Southside Park, 2115 6th Street
- O'Neil Field, 715 Broadway

Five of the publicly owned parks are adjacent to the proposed project; O'Neil Field, Southside Park, Coloma Park, Oki Park, and Glenbrook Park. O'Neil Field, at 715 Broadway, includes a full-sized soccer field and two softball fields. Southside Park, a 19 acre park at 6th and W street, includes a swimming pool, wading pool, three-quarter mile jogging trail, Southside Clubhouse, lake with fishing piers, accessible playground, par course with four fitness stations, amphitheater, and picnic areas. Coloma Park, located on T Street south of US 50, is a three-acre park that includes a community center, basketball courts, and a play area. Oki Park is located south of US 50 on Wissemann Drive, is 14 acres, and includes a swimming pool, picnic areas, basketball courts, and soccer fields. Glenbrook Park is located on La Rivera Drive north of US 50, is approximately 19 acres, and includes picnic areas, a ball field, soccer fields, tennis courts, and play areas.

Community Cohesion

"Community cohesion" is the degree to which residents have a sense of belonging to their neighborhood or a strong attachment to neighbors, local groups or institutions, usually as a result of continued association over time. Cohesion refers to the degree of interaction among the individuals, groups, and institutions that make up a community. This interaction can be affected by the location of physical and psychological barriers, such as water bodies, transportation routes, political boundaries, or informally established neighborhood lines. High levels of cohesiveness are often associated with areas that have low turnover rates and residents who have lived in a neighborhood for many years.

Barriers to Interaction

Within the project's limits, US 50 serves as a dividing line between north and south. The freeway is elevated through much of downtown Sacramento, and many north-south streets pass under it. Farther east, the freeway is a more substantial barrier: major surface streets (such as Howe and Watt Avenues) cross it at interchanges, and some smaller streets have over-crossings or under-crossings. Otherwise, the freeway is a barrier to north-south movement.

Indicators of Neighborhood Stability

All of the neighborhoods in the Study Area have at least one neighborhood association that is actively engaged with the City in solving community problems. Neighborhood associations within or adjacent to the Study Area include Southside Park Neighborhood Association, East Sacramento Improvement Association, McKinley East Sacramento Neighborhood Association, Sierra Curtis Neighborhood Association, Land Park Community Association, Boulevard Park Neighborhood Association, Capitol Area Development Association, Capitol Area R Street Association, Greater Broadway Partnership Business Improvement District, Newton Booth Neighborhood Association,

Beverly Way Neighborhood Association, R Street Sacramento Partnership, Friends of Grant Park, Richmond Grove Neighborhood Association, Upper Land Park Neighbors, Oak Park Neighborhood Association, Oak Park Business Association, Elmhurst Neighborhood Association, Folsom Blvd. Alliance, and Campus Commons Homeowners Association.

Another indicator of neighborhood stability is the ratio of owner-occupant to renter. In 2013, the percentage of owner occupied vs renter occupied in Sacramento County was 54.2% to 45.8%. It was flipped in the city of Sacramento: 48.4% owner occupied and 51.6% renter occupied. The disparity in the Study Area was wider: 40.3% owner occupied and 56.2% renter occupied (Table 2-3).

Length of residency is another indication of neighborhood stability. The percentage of residences that moved into their homes prior to 2000 were as follows: Sacramento County 21.6%, City of Sacramento 27.2%, and Study Area 28.1%. Four of the 15 census tracts within the Study Area had over 40% of their residents moving into their homes before 2000 (Table 2-3), indicating residential stability.

Regional and Local Economy

Workers based in the Study Area are employed in a range of industries. The US 50 corridor is a major destination for commuters, with some of Sacramento County's largest employers located near the freeway.

Employment

According to the Census Bureau, the top industry categories in terms of employment of residents living in the Study Area include: Management, Business, Science, and Arts (14,371 workers), Sales and Office (7,420), and Service (5,286). There were about 29,600 residents over the age of 16 employed within the Study Area (Table 2-5)

The employment profile in the Study Area closely mirrors the types of businesses that are located in the region. Of Sacramento County's total employed civilian population of 610,662 (those over 16 years of age), 228,965 were employed in the Management, Business, Science, and Arts occupations, 163,511 in the Sales and Office occupations, and 118,000 in the Service occupations.

In 2013, approximately 55% of Sacramento County's 1,115,500 residents over 16 years of age were employed. In the City of Sacramento, this number was also 55%. In the Study Area, approximately 60% were employed. Labor force characteristics are presented in Table 2-5.

2013 Census data for civilian unemployment rates in the County, Study Area, and City of Sacramento were 8.7%, 8.2%, and 9.3%, respectively (Table 2-4). Current data also shows that the Sacramento region continues to recover from the recent recession. In 2010, the unemployment rate was about 12.5% in the City of Sacramento; in December 2014 it had decreased to 6.7%. Also, according to SACOG projections up to 2035, job growth is expected to outpace population growth (Table 2-6).

Project Area Businesses

The proposed project runs through downtown Sacramento and along a heavily developed commercial corridor in the City of Sacramento. Several large employers are situated within a half-mile of the freeway in the Study Area. Major employers located near US 50 include:

- UC Davis Medical Center and Children's Hospital
- Sutter Health
- Sacramento Municipal Utility District
- California State University, Sacramento
- State of California, various agencies

Tax Revenue

In the Study Area, tax revenue is generated through a combination of property taxes, business taxes, and sales tax. According to the County of Sacramento's Assessors Office 2014 Annual Report, the total assessed value of all property and property assets was estimated at $126.4 billion. This is the primary tax base in the Study Area (Sacramento County 2014).

Environmental Consequences

Community Cohesion

Generally speaking, the effects of transportation projects on community cohesion may be beneficial or adverse, and may include splitting neighborhoods, isolating a portion of a neighborhood or an ethnic group, generating new development, changing property values, or separating residents from community facilities. The proposed project does not cause any of these actions. Noise reduction, pedestrian safety, changes in property value, and changes in visual quality are all inexorably linked to the opportunities for – and perhaps more importantly the quality of – social life within a neighborhood. Whereas the project reduces noise (through noise abatement and RHMA pavement) and increases pedestrian safety (65th Street improvements), it does not decrease property values or substantially change visual quality.

Parks and Recreational Facilities

Coloma Park is part of the Coloma Community Center located at 4623 T Street in Sacramento. Under Alternatives 1, 2, and 3, a sound wall may be constructed along the northern boundary of the Coloma Community Center in the existing US 50 right-of-way. Temporary construction easements in the parking lot may be required for the construction of a sound wall. The TCE will involve using several parking spaces during sound wall construction. According to 23 CFR 774, a Section 4(f) evaluation must be prepared when a project will require the use of land from a publicly owned recreational facility (among other categories of land). This use may include temporary occupancy. However, Section 4(f) does not apply to temporary occupancy when the following five conditions are met:

1. Duration (of the occupancy) must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the 4(f) resource are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

No other parks or recreational facilities will be affected by any project alternatives. Temporary occupancy has been meet. The construction of the sound wall will take less time than the project as a whole and there will be no change in ownership; the scope of the work will be minor; there are no permanent adverse impacts or interference with Coloma Park; any damage to the parking lot will be repaired to a condition as good or better than before the project; and the City of Sacramento has concurred that the project would not have an adverse effect on this property (Caltrans received this concurrence on June 28, 2016; see Appendix C). As a result, 4(f) doesn't apply to Coloma Park.

Regional Access

Generally speaking, the project would be expected to have a positive impact on the regional economy. Versus Alternative 4, Alternatives 1 and 2 would improve travel times and vehicle throughput in the study area for vehicles in the bus/carpool lanes and vehicles in the mixed-flow

lanes, including inter-regional freight carriers. Alternative 3 is projected to result in less throughput and greater travel times versus Alternative 4.

Property Tax
None of the proposed alternatives require the acquisition of private property. Impacts to property tax revenue is not anticipated.

Sales Tax
The proposed project will not permanently impact any business operations in the Study Area. Under Alternatives 1 and 2, all the affected businesses under the W – X freeway, with the possible exception of the mini-storage business, will temporarily relocate to another area which will allow them to continue operations.

Sales tax revenues from businesses in the Study Area would remain unchanged.

Property Values
The proposed project is not likely to have a substantial impact on any of the factors that currently influence property values in the Study Area.

Property values are based on a complicated interaction of factors, including statewide and national economic conditions, consumer tastes and trends, and the desirability of individual locations. Transportation facilities can, generally speaking, improve property values by improving access, business productivity, or travelers' safety, or reduce them by substantially increasing noise levels, affecting community cohesion, or reducing an area's visual quality. Please refer to the appropriate sections for a discussion of the project's anticipated effects on noise levels, visual quality, and community cohesion.

Construction Impacts

Project construction would not have a substantial effect on the local or regional economy. Construction delays may have a minor effect on travel times.

Avoidance and/or Minimization Measures

No community resource impacts are anticipated. No avoidance and/or minimization measures are required.

CEQA Considerations

As discussed above, the project alternatives will not displace substantial numbers of existing housing or displace substantial numbers of people. None of the alternatives affect housing. The project alternatives would not 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 or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The alternatives involve adding capacity to the highway and do not affect the use of the 15 existing adjacent parks described earlier. The project alternatives do not impact community resources.

Table 2-2. Population and Ethnicity

Area	Population, 2013	Population, 2000	% change, 2000 to 2013	Age, under 18	Age, 18 and 64	Age, over 65	Ethnicity, white (alone)	%	Ethnicity, black (alone)	%	Ethnicity, not Hispanic	Ethnicity, Hispanic	%
Sacramento County	1,418,788	1,223,499	16.0%	363,053	897,184	158,551	688,052	48.5%	139,014	9.8%	1,122,410	296,378	20.9%
City of Sacramento	471,477	407,051	15.8%	116,121	300,947	49,420	163,722	34.7%	62,692	13.3%	343,325	128,152	27.2%
City of Rancho Cordova	66,027	55,060	19.9%										
City of West Sacramento	49,061	31,615	55.2%										
Study Area	54,024	59,836	-9.7%	9,670	39,994	7,160	33,648	62.3%	5,095	9.4%	47,484	11,131	20.6%

Table 2-3. Housing

Area	Housing units, 2010	Housing units, 2000	Vacancy rate, 2010	Total Households, 2010	Total Households, 2000	Change, 2000 to 2010	Median home value, 2010	Median home value, 2000	Owner occupied	Owner occupied, percent	Renter occupied	Renter occupied, percent	Moved in prior to 2000	Percent
Sacramento County	555,932	474,814	7.6%	557,331	453,600	18.6%	$234,200	$144,200	282,206	54.2%	238,374	45.8%	136,128	26.1%
City of Sacramento	190,911	163,957	8.5%	174,624	154,581	11.5%	$225,900	$128,800	85,886	48.4%	91,442	51.6%	48,301	27.2%
Study Area*	28,896		8.7%	26,415	27,330	-3.5%	$305,264		11,392	40.3%	14,824	56.2%	7,771	28.1%

* Study Area data is for 2013

Sources: US Census, DP04, Selected Housing Characteristics

Table 2-4. Income

Area		Median Household Income	Per capita income		Poverty rate, 2010	Civilian labor force	Civilian, employed	Unemployment rate
State of California		$56,533	$27,733		11.9%	18,804,519	16,635,854	7.5%
Sacramento County		$55,064	$26,739		21.8%	707,855	610,662	8.7%
City of Sacramento		$49,753	$25,508		18.4%	236,390	202,226	9.3%
Study Area		$48,248	$31,493		16.8%	34,472	30,389	8.2%

Table 2-5. Occupations

	Sacramento County	City of Sacramento	Study Area
Population 16 Years and Older	1,115,458	369,218	49,651
Civilian Employed over 16 Years Old	610,662	202,226	29,641
Percent Employed	54.7%	54.8%	60.1%
Percent Unemployed	8.7%	9.3%	8.2%
Occupation			
Management, Business, Science, and Arts	228,965	77,263	14,371
Service	118,000	40,720	5,286
Sales and Office	163,511	53,474	7,420
Natural Resources, Construction, and Maintenance	47,602	13,006	1,216
Production, Transportation, and Material Moving	52,584	17,763	1,348
Class of Worker			
Private Wage and Salary Workers	425,584	138,138	19,557
Government Workers	139,122	50,767	7,983
Self-Employed Workers	45,112	13,101	2,090
Unpaid Family Workers	844	220	11

Source: US Census Bureau, Selected Economic Characteristics, DP03. 2009-2013 American Community Survey 5-Year Estimates

Table 2-6. Projections: 2008, 2020, 2035

	2008				2020				2035			
Area	Population	House-holds	Housing Units	Employment	Population	House-holds	Housing Units	Employment	Population	House-holds	Housing Units	Employment
Sacramento County	1,376,868	511,515	554,360	622,579	1,547,978	596,707	621,084	679,874	1,888,307	685,500	734,169	834,066
City of Sacramento	447,571	175,220	191,499	285,977	516,720	209,712	219,114	309,623	629,006	242,195	260,704	363,097
City of Rancho Cordova	59,979	22,808	24,868	47,385	79,305	31,256	32,826	54,066	126,112	46,476	49,812	72,852
City of West Sacramento	45,098	16,529	17,825	32,759	62,346	24,055	24,672	38,075	88,659	32,803	35,615	53,599
Zip Codes*	133,865	61,681	67,152	114,351	159,414	76,582	78,893	125,113	219,804	100,147	106,554	148,973
SACOG region	2,215,044	819,434	885,082	966,285	2,519,947	966,886	1,004,151	1,068,839	3,086,213	1,114,451	1,188,210	1,327,423

	Change, 2008 to 2035							
Area	Population, number	Population, percentage	Households, number	Households, percentage	Housing Units, number	Housing Units, percentage	Employment, number	Employment, percentage
Sacramento County	511,439	27.1%	173,985	25.4%	179,809	24.5%	211,487	25.4%
City of Sacramento	181,435	28.8%	66,975	27.7%	69,205	26.5%	77,120	21.2%
City of Rancho Cordova	66,133	52.4%	23,668	50.9%	24,944	50.1%	25,467	35.0%
City of West Sacramento	43,561	49.1%	16,274	49.6%	17,790	50.0%	20,840	38.9%
Zip Codes*	85,939	39.1%	38,466	38.4%	39,402	37.0%	34,622	23.2%
SACOG region	871,169	28.2%	295,017	26.5%	303,128	25.5%	361,138	27.2%

* Zip codes crossed by US 50 were used because projection data for census tracts was not available.
Sources:
SACOG Modeling Projections for 2008, 2020, and 2035; May 2012, Total Population, Total Households, Total Dwelling Units, and Total Employment
SACOG-08-20-35_forecast%20-%20ZCTA.xlsx (for zip code data)

2.4 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on California Department of Health and Human Services poverty guidelines. For 2014, this was $24,850 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix D of this document.

Affected Environment

Data from the US Census, including income, housing and ethnicity, was used to help determine whether minority or low income populations resided within the project study areas. This data is presented in Tables 2-2, 2-3, and 2-4. As these tables show, within the study area the minority populations were lower, the median housing value was higher, the per capita income higher, and the poverty rate lower than within the City of Sacramento.

However, two individual census tracts had income levels below the 2014 level of $23,850: Tracts 27 ($22,895), and 52.01 ($18,413).

2013 U.S. Census data indicates that percentages of minorities located in the study area was less than for the City of Sacramento as a whole. The ethnic composition in the Study Area was different than for both the county and city of Sacramento, especially the white population:

	White	Black	Hispanic	Other
Sacramento County:	49%	10%	21%	20%
City of Sacramento:	35%	13%	27%	25%
Study Area	62%	9%	21%	8%

As seen above, the Study Area had a higher percentage of whites than either the city or county. Several tracts had a non-white population higher than 50%: Tracts 20, 21, 22, 27, and 52.01.

Environmental Consequences

Increased noise levels resulting from the construction of proposed project may affect residents adjacent to the proposed project. However, this noise is temporary. Proposed measures to reduce construction noise will be part of the project.

Substantial noise increases as a result of the project are not anticipated; any increases in noise would generally affect all residents along the project corridor similarly. There are also sound walls throughout the project limits that will continue reducing freeway noise to nearby residents.

No permanent substantial socioeconomic impacts are expected to affect any population within the study area due to implementation of the proposed project. Temporary construction related impacts

are expected due to noise, air, dust and debris. Disruption to the traveling public is expected to be kept to a minimum as travel lanes and ramps are expected to remain open during peak and daylight hours.

Portions of the project, such as widening the viaducts, may be phased so as to affect a limited area at a time.

Any cumulative socioeconomic impacts from related projects to residents and their neighborhoods would be minimized by implementation of a Transportation Management Plan (TMP).

The socioeconomic impacts due to implementation of the proposed project are generally spread evenly throughout the project area and any temporary impacts during construction are not expected to reach a “high and adverse” level of concern. Based on the above discussion and analysis, the project alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding environmental justice.

The proposed project would not impact community character or cohesion. Neighborhoods within the project corridor currently have well-defined boundaries based upon the artificial division provided by the existing freeway. The addition of bus/carpool lanes within the median would not be expected to affect the character or cohesion of these neighborhoods.

Avoidance and/or Minimization Measures

No environmental justice impacts are anticipated. No avoidance and/or minimization measures are required.

2.5 Utilities/Emergency Service

Affected Environment

Caltrans prepared a Community Impact Assessment in March 2015.

Utilities

Designated utility corridors and easements are located in the Study Area. Utilities such as water, storm drains, sanitary sewer systems, gas, and electrical lines traverse the Study Area.

Water Supply and Distribution
Drinking water within the Study Area is supplied by the City of Sacramento’s Department of Utilities (85 % from the American River and 15 % from groundwater).

Flood Control
The Sacramento Area Flood Control Agency has been charged with the responsibility of providing the Sacramento area with flood protection from the American and Sacramento rivers. Stormwater drainage and flood control services in the Study Area are provided by the Sacramento County Stormwater Utility of the County’s Water Resources Department.

Wastewater Collection and Treatment
Sewer and wastewater collection, conveyance and treatment services in the Study Area is provided by the City of Sacramento’s Department of Utilities (routed to the Sacramento Regional County Treatment Plant where it receives primary and secondary treatment).

Solid Waste Disposal
Solid waste disposal and recycling services in the Study Area are provided by the City of Sacramento. The City of Sacramento services all residential and a third of the commercial customers within the city, and transports the waste initially to a transfer station and then to the Lockwood Landfill in Sparks, Nevada. Private franchised haulers service the remaining commercial customers in the City of Sacramento and dispose of the waste at various facilities including the Sacramento County Keifer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill and private transfer stations.

Natural Gas and Electricity
The Sacramento Municipal Utility District (SMUD) provides electricity in the County and Study Area, while Pacific Gas and Electric Company (PG&E) provides natural gas.

Telecommunications
Multiple companies provide telecommunications services in the Sacramento area, with a variety of services providing land line and cellular service, cable television, and internet connectivity. The primary telecommunications service providers in the Sacramento area are AT&T, Sprint, Verizon, T-Mobile, Comcast, and Direct TV.

Emergency Services

Police
Primary public safety services are provided by the Sacramento Police Department (SPD) within the City of Sacramento jurisdictions of the Study Area. The California Highway Patrol provides public safety services along US 50 but does not have facilities within the Study Area.

Fire Stations/Emergency Services
The Sacramento Fire Department provides emergency first responder services (fire and ambulance). No SFD stations are located within the Study Area, but SFD Battalion 1 Stations 1, 2, 4, 5, 6, 8, and 60 service the City of Sacramento jurisdictions of the Study Area.

Hospitals
Emergency medical facilities located within the Study Area include the University of California Davis Medical Center, Sutter Health, and Mercy Medical Group.

Environmental Consequences

Utilities
There are existing utilities within the project limits, including several high risk electric lines. Positive location (potholing) work for the high risk facilities and other facilities where there are potential conflicts will be done early in the PS&E phase once an alternative is selected. Under Alternatives 1 and 2, these utilities will either be avoided or relocated. It is anticipated that any required relocations can be accommodated within the limits of environmental clearance. The final "Determination of Liability" will occur on a case by case basis as the relocation plans are finalized. Preliminary indications show that cost sharing should be on a 50%-50% split with most of the major utility companies.

Minor utility disruption may occur during construction; however, this will be temporary and localized.

The overhead power line for the light rail east of 65th Street is attached to the soffit of the overhead structure and will be affected by the proposed structure widening under Alternatives 1 and 2. The system of overhead wires that supply electricity to light rail is referred to as a messenger wire and is attached directly to the soffit of this structure. The messenger wire requires relocation since the

new structure height will be lower and will conflict with the messenger line. Cal OSHA clearance requirements also restrict workers in the vicinity of the active messenger line's existing alignment during construction.

No utilities will be relocated under Alternatives 3 and 4.

Emergency Services
Under Alternatives 1 and 2, the added capacity of the HOV/mixed flow lane would not negatively affect emergency vehicles.

Under Alternatives 3 and 4, congestion is anticipated to worsen, affecting access to public facilities. Please refer to the Traffic and Transportation section for more information.

During roadway construction under Alternatives 1, 2, and 3, emergency vehicles may need to stop temporarily or slowdown in order to ensure that they can safely pass through the project area.

Construction staging under Alternatives 1 and 2 would likely slightly disrupt activities at the interchanges within the project area. On-ramps and off-ramps may see temporary disruptions. However, most of the construction at critical junctions along the impacted route is expected to occur at night and not during peak hour commute times. No disruptions are anticipated for Alternatives 3 and 4.

Avoidance and/or Minimization Measures

Coordinate with utility companies regarding relocating utilities affected by the project prior to construction.

Coordinate with RT to relocate the light rail line wire east of 65th Street prior to construction.

Coordinate with all emergency public services, such as medical services, law enforcement agencies, fire departments, and local ambulance services prior to construction.

A Transportation Management Plan (TMP) will be implemented for this project. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies including public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. Typical components of a TMP can include measures such as the implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts to traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public of construction activities.

A public participation plan will be formulated, involving public workshops, press releases, project website, construction updates, etc.

CEQA Considerations

As discussed above, there are no significant impacts to utilities.

Project alternatives would not impact schools or parks. Project construction may temporarily impact emergency vehicles. Coordination with emergency service providers will occur. This impact will be temporary and less than significant.

2.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section provides a description of the transportation setting and assesses the potential circulation impacts associated with the implementation of the proposed project. This section also discusses the impact to pedestrian and bicycle facilities. A Traffic Report was completed for this project in May 2015. A copy of the Traffic Study is available at www.dot.ca.gov/dist3/Projects/00216/prjindex.htm.

Regulatory Setting

Caltrans, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). The regulations further direct that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

Affected Environment

The study area for the Traffic Report included US 50 from Watt Avenue (City of Sacramento) in the east to Jefferson Boulevard (City of West Sacramento) in the west. Additional freeway segments were also included in the project study area to account for congestion buildup and bottlenecks that could potentially spill back onto US 50, including I-5 between Sutterville Road in the south and Richards Boulevard in the north, SR 99 between Fruitridge Road in the south and US 50 in the north, and SR 51 (Business 80) between US 50 in the south and the American River Bridge in the north.

There are eight (8) US 50 interchanges within the project limits: Watt Avenue, Howe Avenue, 65th Street, 59th Street, Stockton Boulevard, SR 51/SR 99 (Oak Park I/C), 16th/15th/10th Streets, and I-5/5th Street/3rd Street. There are two (2) additional US 50 interchanges within the traffic study area but outside the project limits: South River Road and Jefferson Boulevard, both in the City of West Sacramento. There are five (5) I-5 interchanges within the traffic study area: Sutterville Road, US 50, P/Q Streets, I/J/L Streets, and Richards Boulevard. There are also five (5) SR 99/SR 51 interchanges within the traffic study area: Sutterville Road, US 50, P/N Streets, H/J Streets, and E Street. Within the project area, US 50 has 33 grade-separated crossings for motor vehicles.

US 50 is an east-west route of national importance that stretches over 3,000 miles through the middle of the United States from Ocean City, Maryland to West Sacramento, California. Within and through Sacramento County limits, US 50 serves as an important east-west commuter route, truck route, and recreational route. It connects the major north-south routes in the area (including I-5, SR 99, and SR 51) and connects the region to other parts of the state and country. US 50 is a part of the National Highway System (NHS) and its federal functional classification through Sacramento County is “Freeway or Expressway”. US 50 within Sacramento County is also a part of the

Interregional Road System (IRRS) and is designated as a National Network STAA (Surface Transportation Assistance Act) truck route. Additionally, it has been classified by Caltrans as a High-Emphasis Focus Route, which means it has a high priority for construction of improvements in the future. Overall travel on the US 50 corridor in Sacramento County has increased dramatically in recent years and is expected to continue to increase over the next 25 years according to SACOG's 2016 MTP/SCS.

Through the City of Sacramento limits, US 50 has a general eight-lane divided freeway cross-section with a 65 mph posted speed limit. During weekday peak periods, the dominant traffic flow east of the Junction of US 50 and SR 99 is both eastbound and westbound in the morning and evening, reflecting the large volume of commuters headed into and out of downtown Sacramento area for work to/from Rancho Cordova, Fair Oaks, and Folsom, and communities in El Dorado County. US 50 also carries a large amount of commuter traffic traveling to Davis and the Bay Area every day, which further adds to the westbound traffic in the morning. According to 2012 Caltrans traffic count data, US 50 currently carries an Annual Average Daily Traffic (AADT) ranging between approximately 171,000 to 246,000 vehicles and peak month Average Daily Traffic (ADT) of 178,000 to 256,000 vehicles through various segments within the City. According to 2011 Caltrans Truck traffic data, truck composition varies between 2.32% to 5.54% of the average daily traffic on the US 50 mainline corridor through Sacramento.

Methodology and Limitations

The Traffic Report prepared for the proposed project included a summary of existing and future conditions traffic operations along the project segment of US 50. *PTV VISSIM 6* software was utilized to develop microsimulation models. *PTV VISSIM* creates a sub-regional roadway network that was calibrated to match existing operational conditions in/through the project study area, including US 50, I-5, SR 51, and SR 99.

The AM (6 AM to 10 AM) and PM (3 PM to 7 PM) four-hour peak period models were developed to analyze both eastbound and westbound operations on US 50 along the project segment. Existing models were constructed from geometric data (aerial photographs, field observations, as-built plans), traffic control data (ramp meter signal timing plans), and traffic flow data (traffic counts, travel time measurements, field observations, vehicle composition, etc.). The existing conditions models were calibrated and validated to observed traffic volumes, travel times, and queues. The calibration/validation process involved iteratively adjusting the existing conditions models until they met certain criteria defined in federal, Caltrans, and Highway Capacity Manual (HCM) 2010 microsimulation guidelines. The validated existing conditions models were used as the base upon which future year microsimulation models were built.

Traffic counts and data collection for the project study area freeway mainlines, collectors, and on- and off-ramps were performed entirely in fall 2013 (September 16 through October 11) during typical weekdays and travel conditions. Collected data included mainline/ramp volumes, intersection turning movements, occupancy counts, classification counts, and travel times. The data collected in 2013 was used as inputs to the existing conditions microsimulation models and as the basis against which the project study area Travel Demand Model was calibrated. A US 50 HOV Lanes Project Corridor Travel Demand Model (US 50 TDM) was developed and calibrated using the SACOGs' Sacramento Activity-Based Travel Simulation Model (SACSIM) as the starting point. The US 50 TDM was used to develop future year volumes and vehicle compositions, per future year alternative/scenario, that were used as inputs to the future year microsimulation models.

The study area microsimulation models produced traffic operations results that included served vehicles, served persons, speeds, densities, levels of service, and travel times along the project segment of eastbound and westbound US 50. Level of service (LOS) is a measure of traffic operation conditions varying from LOS A (the best) to LOS F (the worst) based on the speed and

density of vehicles on a freeway segment. This operations data was used to derive traffic, air quality, and noise performance measures throughout the project area.

Note that the data presented in the following tables summarize US 50 freeway mainline operations only. As a result, any delay experienced by vehicles traveling on nearby local roadways is not captured. By year 2040 conditions, traffic in downtown Sacramento is projected to increase on both freeways and local roads. Therefore, alternatives that do not provide improvements to the freeway, such as No Build (Alternative 4), are expected to experience the largest increase in delays on local roads as cars try to find alternative routes to their destination.

Existing Conditions

Traffic Volumes and Operations

Table 2-7 summarizes the base year network statistics for the year 2013 AM and PM 4-hour peak periods. The network statistics represent data from all freeways in the project study area.

Table 2-7. Year 2013 4-Hour Peak Period Network Summary

Performance Measure	AM	PM
Vehicles Served (veh)	251,196	302,433
Vehicle Miles of Travel (mi)	934,768	1,011,698
Persons Served (per)	304,262	376,709
Person Miles of Travel (per-mi)	1,132,239	1,260,165
Average Travel Time (h)	25,128	26,823
Average Travel Speed (mph)	39	39
Vehicle Hours of Delay (h)	4,932	5,486
Person Hours of Delay (per-h)	5,974	6,833

The overall base year network serves approximately 255,000 vehicles and 310,000 persons during the AM peak period, and 305,000 vehicles and 380,000 persons during the PM peak period. The average speed on the network is 41-42 mph, and the vehicle hours of delay ranges between 3,600 (AM) to 5,100 (PM).

Table 2-8 shows the average eastbound US 50 travel times (between specific origins and destinations as shown) during the AM and PM 4-hour peak periods.

Table 2-8. Year 2013 4-Hour Peak Period Travel Times (EB US 50)

Travel Time Route	Travel Time (min.)	
	AM	PM
1: SB I-5 at Richards Blvd to EB US 50 at Watt Ave	11.5	13.5
3: EB I-80 at West Sacramento to EB US 50 at Watt Ave	10.5	11.0
5: NB I-5 at Sutterville Rd to EB US 50 at Watt Ave	11.5	12.5
7: NB SR 99 at 12th Ave to EB US 50 at Watt Ave	8.5	8.5
9: SB US 51 at E St to EB US 50 at Watt Ave	8.5	8.5

As shown in Table 2-8, average eastbound travel times range between approximately 8 – 14 minutes for all routes. The northbound and southbound I-5 to eastbound US 50 experiences the longest travel time during both peak hour period.

Table 2-9 shows the average 2013 AM and PM peak hour volume served, persons served, speed, density, and LOS of eastbound mainline US 50 in the project corridor (US 50 between Watt Avenue and I-5).

Table 2-9. Year 2013 Peak Hour Project Corridor Performance (EB US 50)

Performance Measure	AM	PM
Average Volume Served (veh)	6,032	5,823
Average Persons Served (per)	7,307	7,264
Average Speed (mph)	53.5	50.0
Average Density (pcplpm)	26.5	28.5
Average LOS	D	D

Eastbound mainline US 50 generally operates at LOS D with an average speed of approximately 53 mph during the AM peak period and 50 mph during the PM peak period. There is slightly more congestion during the PM peak hour, as demonstrated by the lower average speed and higher density.

Table 2-10 shows the average westbound US 50 travel times (between specific origins and destinations as shown) during the AM and PM 4-hour peak periods.

Table 2-10. Year 2013 4-Hour Peak Period Travel Time (WB US 50)

Travel Time Route	Travel Time (min.)	
	AM	PM
2: WB US 50 at Watt Ave to NB I-5 at Richards Blvd	11.0	11.5
4: WB US 50 at Watt Ave to WB I-80 at West Sacramento	10.5	10.5
6: WB US 50 at Watt Ave to SB I-5 at Sutterville Rd	12.0	12.0
8: WB US 50 at Watt Ave to SB SR 99 at 12th Ave	8.5	8.5
10: WB US 50 at Watt Ave to NB US 51 at E St	9.0	8.5

Average westbound travel times range between approximately 8 – 12 minutes for all routes. The westbound US 50 to southbound and northbound I-5 experiences the longest travel times during both peak periods.

Table 2-11 shows the average 2013 AM and PM peak hour volume served, persons served, speed, density, and LOS of westbound US 50 in the project corridor (US 50 between Watt Avenue and I-5).

Table 2-11. Year 2013 Peak Hour Project Corridor Performance (WB US 50)

Performance Measure	AM	PM
Average Volume Served (veh)	6,376	6,505
Average Persons Served (per)	7,307	7,264
Average Speed (mph)	54.0	55.5
Average Density (pcplpm)	28.5	28.0
Average LOS	D	D

As shown in Table 2-11**,** westbound US 50 generally operates at LOS D, with an average speed of approximately 54 mph during the AM peak period and 55 mph during the PM peak period. Westbound congestion is similar during the AM and PM peak hours, as demonstrated by the similar average speeds and densities.

Traffic Safety

Available Traffic Accident Surveillance and Analysis System (TASAS) accident data summaries provided by Caltrans District 3 for the project segment of US 50 between I-5 (03 SAC 050 PM L000.3500) and Watt Avenue (03 SAC 050 PM R005.336) for the most-recent three-year data period (April 1, 2010 through March 31, 2013) were reviewed. The overall accident data and rates is summarized in Table 2-12. The project segment of US 50 between I-5 and Watt Avenue had 1,482 total accidents over a recent three year period, four of which were fatality-related accidents, and 443 of which were injury-related accidents. Actual accident rates for the project segment of US 50 were less than average accident rates for “fatal”, “fatal plus injury” and “total” accident types for this type of facility.

Table 2-12. Study Area Accident Data Summary

US 50 Segment Location (Post Mile)	Number of Accidents							Persons		Actual Accident Rates (# of accidents/ MVM)			Average Accident Rates (# of accidents/ MVM)		
	Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Kld	Inj	Fat	F+I	Tot	Fat	F+I	Tot
I-5 (PM 0.350) to Watt Ave (PM 5.335) (April 2010 to March 2013)	1482	4	443	447	1329	178	276	4	652	0.002	0.26	0.88	0.004	0.28	0.90

Note: *MVM = Million Vehicle Miles, Fat = Fatalities, Inj = Injuries, Veh = Vehicle, Kld = Killed, F+I = Fatalities + Injuries, Tot = Total*
Source: Caltrans District 3

Table 2-13 categorizes the study area accidents by the time of day they occurred, peak vs off-peak, and accident type.

Table 2-13. Study Area Accidents by Time and Type

Statistic	Time of Day			Accident Type				Total
	AM Peak Period 6 to 10 AM	PM Peak Period 3 to 7 PM	Off-Peak	Sideswipe	Rear End	Hit Object	Other	
Number of Accidents	341	655	486	269	989	174	50	1482
Percentage	23%	44%	33%	18%	67%	12%	3%	100%

Note: 1. *The “Other” category includes head-on, broadside, overturn, auto-pedestrian, and other accident types.*
Source: Caltrans District 3

The majority of accidents occurred during the AM and PM four-hour peak periods (67%). Rear end collisions, which are associated with congestion and mainline slowdowns, were the most common type of accident that occurred on the project segment of US 50 and accounted for 67 percent of all accidents. The PM peak period experienced nearly double the accidents that the AM peak period did. This is consistent with the findings that the PM peak period experiences a higher level of congestion and worse operations than the AM peak period, as more accidents are likely to occur (especially rear end type accidents) under congested conditions.

Transit Operations

The Sacramento Regional Transit District, Yolo County Transportation District's Yolobus, El Dorado County Transit Authority, and Paratransit all operate bus routes through the project corridor.

RT operates various bus routes within the project area, including 26, 38, 61, 68, 81, and 87. RT also operates the gold line light rail from downtown Sacramento to the City of Folsom and the blue line to Elk Grove. Yolobus operates several bus routes into Sacramento from Yolo County, including 39, 40, 41, 42A, 42B, 43, 43R, 44, and 45. El Dorado Transit operates 11 buses into Sacramento in the AM and PM peak commute times Monday through Friday. There are also 2 "reverse commute" buses every morning and evening. Paratransit is a private nonprofit corporation that provides on-demand transportation services to individuals with disabilities, the elderly, and related agencies throughout the Sacramento County area.

Table 2-14 shows the number of buses counted during the four-hour AM and four-hour PM peak periods during September 2013. The bus traffic counts most likely include busses from the scheduled transit routes for the agencies listed above as well as intercity busses (Amtrak, Greyhound, etc.), school buses, and charter/tour busses.

Table 2-14. Existing AM and PM Peak Period Bus Counts

Location	Peak Period	Direction	Occupancy				Total
			Full	50% Full	25% Full	Empty	
US 50 at 48th Street	AM	Eastbound	3	68	8	0	79
		Westbound	5	42	11	14	72
	PM	Eastbound	4	32	0	1	37
		Westbound	13	27	8	1	49
US 50 at Pedestrian Crossing east of Watt Avenue	AM	Eastbound	9	43	1	1	55
		Westbound	7	21	18	17	63
	PM	Eastbound	1	35	6	2	44
		Westbound	11	13	11	12	47
Notes: Data collected 9/17/2013 and 9/24/2013							

As shown in Table 2-14, bus/transit traffic on the project segment of US 50 that would benefit from the proposed extension of HOV lanes. Busses would be allowed to use the proposed HOV/Bus/carpool lanes, allowing them to bypass congestion in the mixed flow lanes during peak hours. This would result in reduced travel times for Sacramento area transit.

Pedestrian and Bicycle Facilities

There is an extensive system of Class I, Class II, and Class III bicycle paths and routes throughout the City of Sacramento in the vicinity of the proposed US 50 project segment. Several bike routes

run parallel to the project segment of US 50 on T Street, Folsom Boulevard, V Street, and 2nd Avenue, among others. There are also approximately 20 bike routes that pass under/over the project segment of US 50 on local roads. Within the project study area limits, the City is planning several bike lane extension projects, including a proposed Class I bike path that would follow the current light rail tracks from Florin Perkins Road to Alhambra Boulevard, and Class II bike lanes that would cross under the US 50/I-5 I/C along 3rd Street in downtown Sacramento. The 65th street improvements proposed by the City of Sacramento include new bicycle lanes in each direction. These improvements are included in this environmental document, but will be constructed by the City of Sacramento as per agreement.

There is currently only one dedicated pedestrian/bicycle facility that crosses the project segment of US 50. It is located near the eastern limits of the project area, just east of the Watt Avenue I/C.

The 2010 Sacramento City/County Bikeway Master Plan was last updated in March 2011. This document's objective is to create and maintain a safe, comprehensive, and integrated bicycle system and support facilities throughout the City that encourage accessible bicycling for all. The plan supports bicycling as a sustainable, equitable, healthy, and non-polluting form of transportation which promotes the development of vibrant urban streets and public places.

The Bikeway Master Plan specifies three classifications of bikeways:

- Bike trails or bike paths are separated from vehicular traffic and are for the exclusive use of bicyclists and pedestrians. Cross traffic by motorists is minimized.
- Bike lanes are designated lanes within the street for use by bicycles. Bicyclists are required to travel in the same direction as the automobile traffic.
- Bike routes are designated streets that are shared with other road users which serve to designate preferred routes and to provide continuity to other bikeways.

Existing bike routes within the project area include Folsom Blvd., T Street, 34th Street, 39th Street, 48th Street, 51st Street, 65th Street, Occidental Drive, and Watt Avenue.

The City of Sacramento's 65th Street improvements will provide several bicycle and pedestrian features, including

- Constructing new pedestrian "pork chop" islands at the WB US 50 off-ramp terminus, including signal modifications.
- Reconstructing the curb and gutter to provide bifurcated sidewalks with landscaped planters.
- Constructing a concrete barrier with hand railing and raising the sidewalk above the roadway level underneath the US 50 undercrossing structure.
- Replacing the existing 5-foot wide sidewalks with 8-foot wide sidewalks where existing right of way permits.

The Study Area includes numerous neighborhood streets that cross under or over US 50. The sidewalks on these streets provide access and pathways for pedestrians throughout the Study Area.

Park and Ride Facilities

Park and ride lots offer convenient and safe locations for commuters to store their single passenger vehicle while taking carpool, vanpool, or transit to their workplace/destination. Along the US 50 corridor, current carpools utilize the existing park and ride facilities in Rancho Cordova, Folsom, and El Dorado Hills. In general, US 50 / I-80 commuters are headed to downtown Sacramento from the residential areas in Rancho Cordova / Folsom / Eldorado Hills to the east, or West Sacramento / Davis to the west. Successful park and ride lots need to be located on a major route near a large residential area and upstream of major employment areas. Easy and safe

access to pedestrian crossings, sidewalks, bike lockers and transit are also vital to the success of a park and ride lot. Table 2-15 shows the bus/HOV park and ride lots nearest the study area.

Table 2-15. Bus/HOV Park and Ride Lots

Location	City	Parking Spaces	Average Usage
Hazel Ave / Gold Country Blvd	Rancho Cordova	30	73%
Folsom Blvd / Iron Point Rd	Folsom	70	70%
White Rock Rd / Latrobe Rd	El Dorado Hills	120	100%
Enterprise Blvd South	West Sacramento	79	120%
Enterprise Blvd North	West Sacramento	96	133%
Caltrans Park &Ride Inventory (June 2011)			

Table 2-16 shows the Sacramento Regional Transit light rail park and ride lots within/near the study area.

Table 2-16. Sacramento Regional Transit Park and Ride Lots

Location	City	Parking Spaces	Average Usage
Power Inn Rd / Brighton Ave	Sacramento	299	N/A
Watt Ave / Manlove Rd	Sacramento	498	N/A
Butterfield Way / Folsom Blvd	Sacramento	406	N/A
Mather Field Rd / Mills Station Rd	Rancho Cordova	235	N/A
Sunrise Blvd / Folsom Blvd	Rancho Cordova	487	N/A
Hazel Ave / Folsom Blvd	Rancho Cordova	432	N/A
Iron Point Rd / Folsom Blvd	Folsom	216	N/A
Sacramento Regional Transit Website, N/A = Not Available			

Currently, Caltrans does not own or maintain any park and ride lots along US 50 within the project study area, however, informal park and ride arrangements may be occurring at large parking areas along US 50 and nearby city streets. Also, as shown in Table 2-26, Sacramento Regional Transit operates several park and ride lots at light rail stations in the project area. One way for Caltrans to increase HOV usage in the project corridor would be to partner with RT to allow HOV commuters to park their Single Occupancy Vehicles (SOVs) in the light rail lots for a small fee. Adding park and ride lots in the project study area would also encourage more people to use the proposed HOV lanes and would contribute to the success of the project. Potential locations for future park and ride lots are described below.

- 65th Street – Vacant property exists near the intersection of 65th Street and Q Street, north of the freeway. Parking could be shared with the existing 65th Street bus and light rail stations. The Target south of the US 50 interchange could provide a shared parking opportunity as well.
- Howe Avenue / Power Inn Road – A light rail station park and ride lot exists on the corner of Brighton Avenue and Power Inn Road and does not appear to be at capacity on average. Carpool commuters could utilize the existing SacRT lot.

- Watt Avenue - A light rail station park and ride lot exists on the corner of South Watt Avenue and Manlove Road and does not appear to be at capacity on average. Carpool commuters could utilize the existing SacRT lot.

- Bradshaw Road - A light rail station park and ride lot exists on the corner of Folsom Boulevard and Butterfield Way and does not appear to be at capacity on average. Carpool commuters could utilize the existing SacRT lot.

- Zinfandel Drive – As development continues to occur in this area, a new park and ride lot should be considered near the US 50 interchange. Vacant properties exist on the corner of Zinfandel Drive / White Rock Road and White Rock Road / Quality Drive. Carpool commuters could also potentially share parking with the Zinfandel Plaza shopping center on the corner of Folsom Blvd and Olson Drive.

Traffic Operations System Elements

A need for Traffic Operations System (TOS) elements for both eastbound and westbound US 50 has been identified for the locations listed in Table 2-17. The work at these locations includes ramp metering systems (RM), traffic monitoring stations (TMS), extinguishable message signs (EMS), and closed circuit television (CCTV) facilities. By installing 96 strands of single-mode fiber optic cable (96-SMFO) along portions of US 50, high speed and high bandwidth communications to the ramp metering, traffic monitoring, EMS, and CCTV locations will be achieved. Caltrans has an existing fiber facility from Watt Avenue to the RTMC. A fiber optic communications extension from Watt Ave to 28th Street, within the project limits, is required (last column).

Currently, all on-ramps within the projects limits have operational ramp meters. Note that a fiber optic communication system is programmed for the 2014 SHOPP within the project limits.

Table 2-17. US 50 HOV Corridor Planned TOS Elements

Route	P	PM	Location	Dir	Element	Existing Communication Type	Proposed Communication Type
050	L	2.385	28th St.	NA	CCTV	DSL	Fiber
050	L	2.385	28th St.	EB	RMS	DSL	Fiber
050	R	2.426	65th St. (SB)	WB	RMS	GPRS	Fiber
050	R	2.61	65th St. (SB)	EB	RMS	DSL	Fiber
050	R	2.68	65th St. (NB)	WB	RMS	GPRS	Fiber
050	R	2.81	65th St. (NB)	EB	RMS	DSL	Fiber
050	R	3	65th Street	NA	CCTV	DSL	Fiber
050	R	3.226	Hornet Dr.	WB	RMS	GPRS	Fiber
050	R	3.426	Howe Ave. (SB)	WB	RMS	DSL	Fiber
050	R	3.63	Howe Ave. (SB)	EB	RMS	Wireless	Fiber
050	R	3.7	Howe Ave.	NA	CCTV	Wireless	Fiber
050	R	3.759	Howe Ave. (NB)	WB	RMS	GPRS	Fiber
050	R	3.88	Howe Ave. (NB)	EB	RMS	GPRS	Fiber
050	R	4.262	Howe Ave	EB	CMS	Analog - POTS	Fiber
050	R	5.055	Watt Ave. (SB)	WB	RMS	GPRS	Fiber
050	R	5.249	Watt Ave. (NB)	WB	RMS	GPRS	Fiber
050	R	5.29	Watt Ave. (SB)	EB	RMS	Fiber	Fiber
050	R	5.3	Watt Ave.	NA	CCTV	Fiber	Fiber
050	R	5.3	Watt Ave.	EB	EMS	GPRS	Fiber
050	L	2.166	25th St.	NA	TMS	GPRS	Fiber

050	L	2.4	SB 51/WB 50 Connector	NA	TMS	GPRS	Fiber
050	R	2.7	65th St.	NA	TMS	GPRS	Fiber
050	R	3.3	Hornet Dr.	NA	TMS	GPRS	Fiber
050	R	3.7	Howe Ave.	NA	TMS	GPRS	Fiber
050	R	4.5	Occidental Dr. OC	NA	TMS	GPRS	Fiber
050	R	5.3	Watt Ave.	NA	TMS	GPRS	Fiber
050	L	2.385	28th St.	NA	BTR	DSL	Fiber
050	R	2.426	65th St. (SB)	NA	BTR	GPRS	Fiber
050	R	3.226	Hornet Dr.	NA	BTR	GPRS	Fiber
050	R	4.262	Howe Ave	NA	BTR	DSL	Fiber
050	R	5.3	Watt Ave.	NA	BTR	Wireless	Fiber
Source: Caltrans							

Environmental Consequences

Construction of Alternatives 1, 2, and 3 could result in some temporary disruptions of traffic flow, including temporary lane shifts or closures, disruptions of on- and off-ramps at interchanges, and areas where traffic may need to slow down to pass through construction safely. Emergency vehicles may need to temporarily stop or slow down during roadway construction to safely pass through the project area. However, most of the construction is expected to occur at night, not during peak hour commute times, and without major impacts to traffic flows. Lane closures and shifts are also possible on the W-X freeway section (the elevated section of US 50 between 29th Street and I-5 in downtown Sacramento) to accommodate widening of the viaduct segments for Alternative 1 or 2.

Traffic Forecasts

For purposes of this project, a US 50 HOV Lanes Project Corridor Travel Demand Model (TDM) was developed that primarily focused on the segment of US 50 in the City of Sacramento between I-5 and Watt Avenue. The TDM was then used to generate traffic volume forecasts and other travel demand data for an operational evaluation of the US 50 HOV Lanes Project alternatives/scenarios. The TDM was essentially created using the Sacramento Area Council of Governments' (SACOG) Sacramento Activity-Based Travel Simulation Model (SACSIM) as the starting point. The primary purpose of the creation of the US 50 TDM was to develop a base year (2013) model calibrated to simulate existing traffic conditions in the US 50 HOV Lanes Project area, and then develop future year traffic volume forecasts for the area under a variety of scenarios using the calibrated base year model as the starting basis.

The SACSIM model is a regional model, and therefore is calibrated at a regional level. In order to develop a "sub-area" US 50 TDM for the project, the model had to be calibrated to more accurately simulate existing conditions within the project corridor. Base year SACSIM land use files were reviewed and updated to match existing (year 2013) conditions as needed. The year 2014 SACSIM roadway network was extensively reviewed and updated for coding issues (e.g. one-way directionality), attribute data (e.g. travel speed, number of lanes, etc.), and missing/incorrect geometry (e.g. a freeway ramp that did not get coded into the model) to reflect existing conditions network in the US 50 TDM area. All changes to the TDM were based off of current aerial photographs, census data, and parcel map information.

Future year TDMs were built to forecast future year study area volumes for with and without project scenarios. The ultimate year 2040 scenario, developed to analyze proposed project impacts under long-term future conditions, was created using SACOG's Metropolitan Transportation Plan (MTP)

for 2035 land use buildout projections for the Sacramento region. The 2035 land use projections were created before 2008 and project growth throughout the Sacramento region, and can be conservatively viewed as 2040 projections. The ultimate year 2040 scenario roadway network contained all improvement projects listed in the MTP as well as several other projects identified by Caltrans.

The following separate projects are also planned for the study area. Each of the following improvements was assumed complete under each future year conditions travel demand model beyond the project's completion date.

- Watt Avenue Interchange Reconstruction - US 50 / Watt Avenue interchange improvements were recently completed after the assumed 2013 base year conditions had been determined. The eastbound and westbound US 50 / Watt Avenue loop off-ramps were closed, and the existing diagonal off-ramps were realigned and signalized. This project was completed in 2014. This project was included in the 2020, 2030, and 2040 future year models for all alternatives.
- I-5 HOV Lanes - Caltrans plans to construct new northbound and southbound HOV lanes on I-5 by the year 2030. The lanes are proposed to stretch from the Beach Lake vicinity in Elk Grove to US 50 in Sacramento (and eventually further in subsequent years). For the purposes of this project, HOV lanes were assumed for the entire length of I-5 in the study area. This project was included in the 2030 and 2040 future year models for all alternatives.
- EB US 50 / Hornet Drive Off-Ramp Intersection Improvements – Caltrans has proposed to improve the safety and traffic operations for the off-ramp terminus by widening the ramp and adding a traffic signal. This operational improvement may be complete by the year 2030. This project was included in the 2030 and 2040 future year models for all alternatives.
- WB US 50 Auxiliary Lane between Stockton Blvd Ramps - It has been proposed/envisioned that a new auxiliary lane on westbound US 50 between the Stockton Boulevard westbound off-ramp and westbound loop on-ramp would be constructed by year 2030. The project would extend the existing auxiliary lane, which currently ends at the Stockton Boulevard off-ramp. This project was included in the 2030 and 2040 future year models for all alternatives.
- Project Study Area Ramp Meters - Ramp meters and HOV bypass lanes were assumed to be constructed wherever there were not existing on-ramp meters / bypass lanes within the study area (I-5, SR 51/SR 99, US 50). Exceptions include loop on-ramps with 1,000+ vehicles, where two metered lanes and no HOV bypass were assumed. Ramp meters for the US 50 connectors were not assumed, per direction from Caltrans. This project was included in the 2020, 2030, and 2040 future year models for all alternatives.

Average US 50 HOV project corridor gateway-to-gateway traffic growth factors, as extracted from the travel demand model runs, were reviewed. Table 2-18 summarizes the average ambient growth factors of the year 2040 SACSIM-based US 50 TDM runs for each project alternative as compared to year 2013 existing conditions for the four-hour AM and the PM peak periods.

Table 2-18. US 50 HOV Lane Corridor Average Growth Factors Between 2013 and 2040

Peak Period	2013 to 2040 Peak Period Volume Growth (US 50 Project Area)			
	Alternative 1 (Add HOV Lane)	**Alternative 2 (Add Mixed-Flow Lane)**	**Alternative 3 (Take-a-Lane)**	**Alternative 4 (No Build)**
AM	28%	29%	17%	21%
PM	32%	32%	22%	23%
Note: The above-listed traffic growth factors are corridor-level average growth factors. Spot locations and segments within the corridor may experience slightly higher or lower growth.				

US 50 is projected to experience higher demand under Alternative 1 and Alternative 2 than under the Alternative 3 or 4 due to the added capacity. The Alternative 3 is projected to experience the smallest increase in demand overall due to the slight reduction in capacity associated with restricting the use of an existing lane to high occupancy vehicles only. The amount of growth projected throughout the study area will most likely outpace the increases in study area roadway capacity assumed in this study (including the proposed US 50 project). Therefore, while the proposed US 50 project would improve operations, all scenarios will likely experience heavy congestion, increased travel times, and reduced speeds under year 2040 buildout conditions.

HOV volumes and percentages were also forecasted for all project scenarios. TDM projected year 2013 mainline HOV volumes were slightly below existing counts, so all forecasted mainline HOV percentages for all alternatives were increased based on the relationship of the year 2013 model HOV forecasts to existing counts. Final forecasted HOV percentages on US 50 mainline for all project alternatives are shown in Table 2-19. Note that the values shown in the table are average mainline values only, and that individual mainline segments, connectors, and ramps within the project area may have slightly higher or lower HOV percentages, but generally have similar variation between alternatives. Final HOV forecasts were checked for consistency with projected HOV forecasts on other Sacramento region facilities.

Table 2-19. Forecasted Future Year HOV Percentages - Mainline

Scenario	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Year 2013	N/A	N/A	N/A	15.0%
Year 2020	20.0%	17.0%	20.0%	16.5%
Year 2030	21.5%	18.5%	21.5%	18.0%
Year 2040	23.5%	20.5%	23.5%	20.0%
N/A = Scenario Not Applicable or Necessary				

The addition of HOV lanes under Alternatives 1 and 3 is projected to increase HOV usage by approximately 3.5% over No Build conditions.

Induced Demand

"Induced demand", as it relates to transportation, is travel demand that is generated due to an increase in the capacity of a transportation network. The added capacity makes traveling on the improved route faster / more appealing and therefore more people begin to utilize the improved route. These new trips can be from a variety of sources, including diverted traffic that used to take another route, rescheduled traffic that used to use the modified facility at a different time, changes in mode (i.e. someone switching from transit to a vehicle), and additional travel by current facility users. Additionally, over the long term, demand can be generated by new developments that are attracted by the new roadway capacity. For example, as capacity increases on a freeway that provides access to a downtown, people that work in downtown may be more likely to move further away from where they work. Since traveling on the improved freeway segment takes less time and is more convenient than it had been before the improvements were constructed, people may be more willing to travel longer distances to work than they had been previously.

For the project, induced demand can be observed in the future year volume forecasts. As shown in Table 2-20, the travel demand models project Alternatives 1 and 2 to have higher demand volumes than the other alternatives due to the addition of new lanes along US 50 between Watt Avenue and downtown Sacramento. In other words, the project segment of US 50 is projected to experience induced demand because of added network capacity under Alternatives 1 and 2. This increase in

demand due to increased roadway capacity was carried forward into the *VISSIM* microsimulation models and can be seen in the resulting traffic operations analysis.

Table 2-20. Change in Lane-Miles vs. Change in Vehicle Miles Traveled

Criteria	Alternative 1	Alternative 2	Alternative 3
% Change in Lane-Miles	21.4%	21.4%	0.0%
% Change in VMT	+4.3%	+4.4%	-0.6%
Elasticity of Travel Demand[1]	0.20	0.21	N/A
Notes: 1. Elasticity of travel demand = Change in VMT / Change in Lane-Miles.			

The year 2040 SACSIM based US 50 TDM was able to reasonably capture the effects of induced demand in the US 50 study area. Alternative 1 and 2 both experienced an increase in VMT due to the increase in lane-miles (capacity). The elasticity of travel demand for Alternatives 1 and 2 was similar to that projected for other HOV projects within the Sacramento region as well as typical elasticity values of freeways. While the lane-miles in the project area did not change under Alternative 3, the total capacity of the study segment decreased due to the conversion of an existing lane to an HOV lane. The US 50 TDM projected a small decrease in overall travel demand under Alternative 3, which is consistent with the reduced capacity.

Traffic Operations

The Traffic Report prepared for this project analyzed traffic operations of the four alternatives under future year 2040 peak period conditions. The overall findings are summarized below.

Table 2-21 summarizes the projected change in year 2040 AM and PM 4-hour peak period performance measures, for the entire US 50 HOV Lanes Project study area network, for each project alternative as compared to Alternative 4.

Table 2-21. Year 2040 4-hour Peak Period Network Summary

	Performance Measure	Change in Performance Measure vs. No Build			
		Alt. 1 - Add HOV Lane	Alt. 2 - Add Mixed Flow Lane	Alt. 3 - Take-a-Lane	Alt. 4 - No Build
AM Peak Period	Vehicles Served (vehicles)	+6,500	+10,500	-13,000	0
	Persons Served (persons)	+31,000	+16,500	-2,500	0
	Person Miles of Travel	+109,000	+73,000	-41,000	0
PM Peak Period	Vehicles Served (vehicles)	+11,000	+7,000	-15,500	0
	Persons Served (persons)	+40,000	+11,000	-6,500	0
	Person Miles of Travel	+145,500	+82,500	-57,000	0

As shown in Table 2-21, Alternatives 1 and 2 are projected to serve more vehicles than Alternative 4 under year 2040 AM and PM peak period conditions. Alternative 2 is projected to serve the most vehicles under AM Peak Period conditions (10,500 more vehicles than Alternative 4), but the Alternative 1 is projected to consistently serve the most persons overall (31,000 more persons than Alternative 4 under AM peak period conditions, and 40,000 more persons than Alternative 4 under PM peak period conditions). Alternative 1 also accommodates the largest amount of person-miles of travel of any of the four alternatives within the US 50 HOV Lanes Project study area (over 100,000 more person-miles of travel than Alternative 4 under both AM and PM peak period conditions). Alternative 3 is projected to serve the least vehicles and persons of all the alternatives.

Table 2-22 shows the projected change in average eastbound US 50 travel times during the AM and PM 4-hour peak periods for each project alternative as compared to Alternative 4 conditions.

Table 2-22. Year 2040 4-Hour Peak Period Travel Times (EB US 50)

	Travel Time Route	**Change in Travel Time vs. No Build (minutes)**			
		Alt. 1	**Alt. 2**	**Alt. 3**	**Alt. 4**
AM Peak Period	SB I-5 at Richards Blvd to EB US 50 at Watt Ave	+0.5	0	+1.5	0
	EB I-80 at West Sacramento to EB US 50 at Watt Ave	+0.5	+0.5	+0.5	0
	NB I-5 at Sutterville Rd to EB US 50 at Watt Ave	0	0	+1.5	0
	NB SR 99 at 12th Ave to EB US 50 at Watt Ave	0	-1.0	+4.0	0
	SB US 51 at E St to EB US 50 at Watt Ave	0	0	+0.5	0
PM Peak Period	SB I-5 at Richards Blvd to EB US 50 at Watt Ave	0	+1.5	+9.0	0
	EB I-80 at West Sacramento to EB US 50 at Watt Ave	+1.0	+1.5	+5.5	0
	NB I-5 at Sutterville Rd to EB US 50 at Watt Ave	-1.5	-1.5	+10.0	0
	NB SR 99 at 12th Ave to EB US 50 at Watt Ave	+1.0	+2.0	+11.0	0
	SB US 51 at E St to EB US 50 at Watt Ave	+0.0	+1.0	+7.0	0

Alternatives 1 and 2 are projected to have little impact on eastbound travel times over Alternative 4 conditions. Alternatives 1 and 2 AM and PM peak period travel times are generally projected to either stay the same or increase/decrease by up to two (2) minutes. Alterative 3 travel times are generally projected to increase over projected Alternative 4 travel times, with PM peak period routes projected to increase by as much as 11 minutes. Traffic demand is projected to exceed freeway capacity under year 2040 conditions. The resulting mainline traffic queues that form under Alternative 4 conditions were projected to stretch beyond the modeled limits, resulting in vehicles experiencing delay waiting to enter the model network. The delay/travel time experienced by vehicles waiting to enter the study network was not entirely captured in the above results due to limitations of the model. Note that most of the travel time benefits due to the proposed project occur in the westbound direction under year 2040 conditions.

Table 2-23 shows the projected change in average 2040 AM and PM peak hour volume served, persons served, speed, and density of eastbound US 50 in the project corridor for each project alternative as compared to Alternative 4.

Table 2-23. Year 2040 Peak Hour Project Corridor Performance (EB US 50)

	Performance Measures	Change in Performance Measure vs. No Build			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4
AM Peak Hour	Volume Served (vehicles)	+150	+250	-350	0
	Persons Served (persons)	+700	+350	-150	0
	Average Mainline Speed (mph)	0	0	-2.5	0
	Average Density (pcplpm)	-2.5	-2.0	+1.0	0
PM Peak Hour	Volume Served (vehicles)	+200	+200	-700	0
	Persons Served (persons)	+700	+300	-700	0
	Average Mainline Speed (mph)	+1.0	+1.0	-5.5	0
	Average Density (pcplpm)	-3.0	-3.0	-0.5	0

The eastbound US 50 project corridor is projected to serve several hundred more peak hour vehicles and persons with lower mainline densities under Alternatives 1 and 2 than under Alternative 4. Alternative 3, however, is projected to result in less vehicles and persons served, lower eastbound US 50 speeds, and higher eastbound US 50 mainline densities.

Table 2-24 shows the projected change in average 2040 westbound US 50 travel times during the AM and PM 4-hour peak periods for each project alternative as compared to Alternative 4.

Table 2-24. Year 2040 4-Hour Peak Period Travel Times (WB US 50)

	Travel Time Route	Change in Travel Time vs. No Build (minutes)			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4
AM Peak Period	WB US 50 at Watt Ave to NB I-5 at Richards Blvd	+2.5	+3.5	+1.0	0
	WB US 50 at Watt Ave to WB I-80 at West Sacramento	+2.0	+3.0	+1.0	0
	WB US 50 at Watt Ave to SB I-5 at Sutterville Rd	+2.0	+3.0	+1.0	0
	WB US 50 at Watt Ave to SB SR 99 at 12th Ave	+2.0	+3.0	+0.5	0
	WB US 50 at Watt Ave to NB US 51 at E St	+3.5	+5.0	+0.5	0
PM Peak Period	WB US 50 at Watt Ave to NB I-5 at Richards Blvd	-5.5	-7.5	-3.5	0
	WB US 50 at Watt Ave to WB I-80 at West Sacramento	-7.0	-9.5	-4.5	0
	WB US 50 at Watt Ave to SB I-5 at Sutterville Rd	-5.5	-8.5	-5.0	0
	WB US 50 at Watt Ave to SB SR 99 at 12th Ave	-7.0	-9.5	-2.0	0
	WB US 50 at Watt Ave to NB US 51 at E St	-4.0	-7.0	-3.0	0

Alternative 1 and 2 have slightly higher westbound travel times than the other alternatives under AM peak period conditions. However, under PM peak period conditions, the Alternative 1 is projected to decrease westbound travel times by up to approximately 7 minutes, and Alternative 2

is projected to decrease westbound travel times by up to nearly 10 minutes, when compared to Alternative 4. Traffic demand is projected to exceed freeway capacity under year 2040 conditions. The resulting mainline traffic queues that form under Alternative 4 were projected to stretch beyond the modeled limits, resulting in vehicles experiencing delay waiting to enter the model network. The delay/travel time experienced by vehicles waiting to enter the study network was not entirely captured in the above results due to limitations of the model.

Based on review of the models, Alternatives 1 and 2 have the shortest travel times and serve the most vehicles before the peak hour (7:30 AM - 8:30 AM or 4:30 PM – 5:30 PM) occurs. Once the peak hour occurs, Alternatives 1 and 2 have the longest overall travel times in some cases. This is the result of chokepoints in the models becoming more severe under Alternatives 1 and 2. The higher project area throughput of Alternatives 1 and 2 enables more cars to get to the network chokepoints in a shorter amount of time, which causes queuing to increase at a faster rate than the other alternatives and negatively impacts travel times. If future chokepoint/bottleneck improvements within and outside the study segments are implemented, Alternatives 1 and 2 will continue to provide better travel times over Alternative 3 and 4.

Major westbound US 50 chokepoints include the weaving section between SR 51/99 connectors and 16th Street (caused by merging vehicles), the weaving section between the 15th Street on-ramp and the I-5 connectors (caused by merging vehicles), and spillback from the connectors to NB SR 51 and SB SR 99 (NB SR 51 and SB SR 51 both experience low speeds and high queuing under year 2040 PM peak period conditions).

Alternative 3 sometimes shows decreased travel times compared to Alternative 4 due to bottlenecks forming at the edges of the study area where the proposed reduction in capacity for mixed use vehicles would begin. When these bottlenecks form, cars spend a considerable amount of time waiting to enter the US 50 project corridor, which is not entirely captured by the study area models as the resulting queues extend outside of the modeled limits.

Table 2-25 shows the projected change in average 2040 PM peak hour volume served, persons served, speed, and density of westbound US 50 in the project corridor for Alternatives 1, 2, and 3 as compared to Alternative 4.

Table 2-25. Year 2040 Peak Hour Project Corridor Performance (WB US 50)

	Performance Measures	**Change in Performance Measure vs. No Build**			
		Alt. 1	**Alt. 2**	**Alt. 3**	**Alt. 4**
AM Peak Hour	Volume Served (vehicles)	-100	+100	-900	0
	Persons Served (persons)	+400	+200	-900	0
	Average Mainline Speed (mph)	-1.0	-3.0	-0.5	0
	Average Density (pcplpm)	-3.5	+1.0	-5.0	0
PM Peak Hour	Volume Served (vehicles)	+800	+1,400	-400	0
	Persons Served (persons)	+1,600	+1,900	-300	0
	Average Mainline Speed (mph)	+5.0	+5.0	+7.0	0
	Average Density (pcplpm)	-5.0	-1.0	-12.0	0

The westbound US 50 project corridor is projected to serve several hundred more persons with lower mainline densities under Alternative 1 than under Alternative 4 (No Build) during the AM

hour. Alternative 2 is projected to serve several hundred more people with slightly higher densities than Alternative 4 during the AM peak hour. Alternative 3, however, is projected to result in less vehicles and persons served and lower westbound US 50 speeds and densities under AM peak hour conditions. During the PM peak hour, the westbound US 50 project corridor is projected to serve 800-1,400 more vehicles and 1,600-1,900 more persons under Alternatives 1 and 2 than under Alternative 4. Alternatives 1 and 2 are also projected to increase average westbound US 50 speeds by five (5) miles per hour and decrease the average mainline density during the PM peak hour. Alternative 3 is projected to result in less vehicle served and persons served under PM peak hour conditions.

Alternative 3 shows increased average westbound mainline speeds under year 2040 PM peak hour conditions and decreased densities under year 2040 AM and PM peak hour conditions when compared to Alternative 4 under year 2040 PM peak hour conditions. This is the result of bottlenecks for different scenarios forming at different locations. Due to the increased capacity of westbound US 50 in the project corridor, Alternatives 1 and 2 bottleneck at the W-X section of US 50, while Alternatives 3 and 4 bottleneck closer to the eastern edge of the project corridor. This sometimes leads to less volumes traveling through the project area under the Take-a-Lane alternative, as much of the traffic is waiting to enter the project corridor. Since there are less volumes in the project corridor, the vehicles in the corridor experience higher speeds and lower densities.

It is important to note that the year 2040 PM peak period network contains a considerable amount of congestion and mainline queuing due to the high volumes entering the system and the bottlenecks that form. The major W-X bottlenecks occur on eastbound and westbound US 50 between the SR 51/99 connectors and the I-5 connectors. Westbound and eastbound US 50 between the SR 51/99 connectors and the I-5 connectors is a major weave section where cars simultaneously merge (enter) onto US 50 mainline from SR 99/51, I-5, and 15th/16th Street on-ramps and US 50 mainline diverge (exit) to I-5 connectors, SR 99/51 connectors and 15th/16th Street off-ramps.

These freeway segments back up under existing conditions, and the congestion becomes more severe under 2040 conditions. The weave sections become overloaded and vehicles begin to back up on mainline US 50 as they wait for merge/diverge vehicles. Eventually, most of the US 50 lanes within the W-X section become congested with queued vehicles.

Since Alternatives 1 and 2 serve more vehicles on mainline US 50, backups at the described bottlenecks begin sooner, leading to decreased speeds and increased delays in certain locations. As a result of the high levels of traffic demand attempting to use the freeway network under year 2040 conditions, the differences in operations between the alternatives become smaller and more difficult to capture with the model.

The following is a summary of year 2040 conditions traffic operations for the four alternatives analyzed for the US 50 HOV Lanes Project:

- Alternative 1 (Add HOV Lane) is generally projected to serve the most persons and the second most vehicles of the four alternatives. Alternative 1 also is projected to have similar, sometimes better, speeds and densities through the project corridor to the other alternatives and to provide some decreased travel times over Alternative 4.

- Alternative 2 (Add Mixed Flow Lane) is generally projected to serve the most vehicles and the second most persons of the four alternatives. Alternative 2 also is projected to have similar, sometimes better, speeds and densities through the project corridor to the other alternatives and to provide some decreased travel times over Alternative 4.

- Alternative 3 (Take-a-Lane) would encourage more people to utilize high occupancy vehicles but would slightly decrease capacity of the US 50 project corridor from No Build conditions. Alternative 3 is generally projected to serve the least vehicles and persons of the four alternatives. Alternative 3 is also projected to have the lowest speeds, the longest travel times and higher densities in the eastbound direction, in comparison to the other alternatives.–In the westbound direction, higher speeds and lower densities are generally projected within the project corridor for Alternative 3 compared to the other alternatives. However, Alternative 3 is also projected to create the worst bottleneck for traffic entering the project corridor.

- Alternative 4 (No Build) would not reduce peak period congestion as it would not change capacity of the US 50 project corridor. Alternative 4 is projected to have generally low speeds and high delays and travel times throughout the US 50 project corridor. Bottlenecks are projected to form throughout the project corridor, adding to delays.

Traffic Congestion Impacts

By year 2040 conditions, the *VISSIM* models project considerable traffic congestion build-up from upstream and downstream segments that impact US 50 HOV study corridor traffic operations. "Bottlenecks" are projected to form at various points in the modeled roadway network, both outside and through the US 50 project corridor, that either block a portion of upstream traffic from entering the study corridor or block a portion of the downstream traffic from departing the study corridor. This section outlines the major bottlenecks that are observed within the year 2040 microsimulation models and the effects that these bottlenecks have on the operational analysis of the proposed US 50 HOV project corridor.

Eastbound US 50: There are two major bottlenecks that occur on eastbound US 50 during the AM and PM four-hour peak periods. The first occurs at the W-X section of EB US 50. Eastbound traffic to the SB SR 99 / NB SR 51 connector backs up mainline eastbound US 50 and eventually begins to block the majority of eastbound US 50 lanes along the W-X section. The backup from this first bottleneck spills back and exacerbates the second bottleneck, which occurs at the section of W-X eastbound US 50 where traffic from the "NB/SB I-5 to EB US 50" connectors merge with mainline EB US 50 traffic and traffic heading to/from 15/16th Street on/off-ramps. This weaving section creates queuing that backs up the "NB and SB I-5 to EB US 50" connectors as well as eastbound US 50 through West Sacramento. The queuing from these bottlenecks creates a chokepoint in the W-X section of eastbound US 50 that limits the number of vehicles that can enter the eastbound US 50 project corridor during the AM and PM peak periods.

Westbound US 50: Westbound US 50 contains three closely spaced locations where major bottlenecks occur during the AM and PM four-hour peak periods. The three locations are: westbound US 50 between the Stockton Boulevard interchange and the "WB US 50 to NB SR 51 / SB SR 99" connectors, westbound US 50 between the "NB SR 99 / SB SR 51 to WB US 50" connectors and 16th Street off-ramp, and westbound US 50 between the 15th Street on-ramp and "WB US 50 to I-5" connectors. The capacities of these three weave segments are overloaded during the 2040 AM and PM four-hour peak periods and considerable westbound queuing builds up as a result. The year 2040 queuing from these chokepoints backs up through the project corridor to Watt Avenue before eventually beginning to disperse. This queuing causes low speeds, high densities, and long travel times through the US 50 project corridor.

Due to high demand volumes during the year 2040 four-hour PM peak period, the queues from the westbound US 50 bottlenecks extend to the eastern limits of the model and do not completely clear up during the four-hour peak period. As a result, not all demand volumes are able to be served. Note that it is common for the roadway networks in future year microsimulation models to be unable to serve all of the projected demand, especially in built-out areas such as downtown Sacramento. Every roadway facility has a certain maximum capacity it can serve, and the further

into the future the modeled scenario gets, the more likely it becomes that the demand will exceed network capacity.

Outside the Project Corridor: Some locations outside of the US 50 project corridor are also projected to experience bottlenecks in the year 2040 VISSIM models:

- **Southbound I-5** bottlenecks at the "SB I-5 to EB/WB US 50" connectors. This causes queuing on southbound I-5 that backs up to the northern limits of the model. As a result, southbound I-5 is unable to serve all of the demand volumes during the 2040 AM and PM four-hour peak periods.

- **Northbound SR 99** bottlenecks at the "NB SR 99 / 12th Avenue" interchange and the NB SR 99 connectors to EB/WB US 50. This causes queuing that backs up to the southern limits of the model. As a result, northbound SR 99 is unable to serve all of the demand volumes during the 2040 AM and PM four-hour peak periods.

- **Southbound SR 99** bottlenecks near the connectors from EB/WB US 50 due to high EB/WB US 50 demands to SB SR 99. This results in queues that spill back to EB/WB US 50 and SB SR 51.

- **Northbound SR 51** bottlenecks near the E Street onramp due to the mainline reducing to three lanes. This results in queues that spill back to the US 50 connectors and contributes to eastbound and westbound US 50 queuing/chokepoints.

- **Southbound SR 51** bottlenecks at the "SB SR 51 to EB/WB US 50" connectors due to spillback from congestion on the W-X segments of WB US 50. This causes queuing that backs up to the northern limits of the model and prevents SB SR 51 from serving all of the demand volumes during the 2040 AM and PM peak four-hour periods.

- **Eastbound US 50** east of the project area (east of Watt Avenue) currently experiences delays and queue spill back from congestions associated with eastbound US 50 traffic reaching overcapacity conditions. Based on experience with the project area and outside of project area, this queue spill back is projected to continue to increase and spillback to the project area in the future.

Interchanges: Bottlenecks are also caused by overloaded on/off-ramps and overcrossing ramp intersections extended beyond their capacity within the study area. The following major interchange related bottlenecks were observed in the year 2040 four-hour AM and PM peak period models:

- **Watt Avenue:** The EB/WB US 50 on-ramps at Watt Avenue experience considerable backup due to the previously mentioned queuing on WB US 50 and the Watt Avenue overcrossing reaching its capacity under year 2040 four-hour AM and PM peak period conditions. This causes both southbound and northbound Watt Avenue to experience considerable queuing. Two major problems arise from the backups on Watt Avenue:
  1. Vehicles on southbound Watt Avenue are unable to reach the eastbound US 50 loop on-ramp; 2. Vehicles queued on northbound Watt Avenue prevent vehicles on the eastbound US 50 direct off-ramp from turning left, which leads to queue spillback onto eastbound mainline US 50.

- **Howe Avenue:** Howe Avenue experiences interchange queuing similar to Watt Avenue. The EB/WB US 50 on-ramps at Howe Avenue also experience considerable backup due to the previously mentioned queuing on WB US 50 and the Howe Avenue overcrossing

reaching its capacity under year 2040 four-hour AM and PM peak period conditions. This causes both southbound and northbound Howe Avenue to experience considerable queuing. Two major problems arise from the backups on Howe Avenue: 1. Vehicles on southbound Howe Avenue are unable to reach the eastbound US 50 loop on-ramp, 2. Vehicles queued on northbound Howe Avenue prevent vehicles on the eastbound US 50 direct off-ramp from turning left, which leads to queue spillback onto eastbound mainline US 50.

- **34th Street Off-Ramp:** The high traffic volumes utilizing the eastbound US 50 34th Street off-ramp cause queuing that spills back onto the eastbound US 50 mainline. Increasing the green time for the eastbound US 50 off-ramp intersection movement helps alleviate some of the spill back onto EB US 50 mainline. However, even with the increased green time, the 34th Street off-ramp intersection is still unable to serve all SB SR 51 and EB US 50 off-ramp to 34th Street traffic demands under 2040 conditions. As a result, traffic spills back to the SB SR 51 connector and EB US 50 mainline. This queue spillback adds to the eastbound US 50 queuing that prevents vehicles from entering the project corridor.

Operations of Year 2040 Scenarios: The US 50 project corridor (eastbound and westbound) has more throughput and demand under Alternatives 1 and 2 than under Alternatives 3 and 4. Therefore, Alternative 1 and 2 eastbound/westbound US 50 traffic operations between I-5 and Watt Avenue are generally better than Alternative 3 and 4 traffic operations during the 3:00 PM to 4:30/5:00 PM and 6:00 AM to 7:30/8:00 AM time periods. However, because of the increased throughput/demand of the project corridor, vehicles reach the major network bottlenecks in larger quantities and at a faster rate under Alternatives 1 and 2. As a result, queuing in the 2040 Alternative 1 and 2 develops at the discussed critical locations at a faster rate and causes Alternative 1 and 2 networks to have slightly worse traffic operations (longer travel times, lowers speeds, and higher delays) than Alternatives 3 and 4 beyond 4:30/5:00 PM and 7:30/8:00 AM. This is why Alternative 1 and 2 almost always serve more vehicles and persons than Alternative 3 and 4, but sometimes have longer travel times.

Vehicle Miles Traveled (VMT) Analysis

VMT data for each proposed alternative was developed for both the US 50 HOV Lanes traffic study as well as for air quality and greenhouse gas emissions analysis. Projected year 2040 VMT was calculated for the entire US 50 study area. Additionally, VMT on the project segment of mainline US 50 was calculated and sorted into five mile-per hour “speed bins”. Year 2040 mainline US 50 VMT by speed bins in the project corridor is shown in Table 2-26.

Table 2-26. Year 2040 US 50 Mainline VMT by Speed Bin

Speed Bin	Alternative 1	Alternative 2	Alternative 3	Alternative 4
0 – 5 mph	0	0	0	0
5 – 10 mph	0	0	0	0
10 – 15 mph	0	0	0	0
15 – 20 mph	0	0	0	0
20 – 25 mph	35,993	35,997	35,510	35,512
25 – 30 mph	94,389	94,423	70,255	74,009
30 – 35 mph	70,752	84,029	58,465	139,004
35 – 40 mph	79,323	134,160	245,901	516,036
40 – 45 mph	219,852	336,428	380,571	445,486
45 – 50 mph	498,019	549,186	579,666	541,603
50 – 55 mph	447,342	472,716	484,683	327,806
55 – 60 mph	567,295	431,207	408,821	358,594
60 – 65 mph	600,349	544,994	322,288	179,516
65+ mph	117,456	50,303	16,007	0
Total	**2,730,769**	**2,733,443**	**2,602,167**	**2,617,566**

As shown in Table 2-23, Alternatives 1 and 2 are projected to have the highest levels of overall VMT. This is consistent with the concept of induced demand discussed earlier, which predicted that the alternatives with the most capacity (i.e. the add-a-lane alternatives) would have the most demand for travel. Additionally, Alternatives 1 and 2 are projected to experience a higher percentage of VMT at higher speeds. Alternative 3 would experience the least VMT overall and some of the lowest speeds due to its decreased capacity. In general, freeway facilities are able to serve more vehicles with fewer emissions when they are operating at higher speeds due to larger capacities. Generally, the least pollutants and greenhouse gasses are produced when vehicles are operating between 45 and 55 miles per hour on a freeway.

HOV Lane Safety Data

The US 50 HOV lanes traffic study included a discussion of the effects that adding HOV lanes to an existing freeway segment has on traffic safety and accident rates (see page 79 of the US 50 HOV Lane traffic study). The discussion utilized the following available traffic accident data records and Traffic Accident Surveillance and Analysis System (TASAS) accident data summaries provided by Caltrans District 3 for the following US 50 locations and time periods:

- East of the US 50 project segment, between Watt Avenue (03 SAC 050 PM R005.055) and east of Sunrise Boulevard (03 SAC 050 PM 013.498) before construction of the eastbound and westbound HOV lanes, for the three-year data period (January 1, 2007 to December 31, 2009).

- East of the US 50 project segment, between Watt Avenue (03 SAC 050 PM R005.055) and east of Sunrise Boulevard (03 SAC 050 PM 013.498) after the construction of the eastbound and westbound HOV lanes, for the most recent 27-month data period (January 1, 2011 to March 31, 2013). Note: 27 months of data was used instead of 36 months of data because at the time of completion of the Traffic Study, accident data was

only available up until March 2013 (i.e. 27 months since the completion of the HOV lanes east of Watt Avenue).

The before and after HOV lanes accident data is summarized in Table 2-27.

Table 2-27. Accident Data Summary – US 50 from Watt Avenue to Sunrise Boulevard

US 50 Segment Location (Post Mile)	Number of Accidents							Persons		Actual Accident Rates (# of accidents/MVM)			Average Accident Rates (# of accidents/ MVM)		
	Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Kld	Inj	Fat	F+I	Tot	Fat	F+I	Tot
Before HOV Lanes 36-Month 01-JAN-07 to 31-DEC-09 (PM 5.055 to PM 13.497)	683	3	220	223	523	75	198	3	304	0.002	0.12	0.37	0.004	0.27	0.84
After HOV Lanes 27-Month 01-JAN-11 to 31-MAR-13 (PM 5.055 to PM 13.497)	657	1	198	199	550	68	191	1	281	0.002	0.19	0.61	0.003	0.21	0.68

Note: *MVM = Million Vehicle Miles, Fat = Fatalities, Inj = Injuries, Veh = Vehicle, Kld = Killed, F+I = Fatalities + Injuries, Tot = Total*
Source: Caltrans District 3

For the segment of US 50 east of the project segment (between Watt Avenue and Sunrise Boulevard) actual accident rates were less than that of average accident rates for “fatal”, “fatal plus injury” and total accidents both before and after the installation of the eastbound and westbound HOV lanes. With the construction of the eastbound and westbound HOV lanes east of the project segment, the “fatal” type accident rate did not change, but the “fatal plus injury” and the “total” accident rates increased from 0.12 and 0.37 to 0.19 and 0.61, respectively. However, this could be a result of the different time periods for the “before” and “after” data records.

The “before” and “after” construction of the HOV lanes traffic collision records for US 50 east of the project segment were reviewed according to the following categories:

- Type of collision - head on, sideswipe, rear end, broadside, hit object, etc.
- Primary collision factor - follow too close, failure to yield, improper turn, speeding, etc.
- Movement preceding collision - proceeded straight, slowing/stopping, changing lane, etc.
- Time of day - peak period (HOV in effect) versus off-peak period (HOV not in effect)
- Location of collision - left lane, interior lane, right lane, etc.

With the construction of HOV lanes, it appears the number of accidents caused by speeding increased by approximately 14% within the segment of US 50 between Watt Avenue and Sunrise Boulevard, and rear-end accidents increased by approximately 12% within the segment. However, these apparent increases in accident rates may be due to factors other than the presence of HOV lanes, such as increased congestion or the fact that the duration of the time periods for the “before” and “after” data records were different. The locations of accidents on the mainline stayed approximately the same, with approximately 25% of accidents occurring in the left lane, 25% of accidents occurring in the right lane, 40% of accidents occurring in the interior lanes, and the remaining 10% of accidents occurring in the shoulder or median areas, thus it cannot be concluded that the addition of HOV lanes caused an increase in accident rates.

As mentioned in prior HOV reports prepared for Caltrans District 3 (*Contiguous HOV Lane Safety Review,* dated 2006*, I-5 Bus/Carpool Lanes Traffic Report,* dated September 30, 2009), recent research studies in other states have reported higher accident rates associated with HOV lanes on freeways. However, the studies focused on buffer or barrier-separated facilities, which have accident concentrations at ingress/egress locations. A buffer or barrier-separated facility contains a HOV lane that is separated from the mixed flow lanes by a striped buffer width of one foot or more or physical barrier; ingress/egress is only allowed at specific points.

The proposed US 50 HOV lanes are a continuous HOV facility, not a buffer or barrier-separated facility. A continuous HOV lane is only separated from mixed flow lanes by a single stripe and ingress/egress is permitted for the entire length. For continuous HOV lanes, safety concerns exist due to the speed difference between the freely flowing HOV lane and the adjacent congested mixed-flow lanes. However, a study titled *"A Comparative Safety Study of Limited versus Continuous Access High Occupancy Vehicle (HOV) Facilities" (Institute of Transportation Studies, University of California, Berkeley, September 18, 2007)* found that continuous access HOV lanes had a lower percentage of total collisions than limited access (buffer or barrier-separated) HOV lanes.

Based on the data and discussion above, it cannot be concluded that the presence of HOV lanes will cause an increase in accident rates in the project area.

Transit Operations

As growth in the region continues, the need for additional public transit services will also continue to increase. The proposed project would increase total capacity while encouraging a more efficient use of the roadway through peak period carpools, buses, and/or vanpools. Based on data from the traffic study as well as from prior HOV lane studies completed for other facilities in the Sacramento region, the proposed HOV lanes are projected to increase speeds and travel times of buses in the project corridor. Construction of HOV lanes between Watt Avenue and I-5 would allow commuter buses to bypass congestion on the mixed flow lanes during peak periods, allowing workers commuting to downtown Sacramento to experience shorter trips to work. Decreased commute times would likely result in increased transit ridership in the Sacramento region.

Project construction may require temporary relocation of some of the RT bus stops in the Study Area. Relocated bus stops would be within 200 feet of existing stops. Caltrans would coordinate the details of relocated bus stops with RT. Bus stop relocation would be temporary; in most cases, relocation would last six months or less.

Light rail may be temporarily suspended during construction where the line crosses US 50 at 19th Street and the Brighton Overhead. The line would need to be de-energized during false work construction. The suspended service would be temporary and would occur at night to minimize disruption of light rail operations.

Bicycle Routes

All proposed project alternatives are not projected to have any effects on other study area bicycle routes.

Under Alternatives 1and 2, widening the freeway structures that cross over surface streets will require traffic control. Constructing false work may involve one or more of the following:

- Close surface streets at night.
- Close one side of the street during daytime construction
- Completely close the street for a few days until the false work is constructed.

During partial closures, an accessible bicycle/pedestrian route on at least one side of the local street would be maintained. Bicycles and pedestrians will be diverted to the nearest crossing, if the street is fully closed.

Sidewalk width and parking may be temporarily restricted.

Alternatives 3 and 4 will not affect bicycle routes.

The City of Sacramento's 65th Street improvements includes several bicycle and pedestrian features. These features improve safety for pedestrians and bicyclists using 65th Street from the 65th Street Light Rail Station in the north to 4th Avenue in the south. These features will be constructed by the City of Sacramento regardless with alternative is selected as the project preferred alternative.

Pedestrian Facilities

The Study Area includes numerous neighborhood streets that cross under or over US 50. The sidewalks on these streets provide access and pathways for pedestrians throughout the Study Area. Under Alternatives 1 and 2, sidewalks under the W-X freeway may be temporarily closed to pedestrians during construction. However, the number of sidewalks closed at one time will be limited. Also, for the main traveled streets, including 11th, 15th, 16th, 19th, 21st and 24th, only one sidewalk should be closed at a time.

The construction of Alternatives 3 and 4 will not affect pedestrian facilities.

The City of Sacramento's 65th Street project will include new pedestrian pork chop islands at the 65th Street / WB US 50 off-ramp intersection, wider sidewalks within the 65th Street / WB US 50 interchange vicinity, and new raised sidewalks with railings under the US 50 undercrossing structure.

Avoidance and/or Minimization Measures

Caltrans will prepare a Transportation Management Plan (TMP) in order to minimize disruptions to traffic and to emergency services during construction. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies including public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. Typical components of a TMP can include measures such as the implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts to traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public and emergency vehicles of construction activities.

Caltrans will continue coordination with Regional Transit regarding the temporary relocation of bus stops within the project area. Bus stop relocation would be temporary; in most cases, relocation would last six months or less.

Caltrans will also continue coordinating with Regional Transit regarding the temporary suspension of light rail service during construction at US 50 at 19th Street and the Brighton Overhead. The suspended service would be temporary and would occur at night to minimize disruption of light rail operations.

CEQA Considerations

As discussed above, the project alternatives would not:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.
- Conflict with an applicable congestion management program.
- Result in a change in air traffic patterns.
- Substantially increase hazards due to a design feature or incompatible uses.
- Result in inadequate emergency access.
- Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The project alternatives would not have a significant impact to traffic and transportation/ pedestrian and bicycle facilities. The 65th Street improvements enhance pedestrian and bicycle safety.

2.8 Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (CA Public Resources Code [PRC] Section 21001[b]).

Affected Environment

Caltrans staff completed a revised visual impact assessment (VIA) in August 2016. A copy of the VIA is available from Caltrans upon request.

The project location and setting provides the context for determining the type of changes to the existing visual environment.

The natural landscape has been altered from its original native vegetation due to the urbanization of the area. The majority of the vegetation within the vicinity of the project's location has been planted for ornamental or aesthetic value; some areas adjacent to the highway corridor have been planted for erosion control or slope stabilization.

The land use within the project corridor is primarily urban — consisting of residential, business, commercial, and industrial development. The topography is mostly flat. The views from the road are of the surrounding development. Portions of the road are elevated that allows motorist to see the city's structure from a higher perspective and a portion on the eastern edge of the project is depressed and runs through an area that is framed by steep slopes caused by the construction of the original freeway. Portions of the corridor are lined with sound walls.

The proposed project is not located on a highway facility that is designated as a State Scenic Highway. No scenic resources were identified within the project limits.

Criteria for Visual Assessment

The visual character and quality of the region and the project site were evaluated using established FHWA criteria for visual landscape relationships. These criteria are: vividness, intactness, and unity.

- Vividness is the visual power or impressionable memory of the landscape components as they combine in striking or distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape.

Visual Resources and Resource Change

Visual resources of the project setting are defined and identified below by assessing *visual character* and *visual quality* in the project corridor (see above). *Resource change* is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the proposed project.

The visual character of the proposed project will be mostly compatible with the existing visual character of the corridor. The proposed improvements for US 50 will be similar to the existing highway facility in regard to its form, color, and texture.

The most notable change in the visual setting will be due to the increase in the amount of new sound walls. This will diminish the visual quality of the existing corridor however, the area is already highly developed and sound walls already exist along portions of this highway corridor.

The vividness, intactness and unity will not be diminished by this project. The vividness of the area is not recognized as being high due to the lack of striking or distinctive visual patterns. The area lacks intactness due to the various land uses and type of developments. The landscape is moderately well kept but is not noted for its visual integrity. The unity or visual character of the landscape will not be compromised because the area lacks a landscape that would be considered cohesive and harmonious.

Resource change (changes to visual resources as measured by changes in visual character and visual quality) will be moderately low. The visual quality and visual character is not considered high due to the mix of different types of land uses and development within the area. The highway corridor is quite wide in areas and it does not have a view shed that is memorable or scenic. The roadway is often congested, which adds stress to the driving experience and therefore creates a less than positive driving experience. This is the present condition of the highway and post construction may alleviate some of this congestion, but will not substantially alter the visual quality or resources of the highway corridor.

There are some areas where transparent sound barriers may be utilized. These sections would be on the viaduct section of US 50, which is closer to the downtown and midtown area of Sacramento. If the transparent sound barriers are used in these areas, motorists would continue to have elevated views of the city and surrounding residential and commercial areas.

Viewers and Viewer Response

There are two types of viewers: *highway viewers* (people with views *to* the road) and *highway users* (people with views *from* the road).

Highway viewers include a mix of residential, business and commercial users/owners. The views vary depending on the location. Some the views of the highway will be eliminated due to the construction of the sound walls. The walls will enclose the highway, which is apparent east of Watt Avenue where walls have been constructed in the past several years by other highway projects.

Highway users include commuters, business drivers, residents, and drivers destined for local and regional recreational locations. Weekly commuters tend to be local drivers traveling back and forth to work, while weekend drivers are more recreationally based partaking in a more casual drive. It is anticipated that the average response of all viewer groups will be low to moderately low.

The highway users view will change as the driver continues to travel east near the 51st Street exit. The section along this area of highway is depressed, with steep slopes on each side of the freeway. Any vegetation removed will be replanted.

Environmental Consequences

Each project alternative is required to be analyzed independently in order to assess visual and scenic resource impacts. From a visual impact standpoint Alternatives 1 and Alternative 2 will have identical visual impacts due to the overall project scope for each being similar with the exception of how the newly construction lane will function. Alternatives 3 and Alternative 4 will have identical visual impacts due to Alternative 3 simply converting an existing mixed flow lane to HOV with no additional work proposed. Alternatives 3 and 4 will have no visual change. The following assessment applies to both Alternatives 1 and 2.

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. Overall, the visual impacts of the project are expected to be moderately low. The visual quality of the area will not be substantially degraded by the proposed project.

The construction of the sound walls under Alternatives 1, 2, and 3 will have a greater viewer impact due to the size and length of the proposed walls. The sound walls west of the Oak Park Interchange will see a moderate impact. These walls are proposed to be constructed on the elevated viaduct portion of the highway which block motorist's views of the city and surrounding residential and commercial areas. The sound walls constructed east of the Oak Park Interchange are expected to have a low visual impact on their own but, in addition to the existing sound walls along the corridor, will have a cumulative visual effect. This effect is expected to have a moderately low overall impact due to the lack of open views of the surrounding communities and distant horizons. These changes will not necessarily be negative, the construction of new sound walls in this area will actually increase the visual continuity slightly by creating one consistent look along the roadside instead of a mixture of fences as walls. The walls will need to be reviewed and analyzed in more detail during the design phase in order to determine the appropriate aesthetics for the structures. Note that the results of the noise study found that most of the sound walls did not meet the reasonable criteria and none met the feasible criteria (please refer to the noise section of this document).

The proposed project will not create a new source of light or glare which would adversely affect day or night time views in the area; however, colorization may be warranted for the new walls in order provide visual continuity with the recently constructed sound walls along the corridor.

The construction of the roadway improvements (sound walls) along the corridor will require the removal of trees and shrubs. The removal will have a low to moderate effect due to the elimination of some large, mature ornamental species which are visually appealing as well as soften and blend the roadside environment into the surrounding community. The removal of this vegetation will expose the bare unattractive roadside slopes and highway infrastructure. The removal will result in a low to moderate visual chance due to the removal of trees nearest the tops of the slopes as well as the motorists' views of existing mature vegetation adjacent to the project corridor. The number and amount of the trees and shrubs has not been determined at this time but will be determined further in the design phase of the project.

Temporary Construction Visual Impacts

The construction of Alternatives 1 and 2 will have temporary visual impacts. The improvements made to US 50 will be visually obvious. There may also be staging areas at various locations within the highway corridor. Other inconveniences will include dust from the project and trucks hauling materials. Dust will be controlled using measures described in the air quality section of this document. The duration of this inconvenience and visual blight will be temporary.

Avoidance and Minimization Measures

Although less than significant impacts are anticipated, avoidance or minimization measures have been identified that can lessen any visual impacts caused by the project. Also, the inclusion of aesthetic features in the project design previously discussed can help generate public acceptance of a project. This section describes additional avoidance and/or minimization measures to address specific visual impacts. These will be designed and implemented with concurrence of the District Landscape Architect.

The following measures to avoid or minimize visual impacts will be incorporated into the project:

- Use materials, treatments, and/or color similar to those incorporated into other sound walls along the project corridor in order to provide visual continuity with the existing sound walls along the corridor.
- Transparent sound barriers may be considered for the viaduct section of US 50. If the transparent sound barriers are used in these areas, motorists would continue to have elevated views of the city and surrounding residential and commercial areas. Consideration of this concept is predicated by cost and acceptance by the City of Sacramento and the general public.
- All areas of ground disturbance used for staging, access or other construction related activities will be restored to its original condition. This can best be accomplished by contour grading the area and applying a hydro-seed consisting of an indigenous, native seed mix. This will help to blend these areas to the surrounding typography.
- Limit vegetation removal for sound wall construction.
- Develop highway planting and irrigation plans to replace highway planting and irrigation removed during construction activities in order to better bland the roadside into the surrounding community, hide visually unappealing roadside elements and beautify the corridor.

CEQA Considerations

As discussed above the project alternatives will not have a substantial adverse effect on a scenic vista, substantially damage scenic resources within a state scenic highway, or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Less

than significant impacts to visual resources are anticipated. Although less than significant impacts are anticipated, the project will include features including those listed in the avoidance and minimization section above to reduce impacts to visual resources.

2.9 Cultural Resources

Regulatory Setting

The term "cultural resources" as used in this document refers to all "built environment" resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966 , as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation [36 CFR 800]. On January 1, 2004 (amended January 1, 2014), a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and Caltrans went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 USC 327).

Historical resources are considered under CEQA, as well as CA Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet the National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way.

On September 25, 2014, the Governor of California approved Assembly Bill (AB) 52, which requires that Caltrans begins consultation with California Native American tribes prior to the release of a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report. AB 52 requirements apply to all projects that began environmental studies after July 1, 2015. AB 52 does not apply to this project since studies began in 2013.

Affected Environment

Caltrans staff completed a Historic Property Survey Report (HPSR) in November 2015.

The Area of Potential Effects (APE) for the project was established in consultation with Richard V. Olson, Co-Principal Investigator-Prehistoric and Historical Archaeology, and Sutha Suthahar, Project Manager, on April 2, 2015. The APE was established as being the horizontal and vertical extent of the area(s) that will be required to construct HOV lanes, median widening at 12 structural sections, including vertical column installations, bicycle/pedestrian improvements on 65th Street, and addition of sound walls and drainage/culverts, at various locations.

Caltrans cultural staff consulted with local Native American tribes, groups and individuals, the Native American Heritage Commission, and the local historical society. Caltrans cultural staff also reviewed the following sources:

- National Register of Historic Places
- California Points of Historical Interest
- California Historical Resources Information System (CHRIS)
- California Historical Resources
- California Inventory of Historic Resources
- Caltrans Historic Highway Bridge Inventory
- California Historical Landmarks
- Caltrans Cultural Resources Database (CCRD)
- *US Highway 50 High Occupancy Vehicle (HOV) Lanes and Community Enhancement Project;* Historic Property Survey Report (Olson and Hope 2006); Caltrans District 3, Office of Environmental Management.

Two historic properties were identified within the APE: the Coloma Community Center (CCC) and the Sacramento Valley Railroad (SVRR) CA-SAC-428H.

The CCC located at 4623 T Street was determined eligible for the NHRP under Criteria C for its architectural distinction and as an important work of the prominent Sacramento architectural firm of Dean and Dean in 2005. The State Historic Preservation Officer (SHPO) concurred with this eligibility determination on June 15, 2006.

The SVRR was previously determined eligible for the National Register of Historic Places (NRHP) in 1993 as the states' first passenger railroad west of the Mississippi River and for its association with Theodore Judah. It is also designated California Historical Landmark Number 526. In the project area, the SVRR alignment is currently used by RT Light Rail.

Twelve structures within the project limits will be widened into the median and the project may include sound wall construction at two additional structures. According to the Caltrans Statewide Historic Bridge Inventory 2010 Update, all the bridges are Category 5 structures (not eligible for the NRHP) and require no further management.

Environmental Consequences

US 50 crosses over the historic alignment of the SVRR at three locations, one being the Brighton OH structure located east of 65th Street, which is in the proposed project limits. At the Brighton OH structure, under Alternatives 1 and 2, the highway will be widened in the median and where it crosses over the SVRR will be widened on the inside, in the gap between two structures. New columns for the widened structure will be added in the same alignment as the existing columns, and the SVRR will not be altered or affected in any way. This project will not alter the historic railroad or diminish the qualities that make it eligible for listing in the NRHP.

Under Alternatives 1, 2 and 3, a proposed sound wall along eastbound US 50 in the Elmhurst Neighborhood will extend along the northern property boundary of the Coloma Community Center. The proposed sound wall will require a temporary construction easement (TCE) extending approximately ten feet onto a parking lot on the northern end of the Coloma Community Center property. The sound wall at this location would block the view north from the first floor windows at the rear end of the CCC and from the rear grounds of the property. However, this view was altered substantially in the 1970s by highway construction and has been determined to not be an important characteristic of the property's setting (Hope 2006). The TCE would extend only onto the northernmost row of parking spaces in the paved parking lot, which is considered a modern, non-contributing feature of the property. The TCE will have no effect on the characteristics that qualify the CCC for the NRHP. Construction of a sound wall along the northern property boundary will not have an effect on this historic property, as it will not diminish any of the qualities that qualify the property for the NRHP.

Potential for Buried Archaeological Sites: Based on the current knowledge of the geological history of the project area, a very low potential exists for the discovery of subsurface/buried archaeological deposits, given the extent of the *Older (1.9 million to 22,000 years) and Latest Pleistocene (22,000 to 11,500 years)* soil deposits prevalent in the project vicinity. These geologic Epoch(s) are generally associated with landforms that include dissected alluvial fans and floodplains in the Valley lowlands, and soils are typically considered to be too old to contain buried archaeological evidence. In addition, the extent of previous soil disturbance due to highway construction, cut/fill, and dense residential/commercial development within the study limits further precludes the potential of encountering buried archaeological resources.

There are no impacts to cultural resources under Alternative 4.

Because construction activities and the change of the view shed in the vicinity of the CCC would not alter or affect the qualities for which the properties are eligible a Finding of No Historic Properties Affected is appropriate for the project as a whole."

Avoidance and/or Minimization Measures

If cultural materials are discovered during construction for any build alternatives, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If buried archaeological deposits are revealed at the column installation locations, further review by a Caltrans PQS Archaeologist is required to assess and evaluate the nature of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendent. At this time, the person who discovers the remains will contact the project's District environmental construction liaison and cultural resources specialist so that they may work with the Most Likely Descendent, when designated, on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

CEQA Considerations

As discussed above, no significant impacts to cultural resources are anticipated.

PHYSICAL ENVIRONMENT

2.10 Hydrology and Floodplain

Regulatory Setting

Executive Order 11988 (*Floodplain Management*) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments,
- Risks of the action,
- Impacts on natural and beneficial floodplain values,

- Support of incompatible floodplain development, and
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

Affected Environment

A Floodplain Hydraulics Study was prepared for the proposed project in September 2014 and January 2015.

Roadway
Two segments of US 50 (Station 132+00 to 166+00, and Station 300+00 to 455+00) lie in a FEMA designated Zone "X" of the floodplain. Zone X is defined as "areas of 0.2% annual chance flood; and 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". US 50 is protected from flooding by levees that meet the criteria for seepage and stability, which are required for certification of the levees by the Sacramento Area Flood Control Agency (SAFCA).

Structures
Elmhurst Viaduct: Zone "X" of the floodplain extends across a portion of the bridge.

Brighton OH: The Union Pacific Railroad tracks run beneath the Brighton OH bridge. The railroad itself is elevated above Zone "X" of the floodplain. The bridge is elevated above the "areas of 1% annual chance flood with average depths of less than 1 foot.”

Folsom Boulevard UC: This bridge is elevated above the surrounding floodplain.

State College UC: This bridge is also elevated above the surrounding areas.

Sound Walls

Nine sound walls were evaluated within the project limits; SWWB1, SWEB1, SWWB2, SWEB2-2A, SWEB3, SWEB4, SWEB5, SWEB6, and SWEB7A-7B. A description of these sound walls are included in the noise section of this document and are shown on Figure 1-3.

Environmental Consequences

Alternative 1
Roadway
Two segments of US 50 (Sta. 132+00 to 166+00, and Sta. 300+00 to 455+00) lie in a FEMA designated Zone "X" of the floodplain: I-5 / US 50 interchange and US 50 / Folsom Blvd. Undercrossing to Watt Ave. In Zone X with the probability of annual chance of flood water depths not exceeding 1-foot, there will not be a floodplain encroachment .

Structures
Elmhurst Viaduct: Zone "X" of the floodplain extends across a portion of the bridge. If the depth of the floodwaters is 1-foot or less then the water will be below the Elmhurst Viaduct and widening the structure will have a negligible impact on the bridge.

Brighton OH: Widening the structure in the median is expected to have a negligible impact on the floodplain.

Folsom Boulevard UC: The bridge is elevated by several feet above the floodplain and would have a negligible impact on the floodplain.

State College UC: The bridge is elevated several feet above the surrounding areas and as such widening of the structure is expected to have a negligible impact on the floodplain.

Work at the structures will not result in floodplain encroachment.

Sound Walls

Impacts to roadside drainage from sound wall construction will not result in floodplain encroachment.

SWEB4 will be constructed on the existing roadside embankment and will not be located within any floodplain. A Drainage Report will be prepared to ensure that runoff is not trapped on either side of the wall.

SWEB6 will be constructed on the top of embankment, but drainage on both sides of the wall should be considered during design to ensure that there are no adverse impacts to the private properties behind the wall.

In sum, Alternative 1 will not result in a significant floodplain encroachment as defined by 23 CFR, Section 650.105(q): Significant encroachment means a highway encroachment and any direct support of likely base flood-plain development that would involve one or more of the following construction-or flood-related impacts:

1) A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
2) A significant risk, or
3) A significant adverse impact on natural and beneficial flood-plain values.

In addition to the potential for encroachments within a floodplain, localized flooding and drainage issues associated with the proposed project must be considered. The risks associated with localized and drainage issues are anticipated to be similar to the current roadway, which does not have a history of local flooding or drainage issues. As is typically done, Caltrans will continue to assess and address drainage concerns as the design of the project progresses, culminating in a Drainage Report during final design

Alternative 2
Alternative 2's impact on hydrology and floodplains are the same as for Alternative 1.

Alternative 3
Alternative 3's impact on hydrology and floodplains are the same as for Alternative 1, in respect to sound wall construction. Floodplain encroachment is not anticipated under Alternative 3.

Alternative 4
The No Build Alternative would not improve the roadway and would not result in any impacts on hydrology or floodplains.

Avoidance and Minimization Measures

No floodplain avoidance and/or minimization measures are proposed.

CEQA Considerations

None of the project alternatives place housing within a 100-year flood hazard area, place within a 100-year flood hazard area structures which would impede or redirect flood flows, expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow. The level of risk is expected to be minimal. Caltrans hydraulics staff have determined that the project alternatives would have no impacts to hydrology and floodplains.

2.11 Water Quality and Storm Water Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the USACE's Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. For Standard permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's Section 404 (b)(1) Guidelines (USEPA Code of Federal Regulations [CFR] 40 Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the USEPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

[2] The USEPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

- **National Pollutant Discharge Elimination System (NPDES) Program**
  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater dischargers, including MS4s. The USEPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over stormwater, that are designed or used for collecting or conveying storm water." The SWRCB has identified Caltrans as an owner/operator of an MS4 pursuant to federal regulations. Caltrans' MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  Caltrans' MS4 Permit, adopted in September 2012, contains three basic requirements:
  - Compliance with the requirements of the CGP (see below);
  - Implementation of a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and
  - Storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMPs) to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

  To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

  Hydromodification Management Plan Requirements
  The Caltrans Hydromodification Requirements Guidance (June 2014) document lists criteria for determining whether a project must evaluate for the effects of hydromodification. According to these criteria, and given the project parameters, hydromodification requirements may need to be considered. As such, during the Plans-Specifications-Estimate phase Caltrans' Storm Water Design staff will verify all criteria and project variables to determine if any measures, related to hydromodification, require implementation.

  Construction General Permit (CGP)
  The CGP (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order No. 2012-006-DWQ) became effective on September 2, 2009, February 14, 2011, and July 17, 2012, respectively. The permit regulates stormwater discharges from construction sites that result in a land disturbance of equal or greater than one acre, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the CGP, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' Standard Specifications, a WPCP is necessary for projects with a land disturbance of less than one acre.

  By law, all stormwater discharges associated with any construction activity, including, but not limited to clearing, grading, grubbing, excavation, or any other activity that results in a land

disturbance of equal to or greater than one acre, must comply with the provisions of the CGP. Construction activity that results in soil disturbance of less than one acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop a SWPPP; implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the CGP.

The CGP separates projects into Risk Levels 1, 2, or 3. Risk Levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff monitoring for pH, turbidity, and suspended sediment concentration when the Receiving Water Monitoring Trigger or Numeric Effluent Limitation is exceeded. For Risk Level 3 projects with more than 30 acres of soil disturbance, pre- and post-construction aquatic biological assessments will be performed during specified seasonal windows.

Section 401 Permitting
Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit. In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Affected Environment

Caltrans staff completed a water quality assessment (Study) in May 2015. The content below reflects some of the information presented in this Study and not the complete and detailed analysis. Additional project information has been included, from other internally circulated documents, and from project correspondence (2016).

A combined drainage report and floodplain evaluation was performed in January 2007 that included the limits of this project. There are no direct storm water outfalls to water bodies. All of the highway drainage discharges into local systems and is conveyed to the American River, north of the project limits. The existing local systems are at or near capacity. No substantial increase to impervious drainage areas are anticipated that may affect the existing facility hydraulics. Drainage work was installed during the 2008 project that constructed the paved median and concrete barrier.

The proposed drainage design features (below) have included coordination with various local jurisdictions. Minor drainage will be included with the structure widening and to existing drainage facilities where sound walls are proposed along the edge of pavement.

Edge drains were placed next to the PCC pavement in the early 1970s. These are no longer functioning, are not being maintained, and will not be perpetuated in areas of outside widening, where sound walls (along the edge of pavement) are being proposed.

Staging areas have not been identified, so a finalized associated disturbed soil area (DSA) has not been determined. However, per the Project Engineer roughly 10 acre of DSA is anticipated (Mike

Sullivan, 5/7/15). Projects having a DSA equal to or great than 1 acre will require a SWPPP and will be subject to the requirements of the CGP.

Caltrans' online Water Quality Planning (WQP) Tool was utilized to determine watershed characteristics and specifics related to regulatory compliance concerns and objectives within the project limits. Using this tool, PM limits indicate that the project lies within Sacramento County (County) and is located in the County's Municipal Separate Storm Sewer System (MS4) Phase I Permit boundary. As such, the project may be subject to additional MS4 Permit compliance requirements related to this jurisdictional permit.

The project limits are also within one Calwater Planning Watershed and lie within the Hydrological Area of Morrison Creek. The associated Hydrologic Sub-Area (HSA) is No. 519.11. The nearest "major[1]" receiving water bodies to the project area are the Delta Waterway (Sacramento River, northern portion) and the American River (lower, confluence with Sacramento River) and correspond to the following TMDLs:

Delta Waterways (northern portion)
2010 303(d) List
Water Body Type: Estuary
Estimated Size: 6795 Acres

Pollutant	Status
Chlordane	TMDL required
Chlorpyrifos	Being addressed with USEPA approved TMDL
DDT (Dichlorodiphenyltrichloroethane)	TMDL required
Diazinon	Being addressed with USEPA approved TMDL
Dieldrin	TMDL required
Group A Pesticides	TMDL required
Invasive Species	TMDL required
Mercury	TMDL required
PCBs (Polychlorinated biphenyls)	TMDL required
Unknown Toxicity	TMDL required

American River, Lower (Nimbus Dam to confluence with Sacramento River)
2010 303(d) List
Water Body Type: River & Stream
Estimated Size: 26.9286 Miles

Pollutant	Status
Mercury	TMDL required
PCBs (Polychlorinated biphenyls)	TMDL required
Unknown Toxicity	TMDL required

Of the TMDLs identified, pesticides are the only pollutants listed as being approved by the US Environmental Protection Agency (USEPA) (2012 USEPA 303d list). To clarify, the table above indicates that this is a water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for that segment. Regarding pesticides, the potential source identified for this constituent is agriculture; therefore, Caltrans is not a contributor of this pollutant. Additionally, the other TMDLs, while not approved, do not have sources that Caltrans is a stakeholder for nor do they need to be addressed through the implementation of permanent treatment BMPs.

1. These are the major receiving waters nearest to the range of project PMs given. To clarify, major receiving waters refers to the water bodies that will most likely be impacted by storm water and non-storm water discharges resulting from project activities. These would typically be larger water bodies and not necessarily smaller drainage systems within the project limits. Smaller drainage systems (man-made or natural) that were not identified more than likely convey stormwater to these larger (or major) receiving waters.
2. Using Caltrans' Water Quality Planning Tool, none of the TMDLs listed have sources that are linked to Caltrans activities. However, Caltrans has been assigned mass based and concentration based waste load allocations for constituents contributing to TMDLs in specific regions. Therefore, the Department is subject to the TMDLs listed in the amendment to ORDER 2012-0011-DWQ, effective July 1, 2014, which lists methylmercury for the Sacramento-San Joaquin Delta waterway within the Central Valley Region. In consideration of this requirement and the quantity of new impervious area anticipated for the project (which may reach or exceed 1 acre), treatment BMPs options, applicability, and their feasibility must be discussed in Caltrans' Storm Water Data Report (SWDR). Additionally, although not elaborated on in this study, Storm Water design staff may also

evaluate treatment BMP options, as a means of obtaining compliance units (at a later time), but currently no alternatives have been presented.

The Central Valley Regional Water Quality Control Board basin plan lists the following beneficial uses that are nearest to HSA No. 519.11:

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES (1)	HYDRO UNIT NUMBER	MUN	AGRI-CULTURE		INDUSTRY			RECREATION			FRESHWATER HABITAT (2)		MIGRATION		SPAWNING		WILD	NAV
				AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN			
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING (1) AND RAFTING	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
51	FOLSOM DAM TO SACRAMENTO RIVER	519.21	E	E			E	E	E	E	E	E	E	E	E	E	E	E	

LEGEND
E = EXISTING BENEFICIAL USES
P = POTENTIAL BENEFICIAL USES
L = EXISTING LIMITED BENEFICIAL USE

After examining the 2014 – 2015 Storm Water Management Program's District 3 Work Plan, it does not appear that the project passes through areas where spills from Caltrans activities could discharge directly to municipal or domestic water supply reservoirs or ground water percolation facilities.

The project limits appear to lie within a high risk receiving watershed. High risk watersheds are specifically designated watersheds that are either on the most recent 2012 USEPA 303d list for water bodies impaired for sediment; have USEPA-approved Total Maximum Daily Load Implementation Plan for sediment; or have the beneficial uses of Cold, Spawn, and Migratory. A project that meets at least one of the three criteria has a high receiving water risk.

Environmental Consequences

Analysis of the overall project watershed indicates a high receiving water risk (as indicated above). In addition, construction activities associated with the project build alternatives have the potential to impact receiving water quality through the release and transport of pollutants such as sediment, soil stabilization residues, oil and grease, and trash and debris. This includes any type of soil disturbance that typically would expose soil to erosion from wind and water that could result in sedimentation to receiving surface waters (through direct or indirect transfer). However, due to the nature of work, it is not expected that construction operations will impact or produce deleterious water quality consequences. Moreover, the proper application and appropriate use of construction site BMPs is anticipated, so that potential environmental impacts are minimized or avoided. Previously identified constituents, such as pesticides, are not within the purview of Caltrans to address due to contributing sources identified that are outside the scope of Departmental activities. Simply stated, to prevent potential impacts to receiving waters as a result of construction activities and/or operations related to this project, temporary and permanent measures are anticipated to be implemented in accordance with applicable storm water regulations and standards. Short-term temporary measures would focus on implementing construction BMPs, aimed at reducing erosion and subsequent sediment transport, in addition to on-site material waste management. Long-term permanent measures would consider factors such as permanent stabilization of disturbed soil and natural storm water quality treatment, all of which will be vetted in the final Storm Water Drainage Report. Following the temporary and permanent avoidance and/or minimization measures outline above will prevent potential impacts to receiving waters as a result of construction activities and/or operations related to this project.

Avoidance and/or Minimization Measures

Adherence to the following (in addition to other items not listed) is recommended to prevent receiving water pollution as a result of construction activities and/or operations related to this project:

- All temporary equipment and material storage areas on State property must be accounted for and included in the total DSA estimate, unless a stabilization method has been implemented, reviewed, and approved by NPDES or Storm Water staff.
- Caltrans' SWMP, Project Planning and Design Guide Section 4, and Evaluation Documentation Form provide detailed guidance in determining if a specific project requires the consideration of permanent Treatment BMPs. Line Item BMPs may be required during the PS&E phase of the project.
- The project shall adhere to the conditions of the Caltrans Statewide NPDES MS4 Permit CAS No. 000003 (Order No. 2012- 0011-DWQ).
- Projects with DSA equal to or exceeding 1 acre must adhere to the compliance requirements of the NPDES Construction General Permit CAS No. 000002 (Order No. 2009-0009-DWQ) for General Construction Activities (see special considerations within the SWDR). Under certain conditions, a rainfall erosivity value can be calculated to determine if a project qualifies for a waiver and exemption from CGP requirements. In which case, a SWPPP would not be necessary and the project could be covered under a WPCP. Both of these (SWPPP and WPCP) specify the level of temporary pollution control measures required for a project.
- Follow all applicable guidelines and requirements in the 2015 Caltrans Standard Specifications (2015 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.

    - Attention and focus (by the Contractor and field staff) should be given to 2015 CSS, Section 13-4 (Job Site Management), to control and manage potential sources of water pollution, such as material pollution, waste products and non-storm water related pollutants before they encounter storm water conveyance systems or receiving waters within the project limits.
    - Additional scrutiny should also include 2015 CSS, sections 13-9.02C and 13-9.02D (when and where applicable) for requirements related to the handling and disposal of concrete waste during construction operations.

6. The Contractor prepared and Department approved SWPPP (or WPCP, if a CGP exemption is pursued) shall incorporate and describe appropriate strategies to address the effective implementation, handling, storage, use and disposal practices of temporary construction site BMPs during the course of construction operations and project activities.
7. Shoulder backing areas should be stabilized by temporary construction site BMPs, or rolled and compacted in place, by the end of each day and prior to the onset of any precipitation.
8. Existing drainage facilities should be identified and protected by the application of appropriate construction site BMPs.

CEQA Considerations

Project alternatives will not violate any water quality standards or waste discharge requirements, substantially deplete groundwater supplies or interfere substantially with groundwater recharge, substantially alter the existing drainage pattern of the site or area, 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 otherwise substantially degrade water quality.

Accordingly, Caltrans staff has determined that less than significant impacts to water quality are anticipated.

2.12 Paleontology

Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

Several federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects, including:

- 23 United States Code (USC) 1.9(a) requires that the use of federal-aid funds must be in conformity with federal and state law.

- 23 United States Code (USC) 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above and state law.

Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

Affected Environment

A paleontological evaluation report was prepared in 2006 for the U.S. Highway 50 HOV Lanes and Community Enhancements Project. The information from that report was used to prepare the paleontological section and Appendix F (Preliminary Paleontological Mitigation Plan).

Geographic Location and Setting

The project site is located on the eastern margin of the Sacramento Valley, near the westernmost foothills of the Sierra Nevada, and just north of the geographic center of the State of California in an area known as the Central Valley Physiographic Province. The Central Valley Physiographic Province is located between the Sierra Nevada Physiographic Province on the east and the Coast Ranges Physiographic Province on the west. The general project area is bounded on the west by the floodplain of the Sacramento River and on the east by a gently inclined alluvial fan, which heads in the Sierra Nevada.

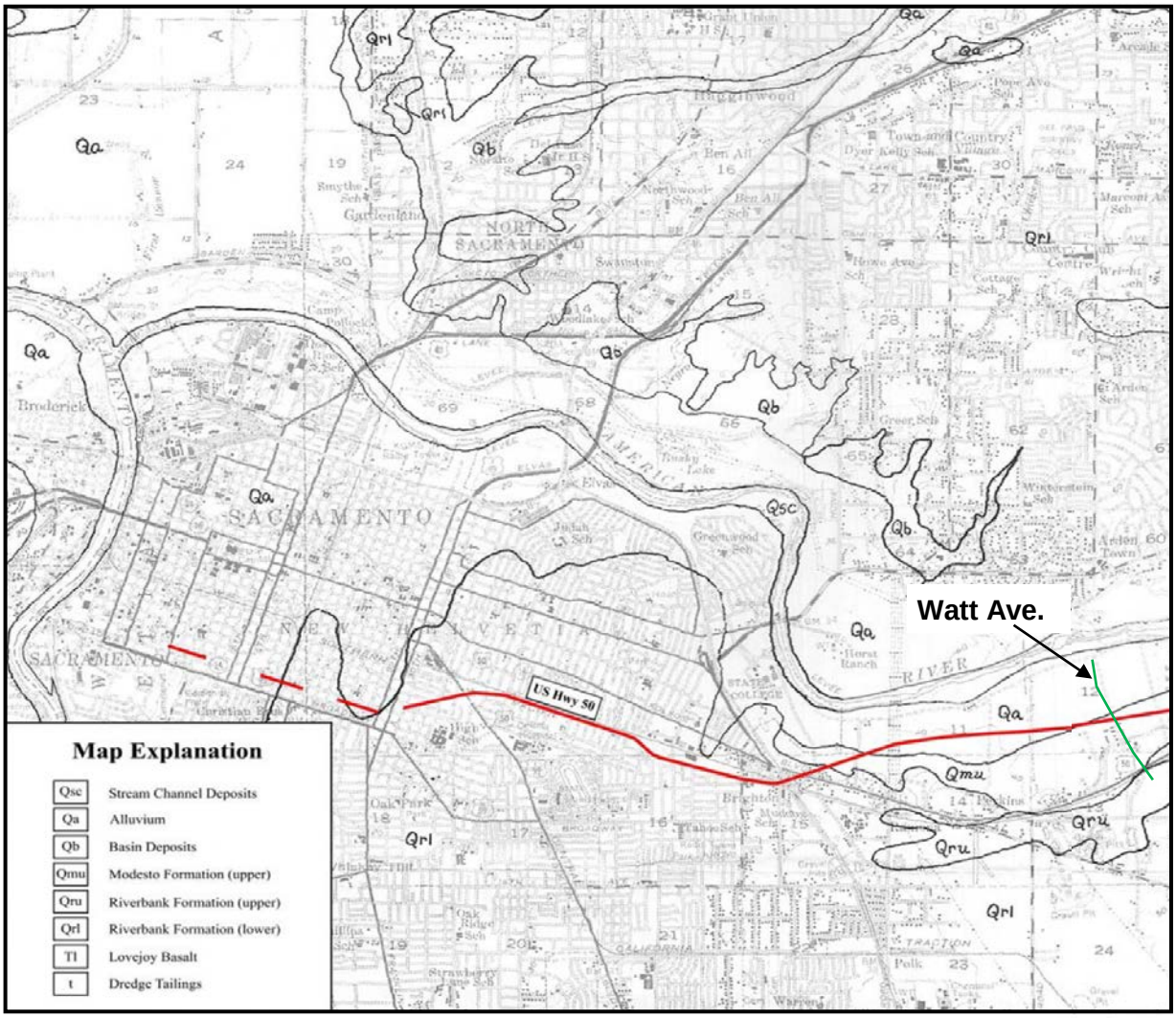
In the project vicinity, coalesced (combined) alluvial fans have been created by rock debris deposited by the American River, Cosumnes River, Morrison Creek, and adjacent smaller streams, all of which drain off the foothills of the Sierra Nevada Range. In the project vicinity, sediments composing the coalesced American-Cosumnes River alluvial fan have been divided into four stratigraphic units: weakly cemented siltstone, sandstone, and conglomerate of the Pliocene Laguna Formation exposed only on the upper alluvial fan, coarser but otherwise similar sediments of the Early Pleistocene Turlock Lake Formation, and a slightly younger and less consolidated, sedimentary sequence mapped as Middle Pleistocene to Early Holocene Riverbank Formation, Modesto Formation, or “Modesto/Riverbank formations undivided” that overlies the Turlock Lake and Laguna Formation on the lower portion of the alluvial fan. Each of these stratigraphic units has yielded fossil remains at previously recorded fossil localities within the Central Valley. In the most recent and most detailed geologic mapping available, the project right of way has exposed at the surface continental deposits of the Riverbank Formation, Modesto Formation, and unnamed Quaternary alluvium (see Figure 2-1, below).

Riverbank Formation. The Riverbank Formation consists of weakly consolidated reddish-brown siltstones, sandstones, and pebble to cobble conglomerates with a few thin intervals of brick-red claystone. Where exposures are available along the east half of the US 50 right of way, abundant coarse cobble conglomerates can be observed. The age of the Riverbank Formation is between 130,000 and 450,000 years before present (BP), Middle Pleistocene. Within Sacramento County the Riverbank Formation is known to contain rare vertebrate and other fossil remains. Vertebrate content alone would indicate that this unit should be considered highly sensitive for paleontological resources. Vertebrate fossils found in the Riverbank Formation include mastodon, mammoth, camel, horse, bison, ground sloth, birds, dire wolf, rodents, frogs, snakes, and fish.

Modesto Formation. The Modesto Formation is composed of interbedded, largely unconsolidated, and poorly sorted, sandstone and siltstone with lesser amounts of pebble to cobble conglomerate. These beds are primarily fluvial deposits and are believed to represent the depositional cycle between two major glacial stages in the Sierra Nevada. The age of the Modesto Formation is between about 42,400 and 12,000 years BP, Late Pleistocene. The Modesto Formation is considered highly sensitive for paleontological resources because of its vertebrate content. Rancholabrean vertebrate fossils have been found in the Modesto Formation within Sacramento County. These included mammoth, bison, horse, camel, ground sloth, and rodents.

Unnamed Quaternary Alluvium. The unnamed Quaternary Alluvium is composed of gravels, sands, silt, and clay deposited along the channels of modern streams and on their flood plains. This informal name is also applied to the lowest and therefore youngest river terraces along the American River north of US 50. The age of the unnamed Quaternary Alluvium is probably Holocene, although there is the possibility that some sediments referred to this stratigraphic unit may be Late Pleistocene in age. These deposits may be too young to contain fossils or fossils of scientific value. There is the potential that in areas where alluvium occurs at the surface, older sediments that do have scientific value may underlie the alluvium and may be encountered if excavation is deep enough.

Figure 2-1. Paleontological Formations within the Project Limits



Environmental Consequences

Alternative 1

Although no fossils are known to directly underlie the proposed project, the Riverbank and Modesto Formations are known to contain vertebrate and other fossil remains, suggesting that there is a high potential for additional similar fossil remains to be uncovered by excavations in these formations during project construction. Under both Caltrans criteria and the Society of Vertebrate Paleontology (SVP) criteria, these formations have a high sensitivity for producing additional paleontological resources. Identifiable fossil remains recovered from these formations during project construction could be scientifically important.

Potential impacts to paleontological resources resulting from construction of Alternative 1 would primarily result from ground disturbance of previously undisturbed sediments during excavations at the four structures.

Sound wall pile foundations may extend up to 16 feet deep. Sound walls will be placed along areas highly disturbed by the construction of US 50. All the proposed sound walls would be constructed on fill up to 35 feet deep. Impacts to paleontological resources during sound wall construction are not anticipated.

Cast-in-place foundation piles will be the likely foundation method used for the new columns for the elevated structures of the W-X freeway. The columns will be approximately 30 feet deep and on 4 ft to 5 ft diameter cast-in-drilled-hole (CIDH) piles. CIDH piles are a deep foundation support that is constructed by placing fresh concrete and reinforcing steel into a drilled shaft. These reinforced concrete piles are cast in holes of predetermined diameters and depths drilled through soil and rock to the desired bearing stratum. Pre-borings for cast-in-place piles will disturb a relatively small area within the formation.

Spread footings for new columns are recommended by Caltrans Design at the Brighton OH and Elmhurst Viaduct. Spread footings are shallower and wider than CIDH piles. Spread footings will disturb a relatively small area within the formation.

The implementation of the Paleontological Mitigation Plan would lessen the potential impacts and thus effects to paleontological resources are not expected.

Alternative 2
Alternative 2 footprint and features are the same as Alternative 1. Its potential impacts to paleontological resources will be the same as well.

Alternative 3
Potential impacts to paeleontological resources from Alternative 3 are not expected because the only ground excavations involve sound walls.

Alternative 4
The No Build Alternative would not have the potential to disturb paleontological resources, as no construction-related activities would take place.

Avoidance, Minimization and/or Mitigation Measures

The presence or absence of paleontological resources usually cannot be known until construction excavation for the project is underway. Due to the presence of sensitive formations within the project limits, a Preliminary Paleontological Mitigation Plan was prepared to address potential discoveries during construction of the proposed project (Appendix F). A final Paleontological Mitigation Plan will be prepared by a qualified paleontologist near completion of the final design. The plan will be implemented during project construction. Please refer to Appendix F for specific measures.

CEQA Considerations

As discussed above, impacts to paleontological resources may occur at the excavation sites of the new columns. Pre-borings for cast-in-place piles at the W-X Freeway and potential spread footings at the Brighton OH and Elmhurst Viaduct will disturb a relatively small area within the formation. Proposed avoidance/minimization/mitigation measures will reduce potential significant impacts to paleontological resources to insignificance. Accordingly, with these measures included, less than significant impacts to paleontological resources are anticipated.

2.13 Hazardous Waste/Materials

Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and clean up contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

Affected Environment

Caltrans hazardous waste staff completed an Initial Site Assessment in June 2015. The review for potential hazardous waste impacts involved the following:

- A review of the project plans and aerial mapping;
- Discussions with the design engineer;
- A review of Geotracker (a hazardous waste database of contaminated sites);
- A review of previous hazardous waste consultant studies performed within these project limits.

The potential for hazardous waste exists with respect to the following:

1. There is the possible presence of soils with elevated concentrations of ADL within the limits of the project alternatives on the state highway system right of way that must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. Soils with elevated concentrations of ADL outside of the state right of way will be managed under all applicable laws and regulations.

2. Groundwater and soil contamination may exist at new footings for the bridge widening. Potential hazardous materials in soil and groundwater will be avoided to the extent feasible by design provisions. If infeasible, soil and groundwater will be controlled and discharged pursuant to regulatory and permit requirements during construction.
3. Bridge expansion joint materials and rail shims may contain asbestos that will be removed during construction. Any asbestos containing material (ACM) on bridges requiring removal will be removed and disposed by a licensed and certified asbestos abatement contractor implementing an Asbestos Compliance Plan to prevent or minimize exposure to asbestos. Non-Standard Special Provisions addressing ACM will be included in the project specifications.
4. Hazardous chemicals are known to exist in the wood posts associated with metal beam guardrail. The project will be designed to avoid removal of metal beam guard rail posts and other treated wood and otherwise minimize the quantity requiring removal. Any metal beam guardrail posts and other treated wood removed will be disposed consistent with Caltrans Standard Special Provision 14-11.09 (Treated Wood Waste). The quantity will be determined during design.
5. The potential for hazardous waste exists with the levels of lead and chromium in the yellow color traffic stripes. Since these traffic stripes will be ground off along with the roadway or dug out, the levels of lead and chromium may become non-hazardous. These grindings (which consist of the roadway material and the yellow color traffic stripes) shall be removed and disposed of in accordance with Caltrans Standard Special Provision 15-1.03B (Residue Containing High Lead Concentration Paints), which requires a Lead Compliance Plan (LCP). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings shall be removed and disposed of in accordance with the same specification.
6. A Hazardous Materials Disclosure Document will be required as an attachment to the Certificate of Sufficiency before any right of way can be acquired.

Environmental Consequences

The potential for hazardous waste exists with respect to the following:

1. There is the possible presence of soils with elevated concentrations of ADL within the limits of the project alternatives on the state highway system right of way that must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. Soils with elevated concentrations of ADL outside of the state right of way will be managed under all applicable laws and regulations.
2. Groundwater and soil contamination may exist at new footings for the bridge widening will occur. Potential hazardous materials in soil and groundwater will be avoided to the extent feasible by design provisions. If infeasible, soil and groundwater will be controlled and discharged pursuant to regulatory and permit requirements during construction.
3. Bridge expansion joint materials and rail shims may contain asbestos that will be removed during construction. Any asbestos containing material (ACM) on bridges requiring removal will be removed and disposed by a licensed and certified asbestos abatement contractor implementing an Asbestos Compliance Plan to prevent or minimize exposure to asbestos. Non-Standard Special Provisions addressing ACM will be included in the project specifications.
4. Hazardous chemicals are known to exist in the wood posts associated with metal beam guardrail. The project will be designed to avoid removal of metal beam guard rail posts and other treated wood and otherwise minimize the quantity requiring removal. Any metal beam guardrail posts and other treated wood removed will be disposed consistent with Caltrans Standard Special Provision 14-11.09 (Treated Wood Waste). The quantity will be determined during design
5. The potential for hazardous waste exists with the levels of lead and chromium in the yellow color traffic stripes. Since these traffic stripes will be ground off along with the roadway or dug out, the levels of lead and chromium may become non-hazardous. These grindings (which consist of the roadway material and the yellow color traffic stripes) shall be removed and

disposed of in accordance with Caltrans Standard Special Provision 15-1.03B (Residue Containing High Lead Concentration Paints), which requires a Lead Compliance Plan (LCP). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings shall be removed and disposed of in accordance with the same specification.

6. A Hazardous Materials Disclosure Document will be required as an attachment to the Certificate of Sufficiency before any right of way can be acquired.

Alternative 1 and 2

Both alternatives have the same footprint of the alignment and features; therefore, the potential impacts related to hazardous materials and wastes would be the same. Both alternatives involve structure work, re-striping, column construction, and possible sound wall construction. The potential hazardous waste and materials that may be encountered include ADL, groundwater and soil contamination, asbestos containing materials (ACM), treated wood waste, and lead and chromium in yellow traffic stripe.

Alternative 3

This alternative has the same footprint of the alignment as alternatives 1 and 2; however, this alternative only includes re-striping and possible sound wall construction. The potential hazardous waste and materials that may be encountered under Alternative 3 may include ADL, treated wood waste, and lead and chromium in yellow traffic stripe.

Alternative 4

The No Build Alternative would not have the potential for hazardous waste and materials impacts, as no construction-related activities would take place.

Avoidance and/or Minimization Measures

The following measures will be implemented.

Groundwater and soil contamination

Potential hazardous materials in soil and groundwater will be avoided to the extent feasible by design provisions. If infeasible soil and groundwater will be controlled and discharged pursuant to regulatory and permit requirements during construction.

Treated Wood Waste (Metal Beam Guardrail)

The project will be designed to avoid removal of metal beam guard rail posts and other treated wood and otherwise minimize the quantity requiring removal. Any metal beam guardrail posts and other treated wood removed will be disposed consistent with Caltrans Standard Special Provision 14-11.09 (Treated Wood Waste). The quantity will be determined during design.

ACM

ACM on the bridges will require removal and proper disposal by a licensed and certified asbestos abatement contractor in conjunction with the planned bridge widening. The contractor must implement an Asbestos Compliance Plan to prevent or minimize exposure to asbestos. Attention is directed to Title 8, California Code of Regulations, Construction Safety Orders, section 5192 (b) and section 1529, "Asbestos", Occupational Safety and Health Guidance Manual published by the National Institute of Occupational Safety and Health and the USEPA for elements of the ACP. Non-Standard Special Provision (NSSP) will be included in the project specifications to address National Emissions Standards for Hazardous Air Pollutants (Air Quality - NESHAP) notification.

The NSSP for removal of ACMs, bridges, will be included in the project specifications. Copies of NSSPs can be obtained by contacting Caltrans' Hazardous Waste Office at HQ_HazWaste@dot.ca.gov. In accordance with Sacramento Metropolitan Air Quality Management District (SMAQMD) Rule 902, written notification to SMAQMD is required ten working days prior to

commencement of any demolition activity (whether asbestos is present or not) and for renovation activities involving specified quantities of RACM. In accordance with Title 8, CCR 341.9, written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain asbestos-related work.

ADL
There is the possible presence of soils with elevated concentrations of ADL within the limits of the project alternatives on the state highway system right of way that must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. Soils with elevated concentrations of ADL outside of the state right of way will be managed under all applicable laws and regulations. The quantity of ADL soil requiring special handling will be minimized during design by identifying and restricting special handling areas to those above regulatory limits. Any ADL soil requiring removal will be managed pursuant to the appropriate Standard Special Provision.

Yellow Traffic Stripes
Grindings (which consist of the roadway material and the yellow color traffic stripes) will be removed and disposed of in accordance with Caltrans Standard Special Provision 15-1.03B (Residue Containing High Lead Concentration Paints) which requires a Lead Compliance Plan (LCP). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings will be removed and disposed of in accordance with the same specification.

CEQA Considerations

Project alternatives would not 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, emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, or 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 not create a significant hazard to the public or the environment. Accordingly, hazardous waste impacts from project alternatives are not anticipated.

2.14 Air Quality

Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (PB) and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition. The standards for all criteria pollutants are presented in Table 2-28.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity

The conformity requirement is based on Federal Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs or projects that do not conform to State Implementation Plan (SIP) for attainting the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional—or, planning and programming—level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California) sulfur dioxide (SO_2). California has attainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years for the RTP) and 4 years (for the TIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis. Please see Appendix J.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a "hot-spot" analysis if an area is "nonattainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter (PM_{10} or $PM_{2.5}$). A region is "nonattainment" if one or more of the monitoring stations in the region measures a violation of the relevant standard and the U.S. EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by U.S. EPA and are then called "maintenance" areas. "Hot-spot" analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the "hot-spot" related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Table 2-28. Ambient Air Quality Standards				
Pollutant	**Averaging Time**	**California Standards [a,c]**	**Federal Standards [b,c]**	
			Primary	**Secondary**
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	—	—
	8 Hour	0.07 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3) [d]	—
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	Annual (AAM)	20 µg/m^3	— [e]	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 µg/m^3	Same as Primary
	Annual (AAM)	12 µg/m^3	12 [f] µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual (AAM)	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m^3)	—	
Sulfur Dioxide (SO_2)	Annual (AAM)	—	0.030 ppm (80 µg/m^3) [i]	—
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3) [i]	—
	3 Hour	—	—	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.05 ppm (196 µg/m^3) [i]	—
Lead (Pb)[g]	30-Day Average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary
	Rolling 3-Month [h]	—	0.15 µg/m^3	Same as Primary
Visibility- Reducing Particles	8 Hour	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 %	No Federal Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride [g]	24 Hour	0.01 ppm (26 µg/m^3)		

Notes:

[a] California standards for O_3, CO (except Lake Tahoe), SO_2 (1 and 24 hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, PM, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to these reference conditions; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

[e] The annual standard of 50 µg/m^3 was revoked by USEPA in December 2006 due to lack of evidence linking health problems to long-term exposure to coarse particulate pollution.

[f] In December 2012, USEPA strengthened the annual $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) from 15.0 to 12.0 micrograms per cubic meter (µg/m^3). In December 2014, USEPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

[g] The California Air Resources Board (CARB) has identified Pb and vinyl chloride as 'toxic air contaminants' with no standard level of exposure for adverse health effects determined. These actions allow for implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[h] Final rule for the new federal standard was signed October 15, 2008.

[I] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1971 standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard. In areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

AAM – annual arithmetic mean; mg/m^3 – milligrams per cubic meter; µg/m^3 – micrograms per cubic meter; ppm – parts per million

Source: CARB, 2015

Affected Environment

An air quality technical report was revised in August 2016. This air quality study includes an air quality conformity analysis and Interagency Consultation documentation for the build and no-build

alternatives for the opening year of 2020 and the future year of 2040. The air quality report shows that the project would not worsen or violate air quality standards under the USEPA rules. This study was conducted with EMFAC 2011 for CO analysis and EMFAC 2014 for MSAT and GHG analysis. The CO analysis was completed using EMFAC 2011 prior to the transition to EMFAC 2014. It was assumed that the results of the CO analysis would not be different between EMFAC 2011 and 2014.

The air quality report suffices under the current project scope with NEPA approval within 3 years. The project currently does not have funds to begin construction. As a result, Caltrans anticipates that the project will be shelved after draft Plans, Specifications and Estimates. Once construction funding is secured, the project will be re-evaluated with updated traffic data and the air quality study revised using a newer version of EMFAC emission model.

The proposed project is located in Sacramento County, within the Sacramento Valley Air Basin (SVAB). The Sacramento Valley Air Basin is comprised of nine air districts: the Shasta County Air Quality Management District (AQMD); the Tehama County Air Pollution Control District (APCD); the Glenn County APCD; the Butte County APCD; the Colusa County APCD; the Feather River AQMD that includes Sutter and Yuba Counties; the western portion of the Placer County APCD; the Yolo-Solano AQMD, that includes Yolo County and the eastern portion of Solano County; and the SMAQMD that consists of Sacramento County in which the project is located.

Climate and Meteorology

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions such as temperature, wind speed and direction, in combination with local topography determines how air pollutant emissions affect the local air quality. The proposed project corridor extends in the Metropolitan Sacramento County within the SVAB. The Sacramento Valley is a basin bounded by the Sierra Nevada Mountain Range to the east and the Coastal Mountain Ranges to the west. Topography in the Sacramento Valley is generally flat, with elevations anywhere from slightly below sea level near the Sacramento/San Joaquin Delta to over 2,150 feet above sea level at the Sutter Buttes. Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB.

During the year the temperature may range from 20 to 115 degrees Fahrenheit, with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with about 75 percent occurring during the rainy season (November through March). The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

Topography is a major factor influencing wind direction over the project area. The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants when certain meteorological conditions exist. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable layer of air. The surface concentrations of particulate matter pollutants are highest when these conditions are combined with smoke or when temperature inversions trap cool air, fog and pollutants near the ground. The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds, with the delta sea breeze arriving in the afternoon out of the southwest.

In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases and oxides of nitrogen, which result in ozone formation.

Likewise, peak concentrations of particulate matter $(PM)_{2.5}$ typically occur during the winter season (November – February) when temperature inversion and low wind speeds trap and concentrate $PM_{2.5}$ emissions, and cooler temperature and high humidity increase the secondary formation of particulates.

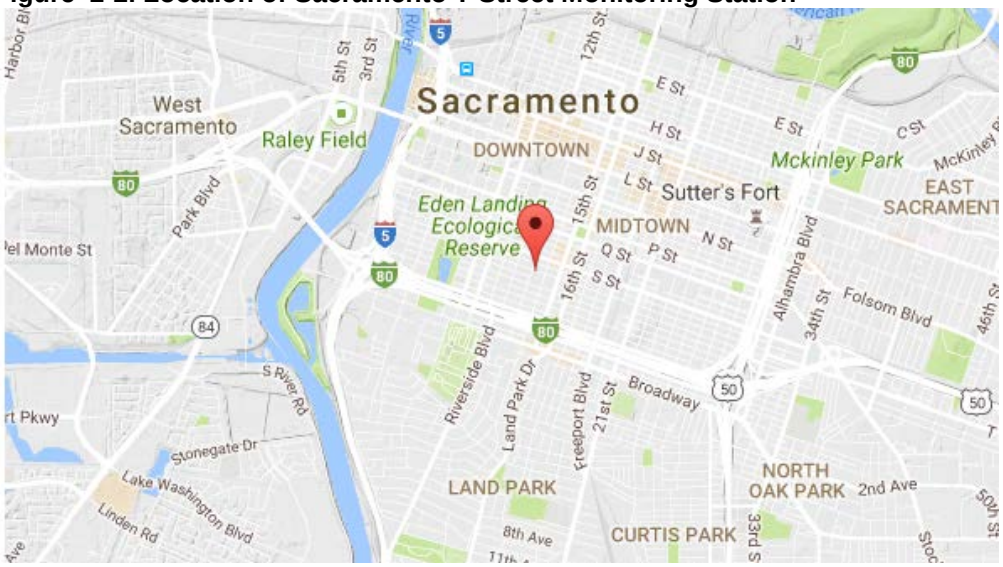
As an air basin, air quality in the Sacramento region is affected not only by pollutants generated within the region, but also by pollutants generated in the San Francisco Bay Area and the San Joaquin Valley, which are carried into the Sacramento region by Delta breezes. The effect of pollutants transported from the San Francisco Bay Area or from the San Joaquin Valley on air quality in the Sacramento region can vary from substantial to inconsequential on any given day, largely determined by accompanying meteorological conditions. Thus, the success of the Sacramento region in attaining better air quality is partially contingent on the achievement of better air quality in nearby areas that affect Sacramento's air quality.

Existing Ambient Air Quality

Criteria Air Pollutants

The CARB and SMAQMD maintain a network of monitoring stations throughout the air basin to effectively monitor source-receptor areas in the region. The nearest air monitoring station to the project site is the Sacramento T Street Station, which is located at 1309 T Street, approximately 0.26 miles south of the project corridor (Figure 2-2). The criteria pollutants monitored at this station include O_3, NO_2, PM_{10} and $PM_{2.5}$. The nearest station where CO monitored data are available from, is the El Camino & Watt Station, located at 3535 El Camino Street, approximately 3.4 miles north of the project's eastern terminus. Table 2-29 presents ambient air quality data, which was recorded at these stations, for the past five years. The recorded data show exceedances of the national standards for 8-hour ozone and 24-hour $PM_{2.5}$ and from the California standards for ozone and PM_{10} on one or more occasions from 2010 through 2014. No exceedances of either the state or national standards were recorded for SO_2, lead, NO_2, or CO.

Figure 2-2. Location of Sacramento T Street Monitoring Station



Attainment Status

Pursuant to the 1990 CAA Amendments (CAAA), USEPA classifies air basins (or portions thereof) as attainment or nonattainment for each criteria air pollutant, based on whether or not the NAAQS had been achieved. A "maintenance" area is one that has met the ambient air quality standards, thus removing it from nonattainment status. "Unclassified" is defined by the CAAA as any area that

cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

The proposed project is within Sacramento County, which is currently nonattainment for the 8-hour ozone (Severe 15) and for $PM_{2.5}$[3], maintenance for PM_{10}[4] NAAQS and is either attainment or unclassified for the remaining criteria pollutants national standards.

Table 2-29. Criteria Air Pollutants Data Summary
(Sacramento T Street Monitoring Station)

Pollutant	Averaging Time	Applicable Standard	2010	2011	2012	2013	2014
Ozone (O_3)	1-Hour	Maximum Concentration (ppm)	0.092	0.100	0.104	0.091	0.085
		Days > CAAQS (0.09 ppm)	0	1	1	0	0
	8-Hour	4th Maximum Concentration (ppm)[a]	0.068	0.072	0.077	0.064	0.071
		Days > NAAQS (0.075 ppm)	0	**1**	**4**	0	0
		Days > CAAQS (0.07 ppm)	1	5	9	0	4
Particulate Matter (PM_{10})	24-Hour	Maximum Concentration ($\mu g/m^3$)	53.9	42.2	36.7	92.3	106.4
		Days > CAAQS (50 $\mu g/m^3$)	0	6	0	21	24
		Days > NAAQS (150 $\mu g/m^3$)	0	0	0	0	0
	Annual	State Annual Average (20 $\mu g/m^3$)	17.6	19.2	17.8	n/a	21.6
	3-Year Max Annual Avg	State Annual Average (20 $\mu g/m^3$)	25	20	19	19	20
Particulate Matter ($PM_{2.5}$)	24-Hour	Maximum Concentration ($\mu g/m^3$)	30.6	50.5	27.1	40	33.2
		Days > NAAQS (35 $\mu g/m^3$)	0	**18.4**	0	**6**	0
		National Std. 98th Percentile[b]	27.3	**45.1**	20.5	33.4	24.1
	Annual	National Annual (12.0 $\mu g/m^3$)[c]	8	10.1	8.3	10	8
Carbon Monoxide[d] (CO)	1-Hour	Maximum Concentration (ppm)	2.3	3.0	2.7	3.0	2.5
		Days > CAAQS (20 ppm)	0	0	0	0	0
		Days > NAAQS (35 ppm)	0	0	0	0	0
	8-Hour	Maximum Concentration (ppm)	1.89	2.83	2.14	2.4	2.1
		Days > CAAQS (9.0 ppm)	0	0	0	0	0
Nitrogen Dioxide (NO_2)	1-hour	Maximum Concentration (ppm)	0.066	0.057	0.062	0.059	0.065
		Days > CAAQS (0.18 ppm)	0	0	0	0	0
	Annual	Arithmetic Average (0.053 ppm)	0.013	0.013	0.012	0.012	0.011

[3] Effective August 14, 2013 the USEPA took the final action to determine that the Sacramento nonattainment area in California has attained the 2006 24-hour fine particle ($PM_{2.5}$) NAAQS. This determination was based upon complete, validated, and certified ambient air monitoring data recorded during the 2010–2012 monitoring period. However, this final action does not constitute a redesignation of the Sacramento nonattainment area to attainment for the 2006 24-hour $PM_{2.5}$ NAAQS under CAA section 107(d)(3) because USEPA has not yet approved a maintenance plan for the Sacramento nonattainment area as meeting the requirements of section 175A of the CAA or determined that the area has met the other CAA requirements for redesignation. The classification and designation status in 40 CFR part 81 remain nonattainment for this area until such time as USEPA determines that California has met the CAA requirements for redesignating the Sacramento nonattainment area to attainment. http://www.gpo.gov/fdsys/pkg/FR-2013-07-15/pdf/2013-16785.pdf

[4] Effective October 28, 2013 USEPA approved the State of California's request to redesignate the Sacramento nonattainment area to attainment for the 24-hour particulate matter of ten microns or less (PM_{10}) NAAQS. USEPA is also approving the PM_{10} maintenance plan and the associated motor vehicle emissions budgets for use in transportation conformity determinations necessary for the Sacramento area, and the attainment year emissions inventory submitted with the plan. http://www.gpo.gov/fdsys/pkg/FR-2013-09-26/pdf/2013-23245.pdf

Table 2-29. Criteria Air Pollutants Data Summary (Sacramento T Street Monitoring Station)							
Pollutant	**Averaging Time**	**Applicable Standard**	**2010**	**2011**	**2012**	**2013**	**2014**

AAM – Annual Arithmetic Mean; CAAQS – California ambient air quality standards; $\mu g/m^3$ – micrograms per cubic meter; NAAQS – National ambient air quality standards; ppm – parts per million; n/a – sufficient data not available to determine the value
The estimated / measured numbers of recorded concentrations above national standards are shown in **bold**.
Note: Ambient data for SO_2 and airborne lead are not included in this table since the Basin is currently in compliance with state and federal standards for these pollutants.

[a] The 8-hour ozone standard is attained when the fourth highest concentration in a year, averaged over 3 years, is equal to or less than the new national standard of 0.075 ppm (effective May 27, 2008).

[b] Attainment condition for $PM_{2.5}$ is that the 3-year average of the 98th percentile of 24-hour concentrations at each monitor within an area must not exceed the standard (35 $\mu g/m^3$) .

[c] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$.

[d] Carbon monoxide concentrations have not been measured at the T Street station since 2006; the listed data are from the El Camino & Watt Monitoring Station located at 3535 El Camino Street, about 3.4 miles north of the project's eastern terminus. The one-hour CO monitored data were obtained from the EPA Air Data web site. *http://www.epa.gov/airdata/ad_rep_mon.html*

Source: CARB, 2015 and EPA, 2015

Based on the state ambient air quality standards (CAAQS), the project area is classified as nonattainment area for 1-hour and 8-hour O_3 and for PM_{10} CAAQS. The area complies with the state standards for sulfates, hydrogen sulfide, and vinyl chloride, and is unclassified for the California standard for visibility-reducing particles. The project area's attainment status with respect to state and federal AAQS is provided in Table 2-30.

Table 2-30. Sacramento County Attainment Status

Pollutant	National Standards [b]	California Standards [c]
Ozone (O_3) – 1-hour	Nonattainment – (Severe)	Nonattainment – (Serious)
Ozone (O_3) – 8-hour	Nonattainment – (Severe 15)	Nonattainment
PM_{10}	Attainment/Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment (Moderate) [a]	Attainment
Carbon Monoxide (CO)	Attainment/Maintenance	Attainment
Nitrogen Dioxide (NO_2)	Attainment /Unclassified	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment

Notes:

[a] Effective August 14, 2013 the EPA took the final action to determine that the Sacramento nonattainment area in California has attained the 2006 24-hour fine particle ($PM_{2.5}$) NAAQS. However, the area re-designation is pending until approval of a maintenance plan by EPA.

[b] EPA Current Nonattainment Counties for Criteria Pollutants http://www.epa.gov/airquality/greenbk/ancl.html page updated January 30, 2015.

[c] State Area Designations, as of June, 2013: http://www.arb.ca.gov/desig/adm/adm.htm

Source: CARB, 2015; EPA, 2015

Toxic Air Contaminants (TACs)

TACs are airborne substances that can cause long-term health effects (e.g., cancer, birth defect, or neurological damage), or short-term acute effects (e.g., headache, eye and respiratory irritation, nausea). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently than criteria air pollutants at both federal and state levels. At the federal level these airborne substances are referred to as Hazardous Air Pollutants (HAPs).

In 1998, CARB identified diesel particulate matter (DPM) as a TAC, based on the evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as

trucks and buses are among the primary sources these emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations.

According to CARB, DPM emissions decreased 37 percent from 2000 to 2010 primarily as a result of more stringent emissions standards and the introduction of cleaner burning diesel fuel. Emissions from diesel mobile sources are projected to continue to decrease after 2010. Overall, statewide emissions of DPM are forecasted to decline by 71 percent in 2035, compared to 2000 emissions.[5] Similarly, the average statewide cancer risk from DPM has declined from 750 in one million in 1990 to 540 in one million in 2000.

Naturally Occurring Asbestos

According to the California Department of Conservation's California Geological Survey (CGS), Special Report 192, on the relative likelihood for the presence of naturally occurring asbestos (NOA) in eastern Sacramento County, the proposed project location is not an area of naturally-occurring asbestos. Naturally occurring asbestos areas are identified based on the type of rock found in the area. Asbestos-containing rocks found in California are ultramafic rocks, including serpentine rocks and several naturally occurring fibrous minerals that may be present in certain geologic settings. These type of materials are found only in the northeastern portion of Sacramento County, and are not present in the project area (California Department of Conservation, 2006).

Sensitive Receptors

Some population groups, such as children, the elderly, acutely and chronically ill persons, especially those with cardio-respiratory problems, are considered more sensitive to air pollution than others. Sensitive receptor locations include schools, residential areas, hospitals, elder-care facilities, rehabilitation centers, daycare centers and parks. Residential areas are considered sensitive to air pollution because residents, including children and the elderly, tend to be at home for extended periods of time, resulting in sustained exposure to air pollutants.

The sensitive receptors that would be potentially affected by the proposed project are located within the project study area along the project segments of US 50. Therefore, during construction of the proposed project, a number of different receptors would be exposed to construction emissions. Sensitive receptors along the affected segments of US 50 include single- and multi-family residences, which are located approximately 500 feet from the boundary of proposed construction activities for the project. In addition to these, there are other land uses such as schools, daycares, parks, medical centers and hospitals within quarter of a mile distance from project corridor. Some examples of sensitive receptors near the proposed project include (most are shown on Figure 1-3):

- William Land Elementary School - Preschool (2120 12th Street)
- Sacramento Area YMCA – Preschool and Kindergarten (2021 W Street)
- California Montessori Project (2635 Chestnut Hill Drive)
- UC Davis Medical Center, Ticon-I Building (2000 Stockton Boulevard)
- Sutter Medical Center (7700 Folsom Boulevard)
- Glenbrook Park
- Oki Park
- Salmon Falls Park
- Southside Park
- O'Neil Park
- Sunset Park
- Coloma Park

[5] CARB, 2013. California Almanac of Emissions and Air Quality - 2013 Edition. Table 3-7 and Figure 3-6

- Sierra Vista Park

Environmental Consequences

Long-Term Operational Emissions

Vehicular emissions constitute the primary source of air pollutants associated with operation of the proposed project. Alternative 4 would not implement the proposed project capacity improvements and thereby would not result in any operational air quality impacts. However, Alternative 4 is not consistent with the projected regional economic growth and population increase within the project area.

Criteria Pollutants

Regional Air Quality Conformity
As described earlier, regional conformity is demonstrated by showing that the project is included in conforming transportation plans/programs and with the same design concept and scope that was used for the regional conformity analysis.

In determining whether a project conforms to an approved air quality plan, agencies must use current emission estimates based on the most recent population, employment, travel, and congestion estimates determined by SACOG. As the region's MPO, SACOG is required to develop and maintain long-range and short-range plans and programs. Conforming regional transportation plans/programs model outcome projects that the regulated pollutants will be reduced to acceptable levels within time frames that meet the NAAQS.

The proposed project is listed in the 2016 financially constrained Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) which was found to conform by the Sacramento Area Council of Governments (SACOG) on February 18, 2016, and FHWA and FTA made a regional conformity determination finding on May 3, 2012. The project is also included in SACOG's financially constrained 2015/2018 Metropolitan Transportation Improvement Program Amendment #4, page 47. The SACOG Metropolitan Transportation Improvement Program was determined to conform by FHWA and FTA on December 15, 2014. The design concept and scope of the proposed project is consistent with the project description in the 2016 MTP/SCS, 2015/18 MTIP, and the "open to traffic" assumptions of the SACOG regional emissions analysis.

The 2016 MTP/SCS and the 2015/2018 MTIP, prepared by SACOG, rely on the emission budgets established by the SIP or attainment plans that are initially developed and adopted by SMAQMD, and subsequently by CARB. Therefore, projects that are listed in the current transportation plans (i.e., MTIP and MTP) are considered consistent with the SIP; hence meet CAA conformity requirements. The proposed project is fully funded and referenced in the Appendix A (Project Listing) of the currently adopted plan, 2016 MTP/SCS, Appendix A: Project List, with following description:

> *US 50 HOV Lanes - Construct High Occupancy Vehicle (HOV) lanes on US 50 [project covers PE: from I-5 to 0.8 mile east of Watt Avenue (PM L0.2/R6.1) and CON: from 0.3 mile west of SR 99 to 0.8 mile east of Watt Avenue (PM L2.2/R6.1)]*

The project is also listed in the 2015/18 MTIP including Amendment #4, (adopted and federally approved September 18, 2014). The following project information is excerpted from the MTIP Appendix 3 - List of Individually Listed Projects and Grouped Project Listings:

> SACOG ID: *CAL18838;*
> Lead Agency*: Caltrans D3*

Project Description: *US 50 HOV Lanes – Construct High Occupancy Vehicle (HOV) lanes on US 50 [project covers PE: from I-5 to 0.8 mile east of Watt Avenue (PM L0.2/R6.1) and CON: from 0.3 mile west of SR 99 to 0.8 mile east of Watt Avenue (PM L2.2/R6.1)]*

The design concept and scope of the proposed project is consistent with the project description in the 2015/2018 MTIP document and the assumptions in SACOG's regional emission analysis; therefore, the project is considered to meet the CAA requirements and is in conformity with the SIP. As such, project development would not conflict with or obstruct implementation of the Air Quality Management Plan (AQMP) or Transportation Control Measures (TCMs) identified in the currently approved SIP.

REGIONAL EMISSIONS ANALYSIS:

As discussed above, the project inclusion in conforming regional transportation plan/program (MTP/MTIP) indicates that it has been incorporated into the region's air quality attainment plan. Therefore, the regional emissions analysis was conducted to demonstrate the project impact for disclosure and informational purposes. The project's operational criteria air pollutant emissions, which include emissions from vehicles traveling along the project corridor, were estimated for the three build alternatives and compared with Alternative 4 for project opening year 2020 and horizon year 2040. Emissions were also estimated for the base year 2013, representing existing conditions.

For each alternative, daily emissions were estimated using the daily VMT distributed by speed bins of 5 mph. The projected VMT and speed bin distributions were provided by the project traffic study group (Wood Rodgers, 2015). Vehicle emission factors were obtained using CARB's latest mobile source emission inventory model, EMFAC2014 (CARB, 2014); EMFAC2014 (v1.0.1) was released in December 2014. On May 15, 2015, CARB released an updated version (v1.0.7) of EMFAC2014 and has submitted it to EPA for approval. EMFAC2014 is currently being reviewed by EPA staff and approval is expected by the end of 2015.

The results of emission calculations for existing conditions (2013), opening year (2020) and horizon year (2040) are summarized in Table 2-31. The emission impacts of the project are presented as the net change and percent change in emissions from Alternative 4 in Table 2-31. As shown, emissions of NO_x decreases compared to Alternative 4 in opening year (2020) and also for Alternatives 1 and 3 in horizon year (2040).

The data in Table 2-31 also indicate that daily emissions of all criteria pollutants except PM_{10} show considerable reduction in future analyzed years (2020 and 2040) for all build alternatives when compared with 2013. This is due to improved vehicle engine efficiency, use of cleaner fuels in the future fleet, and vehicle turnover, all of which would yield reduction in pollutant emissions, even with an increase in traffic volumes and VMT.

The reason for the difference in the PM_{10} emissions trend (change from base year emissions) can be explained by examining the components of PM_{10} emissions from roadway traffic. The data for total PM_{10} emissions include PM_{10} from vehicle exhaust, tire wear, and brake wear, as well as the re-entrained road dust. Vehicles generate particulate emissions from tire wear and brake wear as well as dust from paved and unpaved roads to be re-entrained or re-suspended into the atmosphere. To show the contribution of these non-exhaust PM_{10} emissions, the exhaust PM emission data are presented separately in Table 2-31. As shown, the non-exhaust emissions from road dust and tire and brake wear constitute the majority of total PM_{10} emissions as they increase proportionally with the increase in traffic volume and VMT. The parameters used in calculation of road dust, as well as tire and brake wear emissions of particulates are independent of cleaner fuel or improved vehicle engines; therefore, the estimated emissions will increase with an increase in VMT.

Table 2-31. Summary of Project Daily Operational Emissions (Total Emissions from Traffic Along the Project Corridor)								
Year		**Criteria Pollutants Emission (lbs/day)**						
		VOC (ROG)	**CO**	**NO_x**	**PM_{10} Total**	**PM_{10} exhaust**	**$PM_{2.5}$ Total**	**$PM_{2.5}$ exhaust**
2013	Base Year	365	8,898	3,089	580	63	194	60
Opening Year 2020	Alternative 4	157	4,438	1,362	591	18	164	17
	Alternative 1	167	4,496	1,265	608	18	168	17
	Alternative 2	166	4,523	1,314	609	18	169	17
	Alternative 3	158	4,366	1,347	587	18	163	17
	Project Increment - Change from No Build (% change)							
	Alternative 1	10 (6%)	58 (1%)	-97 (-7%)	17 (3%)		5 (3%)	
	Alternative 2	9 (5%)	85 (2%)	-47 (-3%)	18 (3%)		5 (3%)	
	Alternative 3	1 (0.6%)	-72 (-2%)	-15 (-1%)	-4 (-0.6%)		-1 (-0.6%)	
Horizon Year 2040	Alternative 4	94	2,394	349	676	5	176	5
	Alternative 1	99	2,362	348	705	5	184	5
	Alternative 2	99	2,395	360	706	6	184	5
	Alternative 3	93	2,302	344	678	5	178	5
	Project Increment - Change from No Build (% change)							
	Alternative 1	5 (5%)	-31 (-1%)	-1 (-0.3%)	29 (4%)		8 (4%)	
	Alternative 2	5 (5%)	1 (0.1%)	12 (3%)	30 (4%)		8 (4%)	
	Alternative 3	-1 (-1%)	-92 (-4%)	-5 (-1%)	2 (0.3%)		2 (1%)	
SMAQMD Standard Levels[3]		*65*	N/A	*65*	*80*		*82*	
Exceeds Standard Levels?[3]		No	N/A	No	No		No	

VOC = Volatile organic compounds; ROG = Reactive organic gases; CO = Carbon monoxide; NO_x = Nitrogen oxides; PM_{10} = Particulate matter 10 microns in diameter; $PM_{2.5}$ = Particulate matter 2.5 microns in diameter.
Values may not add up precisely, due to rounding.

1. *Emissions are calculated using projected vehicle miles traveled (VMT) at different speed bins (5, 10, …70 mph), and emission factors calculated from EMFAC2014, at the speed intervals.*
2. *Estimates of directly emitted PM_{10} include emissions from tailpipe, tire wear, brake wear, the contribution from road dust emissions. The Paved Road Dust emission factor was calculated using EPA's methodology (AP-42, Chapter 13. January 2011).*
3. *SMAQMD has not recommended a standard level for regional CO emissions. The area has been in attainment for CO since 1990s.*

Source: Calculations/Modeling performed by AECOM, 2015

As Table 2-31 shows, comparison of the total estimated emissions from different project alternatives (including the No-Build alternative) indicate the following projected results.

- The results of emission calculations for the opening year 2020 show that compared with the No-Build alternative, the emissions of NOx under Alternatives 1 and 2 would decrease by 3 to 7 percent; all other criteria pollutants emissions would increase under the build alternatives, ranging from about 1 to 6 percent. However, Alternative 3 would result in a slight decrease in CO, PM_{10}, and $PM_{2.5}$ emissions.
- In the opening year 2020, Alternative 3 would result in operational emissions of VOC, CO, PM_{10}, and $PM_{2.5}$ that are 3 to 5 percent less than the Alternative 1 as a result of reduced VMT under Alternative 3. However, NO_X emissions under Alternative 3 would be approximately 6 percent greater than Alternative 1 because vehicles would operate at lower and less efficient speeds with one less general-use lane.
- The estimated emissions of criteria pollutants in the horizon year 2040 show that the emissions of NOx and CO from Alternatives 1 and 3 would slightly decrease while for other criteria pollutants and other alternatives emissions increase, ranging from about 1 to 5 percent, compared to the No-Build alternative.

- In the horizon year 2040, Alternative 3 would result in a 1 to 6 percent decrease in all criteria air pollutants compared to the Alternative 1 as a result of reduced VMT under Alternative 3.
- Table 2-31 presents comparison of operational emissions from Alternatives 1, 2, and 3 with the Alternative 4. As shown, the daily emissions of criteria pollutants for Alternatives 1, 2, and 3 are either lower than Alternative 4, or slightly higher. In addition, as Table 2-31 shows, the net change in daily emissions of criteria pollutants for Alternatives 1, 2, and 3 would be below the standard levels set by the SMAQMD.

Local Operation Impacts

Project-Level Conformity

The local analysis is commonly referred to as project-level air quality or hot-spot analysis. Project-level conformity is demonstrated by showing that it will not cause a localized exceedance of carbon monoxide and/or PM (PM_{10} and $PM_{2.5}$) standards, and that it will not interfere with "timely implementation" of transportation control measures called out in the SIP. The primary focus of the analysis is the operational impact on air quality created by the proposed improvements. The analysis is provided for CO, PM_{10}, and $PM_{2.5}$. The analysis years consist of the proposed project's opening year (2020) and the design or horizon year (2040) referenced in the approved plan, which represent the years when the project would impact the traffic conditions. The localized impact analysis (hot-spot analyses) can be qualitative or quantitative.

CO HOT-SPOT ANALYSIS:

Localized CO impacts from the project alternatives were evaluated following the 1997 CO Protocol. The CO Protocol has a screening exercise that would determine whether the project requires a qualitative or quantitative analysis, or whether no further analysis would be necessary. The screening exercise is included in the Air Quality Technical Study available from Caltrans.

Based on the screening analysis, the project would have the potential of worsening air quality during peak hours of traffic. Therefore, a CO quantitative hot-spot analysis was conducted at 4 ramp intersections, which according to the project traffic study, would have the highest traffic volume and worst peak hour level of service and delay. The analyzed intersections were also selected based on their proximity to residential sites.

Localized CO concentrations were estimated for the opening year (2020) and horizon year (2040) for Alternatives 1 and 2 and Alternative 4 using the CALINE4 dispersion model, developed by Caltrans. The modeling was performed in conjunction with emission factors from the CARB emission factor model EMFAC2011. It should be noted that the results would not change if EMFAC2014 are used, as the CO emission factors do not vary substantially between the two versions of EMFAC.

Background CO concentrations were taken from the nearest monitoring station to the project site, the Sacramento T Street Station, located at 1309 T Street, approximately 0.26 miles north of the project corridor. Because the air basin is in maintenance for CO standards, using the average ambient concentrations during the past 5 years at this monitoring station (i.e., 1-hour and 8-hour background concentrations of 2.8 ppm and 2.28 ppm, respectively) is appropriate for background concentrations for future years as well as the existing conditions. Receptor locations were placed 3 meters from each intersection corner, based on CO Protocol guidelines. Other modeling parameters used in CALINE4 based on CO Protocol guidelines include the following:

- Mixing height: 1,000 meters
- Stability class: 7 "G" (very stable atmosphere)
- Wind speed: 0.5 meter/second (minimum speed)

- Wind direction: Worst case (all wind directions in 10-degree increments)
- Surface roughness: 100 (default / suburban)
- 8-hour persistence factor: 0.7

The results of the analysis are provided in Tables 2-32 and 2-33 for opening year and horizon year, respectively.

Table 2-32. Localized CO Concentrations at the Affected Intersection with LOS F and Highest Traffic Volume – Opening Year 2020

Intersection	Peak Hour	1-hour Concentration (ppm)			8-hour Concentration (ppm)		
		Alt. 4	Alt. 1	Alt. 2	Alt. 4	Alt. 1	Alt. 2
15th Street and W Street / WB On-ramp	am	4.3	4.4	4.4	3.3	3.4	3.4
	pm	4.0	4.1	4.0	3.1	3.2	3.1
65th St and S St/US 50 WB Ramps	am	3.6	3.6	3.6	2.8	2.8	2.8
	pm	3.5	3.5	3.5	2.8	2.8	2.8
Howe Ave and US 50 WB Ramps	am	3.9	4.0	4.0	3.1	3.1	3.1
	pm	3.9	4.0	4.0	3.1	3.1	3.1
Jefferson Blvd and Park Blvd / I-80 Ramps	am	4.3	4.4	4.4	3.3	3.4	3.4
	pm	3.8	3.8	3.8	3.0	3.0	3.0
California Standard (ppm)		20			9		

ppm – parts per million; AM – morning peak hour; PM – afternoon peak hour; WB – westbound; EB – eastbound; NB - northbound

- Total CO concentrations include background 1-hour and 8-hour concentrations of 2.8 and 2.28 ppm, respectively, based on the maximum values recorded during the past 5 years at the Sacramento T Street monitoring station.
- Emission factors were obtained using EMFAC2011 model for Sacramento County and for winter (worst case for CO exhaust emissions).

Source: Calculations/Modeling performed by AECOM, 2015

Table 2-33. Localized CO Concentrations at the Affected Intersection with LOS F and Highest Traffic Volume – Horizon Year 2040

Intersection	Peak Hour	1-hour Concentration (ppm)			8-hour Concentration (ppm)		
		Alt. 4	Alt. 1	Alt. 2	Alt. 4	Alt. 1	Alt. 2
15th Street and W Street / WB On-ramp	am	3.5	3.6	3.5	2.8	2.8	2.8
	pm	3.5	3.6	3.6	2.8	2.8	2.8
65th St and S St/US 50 WB Ramps	am	3.3	3.3	3.3	2.6	2.6	2.6
	pm	3.3	3.3	3.3	2.6	2.6	2.6
Howe Ave and US 50 WB Ramps	am	3.4	3.5	3.5	2.7	2.8	2.8
	pm	3.6	3.6	3.6	2.8	2.8	2.8
Jefferson Blvd and Park Blvd / I-80 Ramps	am	3.6	3.6	3.6	2.8	2.8	2.8
	pm	3.4	3.5	3.5	2.7	2.8	2.8
California Standard (ppm)		20			9		

ppm – parts per million; AM – morning peak hour; PM – afternoon peak hour; WB – westbound; EB – eastbound; NB - northbound

- Total CO concentrations include background 1-hour and 8-hour concentrations of 2.8 and 2.28 ppm, respectively, based on the maximum values recorded during the past 5 years at the Sacramento T Street monitoring station.
- Emission factors were obtained using EMFAC2011 model for Sacramento County and for winter (worst case for CO exhaust emissions).

Source: Calculations/Modeling performed by AECOM, 2015

The results of localized CO analysis, shown in Tables 2-32 and 2-33, indicate that for all analyzed intersections, future predicted CO concentrations for horizon year (2040) are less than the opening year (2020) estimates. These reductions, even with projected regional growth and increased traffic,

are due to compliance with adopted regulations and control measures for mobile source emissions, such as improved vehicle engine efficiency, use of cleaner fuel in future fleet, and vehicle turnover.

Under CEQA, a project is considered to have significant impacts if it results in CO concentrations that exceed the 1-hour average State standard of 20 ppm (the 1-hour average Federal standard is 35 ppm), and/or the 8-hour average standard of 9.0 ppm. As shown in Tables 2-32 and 2-33, the estimated CO concentrations for Alternatives 1 and 2 would be less than 50 percent of the applicable standards in both 2020 and 2040. The modeled data show very little difference (a maximum of 0.28 ppm) between CO concentrations for Alternative 4 and Alternatives 1 and 2. The project would not have a considerable impact on 1- hour or 8-hour local CO concentrations at the intersections with the highest traffic volumes; subsequently, under CEQA, no significant effect is anticipated to occur at any other locations in the study area.

Based on the above analysis, the maximally affected intersections under Alternatives 1 and 2 would satisfy the project-level conformity for CO emissions. Therefore, it is not anticipated that implementation of the proposed project would generate CO concentrations at intersections that would exceed the 1- or 8-hour ambient air quality standards.

Alternative 3 was not considered and included for CO analysis because total emissions would be slightly less than no-build scenario based on the result of EMFAC 2014 (Table 2-31).

PARTICULATE MATTER (PM) HOT SPOT ANALYSIS:

The proposed project is within a federal nonattainment area for fine particulate matter ($PM_{2.5}$) and attainment/maintenance area for respirable particulate matter (PM_{10}). As described earlier, in March 2006 the EPA issued the final Transportation Conformity Rule (40CFR 51.390 and Part 93) that addresses local air quality impacts in PM_{10} and $PM_{2.5}$ nonattainment and maintenance areas. The final rule requires a hot spot analysis to be performed for a project of local air quality concern (POAQC) or any other project identified by the $PM_{2.5}$ and PM_{10} SIP as a POAQC. Further, in November 2013, EPA released its updated guidance document: *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.* The rule and the guidance documents provide criteria and procedures to ensure that such projects will not cause or contribute to new violations, increase the frequency or severity of any existing violations, or delay timely attainment of the relevant NAAQS as described in 40 CFR 93.101.

Section 40 CFR 93.123(b)(1) of the Transportation Conformity Rule defines types of projects that are considered a POAQC including the following:

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as sites of violation or possible violation.

In addition, the *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* also describes projects that are not considered a local air quality concern under 40 CFR 93.123(b)(1)(i) and (ii). The project would be consistent with the following definition:

- Any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F.

The US 50 HOV project falls within the category of new or expanded highway projects that do not involve a significant number or increase in the number of diesel vehicles. The previous 2006 *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* defined significant diesel volumes as being 8% of annual average daily traffic (EPA 2006b). The 2040 horizon year average annual daily traffic (AADT), along some segments of US 50 Highway within the project limits are projected to be above 150,000 average daily traffic, as shown in Table 2-34. The average diesel truck percentage along segments of US 50 within the project limit (see Table 2-35) range from 3.4% to 7.5% in 2040. This is less than the percentage of diesel trucks (i.e., 8%) considered to be significant pursuant to the PM Guidance. Furthermore, the projected fleet mix will not change significantly through the horizon year.

Implementation of the proposed project is anticipated to increase VMT on the affected portion of US 50; however, roadway projects such as the proposed project would not generate more diesel truck traffic and segments would operate at a higher LOS. The proposed project is not a land use that would require additional diesel truck traffic as part of its operation. Therefore, the proposed project is not considered to have a significant amount of diesel truck traffic and would not increase diesel truck traffic along the affected portions of US 50.

According to the PM Guidance, the project would not be a POAQC and would not increase the potential for a PM hot spot. The project will also affect several intersections with LOS E and F; however, there is not a considerable LOS change between Alternative 4 and Alternatives 1 and 2. Implementation of the proposed project would not degrade intersections to LOS D, E, or F with a significant number of diesel vehicles. In addition, the project does not include the construction of a new bus or rail terminal, nor expand an existing bus or rail terminal. Finally, the proposed project is not located within and would not affect sites that are identified as sites of possible $PM_{2.5}$ violations pursuant to the $PM_{2.5}$ applicable implementation plan.

On April 27, 2016, SACOG's Project Level Conformity Group determined that the project (CAL18838) was <u>not</u> a Project of Air Quality Concern (POAQC). The USEPA concurred on April 20th and FHWA concurred on April 25th. A copy of the POAQC email is available from Ken Lastufka, Caltrans Associate Environmental Planner (ken_lastufka@dot.ca.gov).

Table 2-34. Average Daily Traffic and Truck Traffic along the US 50 Studied Segments for Base Year (2013), and Horizon Year (2040)

Roadway Segment	Base Year	No Project	Add HOV Lane				Add Mixed Lane			
	ADT	ADT	ADT	%Truck	Truck ADT	Change in Truck ADT from No Project	ADT	%Truck	Truck ADT	Change in Truck ADT from No Project
Eastbound US 50 -- Segment between										
Jeffereson Blvd On and Off Ramps	62,629	71,553	69,715	7.3%	5,103	-71	69,654	7.3%	5,112	-62
Jeffereson Blvd On Ramp and S. River Rd On Ramp	82,292	103,315	89,736	7.3%	6,545	-932	89,726	7.3%	6,588	-889
Jefferson Blvd and I-5 Connectors	91,639	113,296	120,461	7.3%	8,786	587	120,537	7.3%	8,850	651
Connector to I-5 and 5th St Off Ramp	65,740	83,586	88,785	7.3%	6,475	426	88,895	7.3%	6,527	478
5th St Off Ramp and Connectors from I-5	62,013	74,921	81,866	7.3%	5,971	549	81,915	7.3%	6,013	591
Connectors from I-5 and 10th St	126,714	147,649	**155,493**	7.5%	**11,676**	551	**155,630**	7.6%	**11,768**	643
15th St Off Ramp and 10th St On Ramp	119,015	142,511	148,351	7.5%	**11,165**	453	148,678	7.5%	**11,213**	501
15th St & 16th St	128,618	**156,408**	**161,638**	7.1%	**11,464**	389	**161,856**	7.1%	**11,484**	408
16th St & Connectors to SR 51 & 99	149,830	**175,498**	**183,030**	6.8%	**12,446**	493	**183,424**	6.8%	**12,499**	546
Connectors to SR 51 & 99 and 26th St On Ramp	83,088	104,908	111,801	6.8%	7,609	432	112,078	6.8%	7,606	429
26th St On Ramp and 34th St Off Ramp	87,409	114,028	121,321	6.4%	7,742	396	121,574	6.4%	7,743	397
34th St and Connectors from SR 51 & 99	73,566	100,155	106,031	6.4%	6,767	304	106,267	6.4%	6,782	319
Connectors from SR 51 & 99 and Stockton Blvd	91,207	121,940	129,624	5.5%	7,155	414	129,686	5.6%	7,199	457
Stockton Blvd and 59th St	97,255	128,960	136,364	5.3%	7,289	422	136,503	5.4%	7,332	465
59th St and 65th St	90,263	119,188	127,278	5.3%	6,800	462	127,679	5.4%	6,865	527
65th St Off Ramp and 65th St Loop On Ramp	81,627	108,813	115,429	5.3%	6,166	387	115,613	5.4%	6,218	439
65th St Loop On Ramp and 65th St On Ramp	88,391	116,559	125,512	5.2%	6,538	496	125,703	5.2%	6,591	549
65th St and Howe Ave / Hornet Dr	95,678	126,681	133,413	4.9%	6,570	366	133,639	5.0%	6,617	412
Howe Ave Off Ramp and Howe Ave Loop On Ramp	71,652	93,761	97,676	4.9%	4,826	216	97,411	5.0%	4,823	213
Howe Ave Loop On Ramp and Howe Ave On Ramp	82,952	105,446	109,652	4.8%	5,283	190	109,411	4.9%	5,352	258
Howe Ave and Watt Ave	92,580	115,659	119,840	5.0%	6,001	169	119,644	5.1%	6,097	265
Watt Ave Off and On Ramps	77,154	105,171	108,474	5.0%	5,465	141	108,365	5.1%	5,528	204
Watt Ave and Bradshaw Rd	80,765	132,165	135,073	4.9%	6,660	176	135,015	5.0%	6,723	239
Westbound US 50 -- Segment between										
Watt Ave and Bradshaw Rd	81,331	127,013	130,282	3.7%	4,835	-21	130,336	3.7%	4,820	-36
Watt Ave Off and On Ramps	77,099	104,654	108,186	3.7%	3,984	-16	108,192	3.7%	3,977	-24
Watt Ave Loop On Ramp and Watt Ave Slip On Ramp	84,070	110,190	115,357	4.0%	4,603	23	115,365	4.0%	4,604	24
Watt Ave and Howe Ave	97,847	122,927	127,783	3.9%	5,022	83	127,716	4.0%	5,046	107
Howe Ave Off Ramp and Howe Ave On Ramp Ramp	75,314	96,480	101,257	3.9%	3,972	100	101,230	3.9%	3,974	103
Howe Ave Loop On Ramp and Howe Ave Slip On Ramp	84,604	108,754	114,364	4.1%	4,713	143	114,748	4.1%	4,712	141
Howe Ave and Hornet Dr	92,487	116,270	122,531	4.1%	5,026	170	123,011	4.1%	5,088	232
Hornet Dr and 65th St	99,323	128,967	135,751	4.1%	5,560	253	135,964	4.1%	5,619	312
65th St Off Ramp and 65th St Loop On Ramp	81,673	107,168	113,824	4.1%	4,678	270	113,959	4.1%	4,723	315
65th St Loop On Ramp and 65th St Slip On Ramp	82,916	110,091	119,681	4.0%	4,842	387	120,104	4.1%	4,905	450
65th St and 59th St	85,832	112,720	120,929	4.0%	4,788	337	121,347	4.0%	4,858	408
59th St and Stockton Blvd	95,999	125,186	132,557	3.9%	5,112	286	132,865	3.9%	5,202	376
Stockton Blvd Off and On Ramps	88,481	115,761	123,218	4.1%	5,087	621	123,466	4.5%	5,611	1,145
Stockton Blvd and Connectors to SR 51 & 99	99,637	126,265	133,384	3.7%	4,976	353	133,709	3.8%	5,060	437
Connectors to SR 51 and SR 99	93,563	118,133	124,669	3.7%	4,632	317	125,025	3.8%	4,721	405
Connector to SR 99 and 26th St Off	81,082	104,240	109,648	3.7%	4,094	303	109,933	3.8%	4,149	358
26th St and Connectors from SR 51 & 99	73,801	80,387	85,762	3.7%	3,194	272	85,914	3.8%	3,243	320
Connectors from SR 99 & SR 51	135,905	145,149	149,974	3.7%	5,506	373	**150,286**	3.7%	5,615	482
Connectors from SR 51 & 99 and 16th St	135,905	145,149	149,974	3.7%	5,477	375	**150,286**	3.7%	5,526	424
16th St and 15th St	125,362	142,801	145,481	3.7%	5,339	302	147,689	3.7%	5,429	393
10th St Off and 15th St On Ramp	115,966	139,293	142,037	3.7%	5,188	299	142,303	3.7%	5,203	313
10th St and Connectors to I-5	132,740	**157,288**	**162,194**	3.5%	5,697	374	**162,326**	3.5%	5,741	418
Connectors to I-5 and 5th St	66,775	92,074	94,911	3.6%	3,378	288	94,931	3.5%	3,330	240
5th St and Connectors from I-5	69,690	92,074	94,911	3.4%	3,246	243	94,931	3.4%	3,197	194
Connectors from I-5 and Jefferson Blvd	91,596	121,617	123,263	4.3%	5,249	251	123,277	4.2%	5,155	157

Table 2-35. Comparison of Average Daily Traffic Truck Percentage (Opening Year 2020 and Horizon Year 2040)

Location		Truck Percentage					Change in Truck Percentages			Truck Percentage				Change in Truck Percentages		
		2013	2020 - Opening Year							2040 - Horizon Year						
		Base Year No Project	No Project	Add HOV Lane	Add Mixed Flow Lane	Take-a-Lane	Add HOV Lane	Add Mixed Flow Lane	Take-a Lane	No Project	Add HOV Lane	Add Mixed Flow Lane	Take-a-Lane	Add HOV Lane	Add Mixed Flow Lane	Take-a Lane
	EB US 50 Mainline b/w Jefferson Blvd and I-5 Connectors	7.3%	7.3%	7.3%	7.3%	7.3%	0.027%	0.044%	0.026%	7.2%	7.3%	7.3%	7.3%	0.089%	0.108%	0.091%
	EB US 50 Mainline b/w Connector to I-5 and 5th St Off	7.4%	7.2%	7.3%	7.3%	7.4%	0.065%	0.060%	0.158%	7.2%	7.3%	7.3%	7.4%	0.056%	0.105%	0.114%
	EB US 50 Mainline b/w 5th St Off and Connectors from I-5	7.4%	7.2%	7.3%	7.3%	7.4%	0.088%	0.077%	0.165%	7.2%	7.3%	7.3%	7.3%	0.056%	0.103%	0.106%
	EB US 50 Mainline b/w Connectors from I-5 and 10th St	7.7%	7.6%	7.7%	7.6%	7.7%	0.062%	0.010%	0.097%	7.5%	7.5%	7.6%	7.5%	-0.026%	0.027%	0.002%
	EB US 50 Mainline b/w 10th St and 15th St	7.7%	7.6%	7.7%	7.6%	7.7%	0.085%	0.017%	0.104%	7.5%	7.5%	7.5%	7.5%	0.009%	0.025%	0.017%
	EB US 50 Mainline b/w 15th St & 16th St	7.2%	7.2%	7.2%	7.2%	7.3%	0.067%	0.012%	0.087%	7.1%	7.1%	7.1%	7.1%	0.011%	0.014%	0.021%
	EB US 50 Mainline b/w 16th St & Connectors to SR 51 & 99	7.0%	6.9%	7.0%	6.9%	7.0%	0.057%	0.002%	0.083%	6.8%	6.8%	6.8%	6.8%	-0.011%	0.003%	0.008%
	EB US 50 Mainline b/w Connectors to SR 51 & 99 and 26th St On	7.0%	6.9%	7.0%	6.9%	7.0%	0.050%	0.000%	0.059%	6.8%	6.8%	6.8%	6.8%	-0.036%	-0.055%	-0.044%
	EB US 50 Mainline b/w 26th St On and 34th St Off	6.5%	6.5%	6.6%	6.5%	6.6%	0.040%	-0.015%	0.039%	6.4%	6.4%	6.4%	6.3%	-0.060%	-0.073%	-0.095%
	EB US 50 Mainline b/w 34th St and Connectors from SR 51 & 99	6.5%	6.5%	6.6%	6.5%	6.6%	0.046%	-0.015%	0.050%	6.5%	6.4%	6.4%	6.3%	-0.071%	-0.071%	-0.109%
	EB US 50 Mainline b/w Connectors from SR 51 & 99 and Stockton Blvd	5.6%	5.6%	5.6%	5.6%	5.6%	0.061%	0.008%	0.028%	5.5%	5.5%	5.6%	5.5%	-0.009%	0.022%	-0.039%
	EB US 50 Mainline b/w Stockton Blvd and 59th St	5.4%	5.4%	5.4%	5.4%	5.4%	0.050%	0.021%	0.018%	5.3%	5.3%	5.4%	5.3%	0.020%	0.046%	-0.033%
	EB US 50 Mainline b/w 59th St and 65th St	5.4%	5.4%	5.4%	5.4%	5.4%	0.049%	0.036%	0.019%	5.3%	5.3%	5.4%	5.3%	0.025%	0.059%	-0.040%
	EB US 50 Mainline b/w 65th St Off and 65th St Loop On	5.4%	5.4%	5.4%	5.4%	5.4%	0.049%	0.051%	0.028%	5.3%	5.3%	5.4%	5.3%	0.031%	0.067%	-0.021%
	EB US 50 Mainline b/w 65th St Loop On and 65th St On	5.2%	5.2%	5.3%	5.3%	5.3%	0.057%	0.062%	0.039%	5.2%	5.2%	5.2%	5.2%	0.026%	0.060%	-0.023%
	EB US 50 Mainline b/w 65th St and Howe Ave / Hornet Dr	5.0%	5.0%	5.0%	5.0%	5.0%	0.051%	0.057%	0.033%	4.9%	4.9%	5.0%	4.9%	0.027%	0.053%	-0.015%
	EB US 50 Mainline b/w Howe Ave Off and Howe Ave Loop On	5.0%	5.0%	5.0%	5.1%	5.0%	0.010%	0.057%	-0.002%	4.9%	4.9%	5.0%	4.9%	0.024%	0.035%	-0.014%
	EB US 50 Mainline b/w Howe Ave Loop On and Howe Ave On	4.9%	4.9%	4.9%	5.0%	4.9%	0.032%	0.080%	0.007%	4.8%	4.8%	4.9%	4.8%	-0.012%	0.061%	-0.022%
	EB US 50 Mainline b/w Howe Ave and Watt Ave	5.1%	5.1%	5.1%	5.1%	5.1%	0.036%	0.053%	0.007%	5.0%	5.0%	5.1%	5.0%	-0.035%	0.054%	-0.001%
	EB US 50 Mainline b/w Watt Ave Off/On Ramps	5.1%	5.1%	5.1%	5.1%	5.1%	0.023%	0.032%	-0.006%	5.1%	5.0%	5.1%	5.0%	-0.024%	0.039%	-0.015%
	EB US 50 Mainline b/w Watt Ave and Bradshaw Rd	4.9%	5.0%	5.0%	5.0%	5.0%	0.019%	0.032%	0.006%	4.9%	4.9%	5.0%	4.9%	0.024%	0.073%	0.016%
WB	WB Mainline b/w Watt Ave and Bradshaw Rd	3.8%	3.7%	3.6%	3.8%	3.6%	-0.078%	0.066%	-0.074%	3.8%	3.7%	3.7%	3.8%	-0.112%	-0.125%	-0.035%
	WB Mainline b/w Watt Ave Off/On Ramps	3.8%	3.7%	3.6%	3.8%	3.6%	-0.085%	0.051%	-0.086%	3.8%	3.7%	3.7%	3.8%	-0.140%	-0.147%	-0.057%
	WB Mainline b/w Watt Ave Loop On and Watt Ave Slip On	4.1%	4.0%	4.0%	4.1%	3.9%	-0.082%	0.047%	-0.095%	4.2%	4.0%	4.0%	4.2%	-0.166%	-0.166%	0.008%
	WB Mainline b/w Watt Ave and Howe Ave	4.0%	4.0%	3.9%	4.0%	3.9%	-0.066%	0.049%	-0.076%	4.0%	3.9%	4.0%	4.0%	-0.088%	-0.067%	-0.015%
	WB Mainline b/w Howe Ave Off and Howe Ave On	4.0%	4.0%	3.9%	4.0%	3.9%	-0.058%	0.066%	-0.088%	4.0%	3.9%	3.9%	4.0%	-0.091%	-0.087%	-0.024%
	WB Mainine b/w Howe Ave Loop On and Howe Ave Slip On	4.2%	4.1%	4.1%	4.2%	4.1%	-0.026%	0.067%	-0.040%	4.2%	4.1%	4.1%	4.2%	-0.081%	-0.097%	-0.014%
	WB Mainline b/w Howe Ave and Hornet Dr	4.2%	4.1%	4.1%	4.2%	4.1%	-0.010%	0.073%	-0.027%	4.2%	4.1%	4.1%	4.1%	-0.075%	-0.040%	-0.043%
	WB Mainline b/w Hornet Dr and 65th St	4.1%	4.1%	4.1%	4.1%	4.0%	-0.008%	0.045%	-0.034%	4.1%	4.1%	4.1%	4.1%	-0.019%	0.018%	-0.031%
	WB Mainline b/w 65th St Off and 65th St Loop On	4.1%	4.1%	4.1%	4.1%	4.0%	-0.008%	0.041%	-0.052%	4.1%	4.1%	4.1%	4.1%	-0.003%	0.031%	-0.026%
	WB Mainline b/w 65th St Loop On and 65th St Slip On	4.0%	4.0%	4.0%	4.1%	4.0%	-0.011%	0.039%	-0.060%	4.0%	4.0%	4.1%	4.0%	0.000%	0.038%	-0.015%
	WB Mainline b/w 65th St and 59th St	4.0%	4.0%	3.9%	4.0%	3.9%	-0.011%	0.030%	-0.060%	3.9%	4.0%	4.0%	3.9%	0.011%	0.056%	-0.009%
	WB Mainline b/w 59th St and Stockton Blvd	3.9%	3.9%	3.9%	3.9%	3.8%	-0.020%	0.022%	-0.074%	3.9%	3.9%	3.9%	3.8%	0.002%	0.060%	-0.015%
	WB Mainline b/w Stockton Blvd Off/On Ramps	3.9%	3.9%	3.9%	3.9%	3.8%	-0.026%	0.016%	-0.082%	3.9%	4.1%	4.5%	3.8%	0.271%	0.687%	-0.015%
	WB Mainline b/w Stockton Blvd and Connectors to SR 51 & 99	3.7%	3.7%	3.7%	3.8%	3.7%	-0.027%	0.023%	-0.084%	3.7%	3.7%	3.8%	3.7%	0.069%	0.123%	0.001%
	WB Mainline b/w Connectors to SR 51 and SR 99	3.7%	3.7%	3.7%	3.8%	3.7%	-0.036%	0.020%	-0.087%	3.7%	3.7%	3.8%	3.7%	0.063%	0.123%	0.004%
	WB Mainline b/w Connector to SR 99 and 26th St Off	3.7%	3.7%	3.7%	3.8%	3.6%	-0.051%	0.011%	-0.098%	3.6%	3.7%	3.8%	3.7%	0.097%	0.137%	0.015%
	WB Mainline b/w 26th St and Connectors from SR 51 & 99	3.7%	3.8%	3.7%	3.7%	3.7%	-0.081%	-0.031%	-0.115%	3.6%	3.7%	3.8%	3.7%	0.089%	0.139%	0.020%
	WB Mainline b/w Connectors from SR 99 & SR 51	3.6%	3.7%	3.6%	3.6%	3.6%	-0.062%	-0.020%	-0.092%	3.5%	3.7%	3.7%	3.6%	0.135%	0.200%	0.054%
	WB Mainline b/w Connectors from SR 51 & 99 and 16th St	3.6%	3.6%	3.6%	3.6%	3.6%	-0.065%	-0.032%	-0.087%	3.5%	3.7%	3.7%	3.6%	0.137%	0.162%	0.065%
	WB Mainline b/w 16th St and 15th St	3.6%	3.6%	3.6%	3.6%	3.6%	-0.061%	-0.025%	-0.081%	3.5%	3.7%	3.7%	3.6%	0.143%	0.149%	0.057%
	WB Mainline b/w 10th St Off and 15th St On	3.6%	3.6%	3.6%	3.6%	3.5%	-0.060%	-0.021%	-0.072%	3.5%	3.7%	3.7%	3.6%	0.143%	0.146%	0.057%
	WB Mainline b/w 10th St and Connectors to I-5	3.5%	3.5%	3.5%	3.5%	3.5%	-0.060%	-0.027%	-0.066%	3.4%	3.5%	3.5%	3.4%	0.128%	0.152%	0.065%
	WB Mainline b/w Connectors to I-5 and 5th St	3.5%	3.5%	3.4%	3.5%	3.4%	-0.084%	-0.003%	-0.066%	3.4%	3.6%	3.5%	3.4%	0.203%	0.152%	0.062%
	WB Mainline b/w 5th St and Connectors from I-5	3.4%	3.4%	3.3%	3.4%	3.3%	-0.067%	0.014%	-0.066%	3.3%	3.4%	3.4%	3.3%	0.159%	0.107%	0.023%
	WB Mainline b/w Connectors from I-5 and Jefferson Blvd	4.3%	4.3%	4.2%	4.3%	4.2%	-0.042%	0.028%	-0.039%	4.1%	4.3%	4.2%	4.1%	0.149%	0.072%	0.009%

Mobile Source Air Toxics

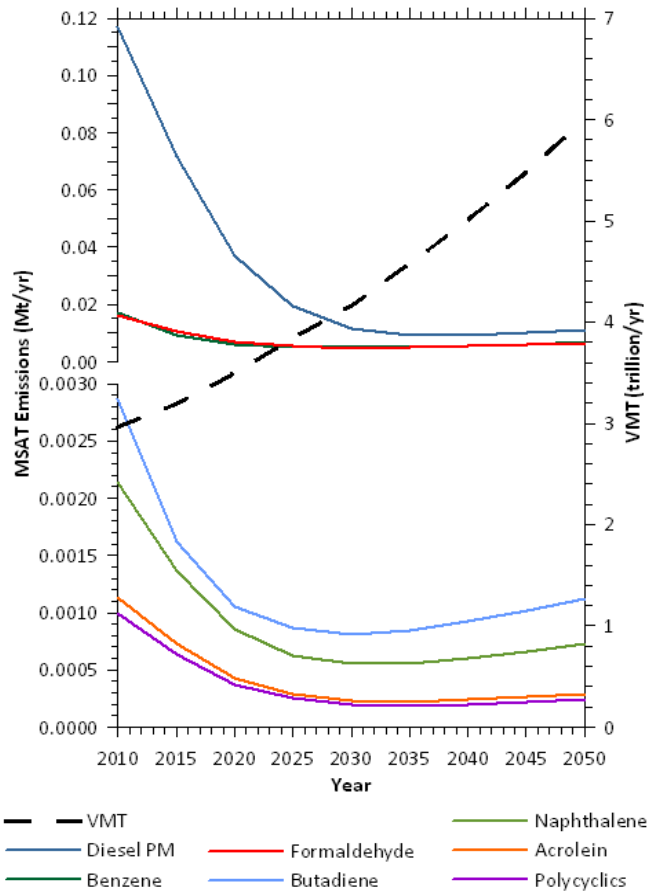
As described earlier, control of TAC is required by federal, state and local regulations. The air districts currently provide rules and policies that are designed to evaluate and minimize TACs from land use projects. Because the main sources of project toxics emissions are mobile sources, the methodology and information used for analyzing project MSATs were employed from FHWA and Caltrans.

In February 2006, FHWA issued its FHWA Interim Guidance (FHWA 2006b) to advise when and how to analyze MSATs in the NEPA process for highways. However, USEPA recommends following its report: *Analyzing, Documenting, and Communicating the Impacts of Mobile Source Air Toxic Emissions in the NEPA Process* (AASHTO 2007). In September 2009, FHWA released an update to the FHWA Interim Guidance (2009 Guidance, [FHWA 2009]). The 2009 Guidance did not change any project analysis thresholds, recommendations, or guidelines; however, seven updated primary MSATs were identified as having considerable contributions from mobile sources that are among the national- and regional-scale cancer risk drivers. In December 2012, FHWA released Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA, as an update to the 2009 FHWA Interim Guidance (2012 Guidance, [FHWA 2012]).

The 2012 Guidance document reflects recent changes in methodology for conducting emissions analysis and updates of research in the MSAT arena. The interim guidance update reflects recent regulatory changes, addresses stakeholder requests to broaden the horizon years of emission trends, and updates stakeholders on the status of scientific research on air toxics. The guidance is described as interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance accordingly. The 2012 update supersedes the September 2009 Interim Guidance and should be referenced in air quality analyses. This analysis follows the most recent FHWA guidance update (i.e., 2012 Guidance).

As previously discussed, several studies have concluded that mobile sources (i.e., on-road and non-road combined) are responsible for most of the excess cancer risk associated with exposure to urban air toxics. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. Currently, the tools and techniques for assessing project-specific health impacts from MSATs are limited. Furthermore, neither EPA nor CARB have established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process. For the same reason, states are neither required to achieve an identified level of air toxics in the ambient air nor identify air toxics reduction measures in the SIP. Developing strategies for reduction of MSATs is a cooperative effort between federal and local authorized agencies. The CAA provides EPA with the authority to establish and regulate emission standards for engines and vehicles. The State of California also has certain rights to adopt its own emission regulations, which are often more stringent than the federal rules. To reduce mobile source emissions, mandatory and incentive-based programs are developed in conjunction with new engine emission regulations; additional emission testing requirements (i.e., supplemental emission test [SET], not-to-exceed [NTE] limits); and limiting fuel sulfur content. These programs are implemented by all levels of government: federal, state, and local. Currently, FHWA's most recent interim guidance update (FHWA, 2012) is used for analysis of potential impacts of MSATs to be included in environmental documents.

The 2007 EPA rule (Control of Hazardous Air Pollutants from Mobile Sources [Federal Register, Vol. 72, No. 37, Page 8430, February 20, 2007]), require controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis, even if VMT increases by 102% as assumed from 2010 to 2050, a combined reduction of 83% in the total annual emissions for the priority MSAT is projected for the same time period, as shown in Figure 2-3.



Source: FHWA, 2012

Figure 2-3. National MSAT Emission Trends 2010 – 2050 for Vehicles Operating on Roadways

California's vehicle emission control and fuel standards are more stringent than federal standards and are effective sooner, so the effect of combined state and federal regulations is expected to result in greater reduction of MSATs in earlier time than the FHWA analysis predict.

Incomplete or Unavailable Information for Project Specific MSAT Health Impact Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The USEPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The USEPA continually assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's *Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents*. Among the adverse

health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Web site, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Assessment of the Proposed Project MSAT Effects

Based on the FHWA's tiered approach in their 2012 Guidance, the proposed project does not meet the Category 1 criteria for projects with no potential for meaningful MSAT effects. Segments of US 50 that would be affected by the proposed project operate above the AADT levels of 140,000 to 150,000 daily vehicle trips. For some segments of US 50 within the project corridor, in horizon year 2040, the maximum ADT for Alternative 4 is 175,500, and Alternatives1 and 2 result in a maximum ADT of 183,000. The average ADT increase on US 50 within the project corridor from Alternative 4, as a result of Alternatives 1 and 2 would be 4.4% and 4.5% , respectively. Alternative 3 would result in an average ADT decrease of 0.5% along the project corridor from Alternative 4 and a 4.6% decrease in average ADT from Alternative 1. Only two segments of US 50 in the project corridor show an increase of approximately 9% for the add HOV lane alternative. However, overall VMT within the project corridor would increase by approximately 4.4% as a result of Alternatives 1 and 2. The proposed project would add HOV or mixed lanes and serve to improve operations of highway within the project corridor (i.e., reduced congestion and improved average speed compared with no build scenario); however, without creating a facility that is likely to increase MSAT emissions considerably, as discussed below.

The description of the proposed project is consistent with Category 2 projects that would require qualitative analysis for projects with low potential MSAT effects. However, since the traffic volumes with the proposed project would be greater than the FHWA criteria of 140,000 to 150,000 AADT, and there are residential uses in proximity of some segments of the project corridor, this analysis includes quantification of MSAT emissions.

For each alternative in this analysis, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The traffic volumes and subsequent VMT estimated for Alternatives 1 and 2 are slightly higher than those for Alternative 4, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network (e.g., local roadways).

ANALYSIS OF MSATS

A quantitative mass daily emission analysis was performed for the seven air toxics that are identified as priority MSATs by the EPA. The EMFAC2014 model and the latest version of the Caltrans program CT-EMFAC (Version 5.0, Sonoma Technology, Inc., 2013) were used to estimate and compare the priority MSAT emissions from the project alternatives, including Alternative 4. Because the latest CT-EMFAC (Version 5.0), at the time of preparation of this report was based on EMFAC2011, adjustments of MSAT emission rates were implemented to reflect EMFAC2014 model data and emission rates.

Analysis Results

Table 2-36 and Figures 2-4 and 2-5 present the estimated emissions of priority MSATs from operations of Alternatives 1, 2, and 3. The projected data are presented for the existing conditions (2013), and project alternatives in Opening Year (2020) and Horizon Year (2040).

As the estimated data in Table 2-36 and Figures 2-4 and 2-5 show, a considerable decrease in MSAT emissions can be expected for the proposed project alternatives from the base year (2013) through future years. This decrease is prevalent for all of the priority MSATs, and is consistent with EPA's study that projects MSAT emissions will decline markedly in the future. This is directly due to the improved pollution emission performance of a modernizing fleet of all diesel- and gasoline-fueled vehicles, which is a trend that is anticipated to continue throughout the planning horizon. This is consistent with the FHWA projected trend, shown in Figure 2-3.

Table 2-36. Priority MSATs Emissions for the Project Corridor (pounds per day)								
Year	Scenario	Benzene	Acrolein	Formaldehyde	Butadiene	Naphthalene	POM	Diesel PM
2013	Baseline	18.21	0.59	16.40	2.66	5.66	0.75	55.78
2020	Alternative 4	8.79	0.23	7.13	1.05	1.69	0.21	11.07
	Alternative 1	9.28	0.26	7.22	1.14	1.72	0.21	10.72
	Alternative 2	9.22	0.25	7.27	1.12	1.74	0.22	11.07
	Alternative 3	8.82	0.24	7.02	1.06	1.70	0.21	11.19
2040	Alternative 4	4.90	0.13	4.72	0.58	0.55	0.06	1.71
	Alternative 1	5.34	0.15	4.73	0.65	0.58	0.07	1.80
	Alternative 2	5.32	0.14	4.84	0.65	0.59	0.07	1.90
	Alternative 3	5.02	0.13	4.64	0.60	0.55	0.06	1.81
Project Increment (change from No Build Scenario)								
2020	Alternative 1	0.49	0.02	0.09	0.09	0.03	0.0	-0.35
	Alternative 2	0.43	0.02	0.13	0.07	0.05	0.01	-0.01
	Alternative 3	0.03	0.01	-0.11	0.01	0.01	0.0	0.12
2040	Alternative 1	0.44	0.02	0.01	0.07	0.03	0.01	0.10
	Alternative 2	0.43	0.01	0.12	0.06	0.03	0.01	0.20
	Alternative 3	0.12	0.0	-0.08	0.02	0.0	0.0	0.10

Notes: POM – polycyclic organic matter;
Values may not add exactly, due to rounding.

Source: Calculations/Modeling performed by AECOM, 2015

- For Alternatives 1 and 2, a slight increase in MSAT emissions are estimated compared with the No Project alternative. Because these alternatives would add lanes to US 50, the traffic volumes and VMT within the project corridor would increase.
- For the studied corridor of US 50, Alternatives 1 and 2 would be comparable in level of MSAT emissions. It should be noted that the projected emissions were modeled with the assumption that the amount of MSATs emitted would be proportional to the VMT and would vary based on average vehicle speed of daily traffic. Other variables such as fleet mix, fleet turnover, and emission standards are assumed to stay constant for each alternative.
- Alternative 3 would also result in a net increase in most MSATs compared to the No Build alternative, except for Formaldehyde, which would decrease in opening year 2020 and horizon year 2040, and Acrolein and Napthalene, which would remain equal to the No Project alternative in 2040. However, when compared to Alternative 1, Alternative 3 would result a decrease in all MSATs for opening year 2020 and horizon year 2040.

In summary, regardless of the design option and alternative selected, the analysis determined that, consistent with the EPA projections, emission levels of all seven primary MSATs would continue a downward trend from existing conditions through the future years. Comparison of the data in Table 2-37 and Figures 2-4 and 2-5 indicates that even with an increase in traffic volume (and VMT), MSAT emissions would continue to decline from opening year (2020) to horizon year (2040).

Figure 2-4. Estimated Emissions of Priority MSATs Benzene, Formaldehyde, Diesel PM, and Butadiene Alternatives 1 and 2 and Scenarios: Base Year (2013), Opening Year (2020) and Horizon Year (2040)

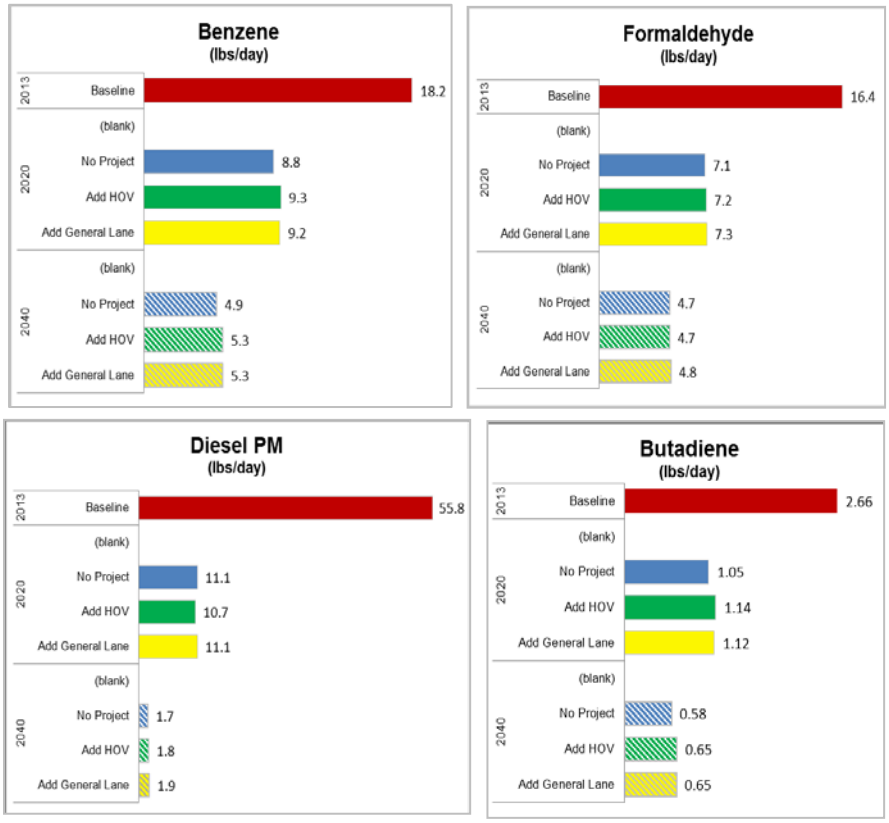
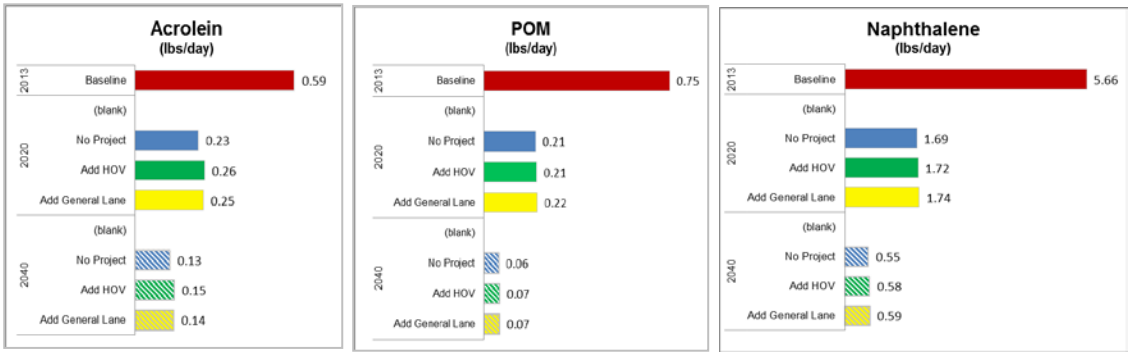


Figure 2-5. Estimated Emissions of Priority MSATs Acrolein, and Polycyclic Organic Matter (POM), and Naphthalene for Alternatives 1 and 2 and Scenarios: Base Year (2013), Opening Year (2020) and Horizon Year (2040)



The change in MSAT emission levels associated with Alternatives 1 and 2 from Alternative 4 would be less than 5% for all MSATS except for benzene. For diesel PM, Alternatives 1 and 2 in the opening year (2020) would result in slight decreases from Alternative 4, while Alternative 3 would result in a net increase from the Alternative 4. In the horizon year (2040), Alternatives 1, 2 and 3 would result in net increases of diesel PM emissions from Alternative 4. Benzene emissions associated with Alternatives 1 and 2 would range from 5% to 9% higher than Alternative 4 in opening (2020) and horizon years (2040). Under Alternative 3, benzene emissions would only increase approximately 0.3% and 2% from Alternative 4 in opening (2020) and horizon (2040) years, respectively.

It should be noted that the considerable decrease in DPM data is due to the fact that the EMFAC2014 model has incorporated revisions in PM emissions (and emission factors) based on the projected increase in use of clean cars and PM filters (that have been found to be more effective than originally projected in EMFAC2011) into the future years' emission estimations.

Furthermore, as discussed above, the study of mobile source air toxics, dose-response effects, and modeling tools are currently in a state where accurate information is unavailable or incomplete. This is relevant to making a viable prediction of any reasonably foreseeable adverse effects on the human environment. Studies are currently being conducted to clarify some of these unknowns; however, the information is not yet available.

Construction Impacts

Under NEPA, for projects having a construction schedule less than 5 years, air emissions are considered temporary with no potential adverse effect. Based on this criterion, quantitative estimation of construction emissions is not required by Caltrans and FHWA for the proposed project, which has an estimated construction schedule of approximately 15 months. However, for the purposes of full disclosure, a quantitative analysis of construction emissions was conducted to demonstrate the project CEQA impact.

Construction Emissions

Construction of the project has the potential to create temporary air quality impacts through the use of heavy-duty construction equipment within the construction site, and through vehicle trips generated from haul trucks and construction workers traveling to and from the project site. In addition, fugitive dust emissions would result from earthwork (e.g., grading, excavation) and on-site construction activities. Off-road (on-site) mobile source emissions, primarily NOx and CO, would result from the use of construction equipment such as excavators, bulldozers, and loaders. During paving operations asphalt application would release reactive organic compounds. Construction emissions can vary substantially from day to day, depending on the level of activity; the specific mix of construction equipment; and, for dust, the prevailing weather conditions.

Construction-related emissions of criteria pollutants were estimated using the *Road Construction Emission Model, Version 7.1.5.1* (the latest updated version, which was released in December 2013). The model was developed for the SMAQMD and approved by the CARB. Table 2-37 summarizes the calculated mass daily emissions (in pounds per day) and the annual emissions (in tons) for comparison with the SMAQMD limits on pollutant emission levels from projects construction activities. As shown in Table 2-37, the maximum daily emissions of pollutants from construction activities do not exceed the SMAQMD's standard levels.

Construction activities will not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Table 2-37 Estimated Construction Emissions								
	Construction Daily Emissions (pounds/day)							
				PM_{10}		**$PM_{2.5}$**		
Construction Stage (Duration)	**ROG**	**CO**	**NO_x**	**Exhaust**	**Total**	**Exhaust**	**Total**	**CO_2**
Grubbing/ Land Clearing *(1.5 months)*	1.4	11.0	14.2	0.7	18.2	0.6	4.2	2,482
Grading/Excavation *(6.75 months)*	7.6	42.5	82.8	4.0	21.5	3.6	7.2	10,281
Drainage/Utilities/Sub-grade *(4.5 months)*	5.1	30.0	45.9	2.7	20.2	2.4	6.0	6,177
Paving/ Finish Work *(2.25 months)*	2.0	15.7	16.7	1.1	1.1	1.0	1.0	3,609
Maximum Daily	7.6	42.5	82.8	4.0	21.5	3.6	7.2	10,281
SMAQMD Standard Levels (lbs/day)	-	-	*85*	-	*80*	-	*82*	-
	Construction Emissions (tons/Construction Period)							
Tons per Construction Duration (15 months)	0.9	5.2	9.1	0.5	2.9	0.4	0.9	1,080*
Tons per Year	0.7	4.2	7.3	0.4	2.3	0.3	0.7	864*
SMAQMD Standard Levels (tons/year)	-	-	-	-	*14.6*	-	*15*	*1,100**

ROG – Reactive Organic Gases; CO – Carbon Monoxide; NOx – Nitrogen Oxides; PM_{10} – Particulate Matter less than 10 microns in diameter; $PM_{2.5}$ – Particulate Matter less than 2.5 microns in diameter.

Emissions were estimated using Road Construction Model, version 7.1.5.1 (SMAQMD, 2013).

- *No values indicate that no standard level is set in those units (e.g., NOx levels are set for maximum daily emissions and not for annual construction emissions).*
- *CO_2 data with (*) are in metric tons.*

Source: Analysis/modeling performed by AECOM, 2015

Avoidance and Minimization Measures

Construction (Short-Term) Impacts

Project alternatives would comply with the requirements of Caltrans requirements and SMAQMD rules and Best Management Practices (BMPs), which would further reduce emissions during construction activities. The project would implement the following practices during construction:

- Construction contractors would comply with Caltrans Standard Specification Provisions which uses newer/retrofit engines for construction equipment;
- Comply with District's Rule 403 for fugitive dust emissions;
- Prohibit truck idling in excess of 10 minutes, whenever practical;
- Use only well-maintained equipment;
- Utilize proper planning to reduce rework and multiple handling of earth materials.

Operations (Long Term) Impacts

Based on the above analysis, there would be no adverse effect from the project operational emissions at the regional level. No minimization measures would be required for project operational emissions.

CEQA Considerations

The project alternatives would not conflict with or obstruct implementation of the applicable air quality plan, 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, expose

sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people. As discussed above, the project would not have a significant impact regarding CO concentrations, PM hot spot, or MSAT. The proposed project alternatives would conform to the requirements of CAA and SIP, and would be considered less than significant.

Climate Change

Climate change is analyzed at the end of this chapter. Neither the USEPA nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will aid decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders on climate change, the issue is addressed in a separate CEQA discussion at the end of this chapter and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

2.16 Noise

Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The CEQA noise analysis is included at the end of this section.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the NEPA 23 CFR 772 analysis.

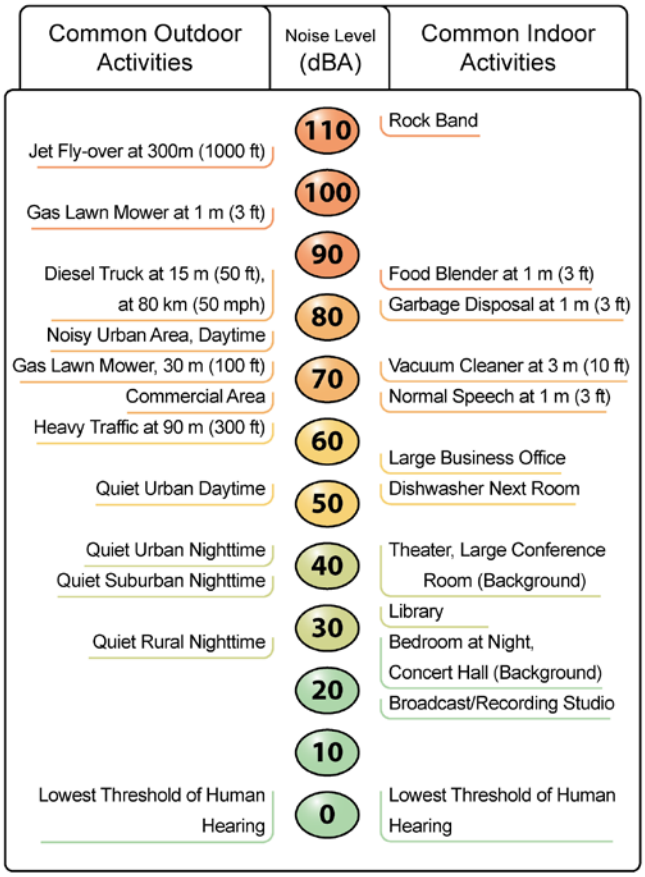
Table 2-38. Activity Categories and Noise Abatement Criteria (23 CFR 772)

Category	Activity Leq[h][1]	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential.
C[2]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F			Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G			Undeveloped lands that are not permitted.

1 The Leq(h) activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).
2 Includes undeveloped lands permitted for this activity category.

Figure 2-6 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Figure 2-6: Noise Levels of Common Activities



According to Caltrans *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011*, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. As defined in Section 772.5 of the regulation, reasonableness is the combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure. The overall reasonableness of noise abatement is determined by the noise reduction design goal, the cost of noise abatement, and the viewpoints of the benefited receptors (including property owners and residents of the benefited receptors). If any of these factors are not met, then noise abatement is not considered reasonable to construct and therefore the noise abatement will not be eligible for federal funding. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance and the cost per benefited residence.

If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision to include sound walls in the proposed project design must consider reasonableness factors, such as cost-effectiveness, as well as other feasibility considerations including topography, access requirements, other noise sources, safety, and information developed during the design and public review process.

Affected Environment

Caltrans completed the Noise Study Report in September 2006 and updated the report in April 2015. In order to validate the noise measurements data collected in 2005 and 2006 for the 2006 noise report, Caltrans staff conducted additional noise measurements throughout the entire project limit on three consecutive days during the week of September 17-19, 2014 from Watt Avenue to Alhambra Boulevard. Staff tried to duplicate the locations of the noise sensitive receptors and the time of day that noise measurements were taken in year 2005 and 2006. Additional short term noise measurements were performed on November 8-9, 2014 and February 17-18, 2015 from Alhambra Boulevard to the US 50/I-5 interchange.

A copy of the report is available from Caltrans upon request. Methodology used to measure and analyze noise impacts is included in the Noise Study Report.

Existing Environment and Noise-Sensitive Land Use

The existing noise environment throughout the project corridor varies by location, depending on site characteristics such as proximity to U.S. 50 and other noise sources, the relative highway and local elevations and terrain, and any intervening structures or barriers. There is a mix of single-family and multi-family residential, commercial, and industrial land-uses throughout the project area. Category B-E land uses (Table 2-38), in the form of single-family and multi-family residential land uses, open space such as parks, public areas such as churches, and hotels and motels, border a large percentage of the project.

Existing Barriers

Eleven existing barriers were identified in the study area and summarized below. The table provides a name identifier for each barrier, and lists the location, construction material, height, and current condition. The location of each barrier can be found on the study-area maps in Appendix D of the Noise Study Report. Each barrier was assigned with a current condition of good, fair, or poor. Barriers considered to be in good condition appeared to be structurally and acoustically solid, with no gaps between barrier materials or at the base of the barrier. Fair condition barriers were found to be structurally sound and to provide some acoustical attenuation, but contained gaps that lowered the acoustical effectiveness of the barrier. Poor condition barriers were found to be structurally damaged and falling down in areas, resulting in poor acoustical properties.

Ten of the eleven existing barriers are constructed of masonry block, all of which appear to be in good condition. Barrier J consists of concrete sprayed onto plywood that is anchored to chain-link fence to form a 5 to 6 foot high wall. The wall is in generally good condition, but it is cracked in some locations and possibly beginning to separate from the fence.

Table 2-39. Existing Sound Walls

Wall ID	Location	Construction Material	Height, feet	Condition
G -1	Watt Ave. to Occidental Dr.	Masonry	12 to 14 ft	Good
G -2	Occidental Dr. to Howe Ave.	Masonry	12 to 14 ft	Good
H	43rd St. to 37th St.	Masonry	10 ft	Good
I	39th St. to 43rd St.	Steel on 10 ft high berm	5 to 6 ft	Fair
J	61st St. to 63rd St.	Concrete spray on chain-link fence, on 3 to 12 ft berm	5 to 6 ft	Good
K	Howe Ave. to Marquette	Precast concrete	8 ft	Good
L-1	Marquette Dr. to Occidental Dr.	Masonry	13 to 14 ft	Good
L-2	Occidental Dr. to Watt Ave.	Masonry	12 to 14 ft	Good
Q-1	46th St. to 47th St.	Masonry	10 ft	Good
Q-2	47th St. to 48th St.	Masonry	10 ft	Good
Q-3	48th St. to 51st St.	Masonry	12 ft	Good

Receivers and Noise Measurement Sites

There were 49 short-term measurements and 9 long-term measurements taken along the project alignment to document the baseline noise environment. The measurement locations were chosen to accurately represent areas of Category B-E land uses that would potentially benefit from lower future noise levels. The sites were also selected to minimize interference from outside noise sources. Appendix D of the Noise Study Report shows the locations of the field noise measurements and the modeled receivers.

Existing Noise Levels at Receivers

The estimated loudest-hour noise levels were based on daytime measurement data, peak-hour traffic data, and trends in hourly noise levels measured at representative 24-hour measurement locations. The results of the long- and short-term field measurements are summarized below.

Segment 1: Westernmost Project Limit (I-5 I/C) to Alhambra Boulevard

U.S. 50 is elevated approximately 16 to 33 feet above sensitive receivers located north and south of the highway and is the predominant source of environmental noise at nearby receiving land uses. There are no existing sound walls along the elevated highway structure. However, 1- to 2-foot-high safety barriers are located at the edge of the structure for both the eastbound and westbound directions throughout most of this segment. These barriers, in combination with the edge of the elevated structure, provide partial shielding of traffic noise generated along the highway. Local vehicular traffic along W Street, X Street, and 9th Street to 28th Street, as well as highway on-ramps and off-ramps, also contribute to the ambient noise environment at nearby sensitive land uses. Two

long-term noise measurements and twelve short-term noise measurements were made in this area to quantify existing worst-hour noise levels at Category B receiver locations. Loudest-hour noise levels ranged from 72 to 76 dBA L_{eq} (h) at first-row receivers and from 64 to 69 dBA L_{eq} (h) at second-row receivers. First-row receivers and some second-row receivers have noise levels that approach or exceed the NAC (67 dBA L_{eq} (h)).

Segment 2: Alhambra Boulevard to 65th Street

Category B-E receivers are located north and south of U.S. 50 and include single- family residences, Faith Bible Church, and the Lighthouse Childcare Center. The majority of receivers in this segment are partially shielded from traffic noise generated along the highway by the edge of the elevated structure or by existing noise barriers ranging from 6 to 12 feet in height (Barriers H, I, J, and Q). The profile of U.S. 50 transitions from above the receivers to below the receivers near 43rd Street and to above the receivers again near 52nd Street. Residential receivers to the north between Stockton Boulevard and 59th Street are also affected by intermittent light rail trains, but are currently shielded by an 8 to 10 foot high sound wall (Barrier Q). Four long-term noise measurements and twenty-one short-term measurements were made at representative receiver locations along this portion of the project. Loudest-hour noise levels ranged from 62 to 73 dBA L_{eq} (h) at first-row receivers and from 62 to 70 dBA L_{eq} (h) at second-row receivers. First-row and some second-row receivers located in unshielded areas approach or exceed the noise abatement criteria (67 dBA L_{eq} (h)). In addition, existing traffic noise levels at first-row receivers located behind Barriers I and J also approach or exceed the noise abatement criteria (67 dBA L_{eq} (h)).

Segment 3: 65th Street to Howe Avenue

Land uses within this segment of U.S. 50 are primarily non-noise-sensitive commercial and industrial uses. Calvary Church, which does not include any outdoor activity areas, is located south of U.S. 50, west of Folsom Boulevard. California State University, Sacramento baseball fields are located to the north of U.S. 50, west of Hornet Drive. Motels are located north and south of U.S. 50 near Howe Avenue. The highway is located at an elevation of approximately 13 to 33 feet above adjacent land uses. One long-term noise measurement (LT-6) and one series of short-term noise measurements (Site 28) were made at CSUS baseball fields. Loudest-hour noise levels were approximately 72 to 73 dBA L_{eq} (h).

Segment 4: Howe Avenue to Watt Avenue

Noise-sensitive land uses in this segment of U.S. 50 include single- and multi-family residences, Thomas Jefferson Elementary School, and open space areas. Existing noise barriers, ranging in height from 8 to 14 feet, are located both north and south of the highway throughout this segment (Barriers G, K, and L). Long-term noise measurements were made north and south of U.S. 50 in open space areas. In addition, fifteen short-term noise measurements were made at Category B receiver locations north and south of U.S. 50. Although sound walls shield receivers along this segment, existing loudest-hour noise levels at first-row residences were about 66 to 72 dBA L_{eq} (h), approaching or exceeding the noise abatement criteria (67 dBA L_{eq} (h)). Loudest-hour noise levels at second-row receivers ranged from 61 to 65 dBA L_{eq} (h).

Environmental Consequences

The following noise impact analysis and conclusions apply to all build alternatives.

Future Traffic Data Assumptions and Site Geometry

Once the traffic noise model was calibrated, existing, future no-project, and future with project loudest-hour traffic noise levels were calculated. Traffic volume inputs for the noise model were taken from the project traffic projections provided by Caltrans Traffic Operations. Peak hour a.m. and p.m. traffic volumes were provided by Caltrans for each of the following conditions:

- Year 2004
- Year 2030 Build and No Build
- Year 2040 Build and No Build

The noisiest hour is not necessarily the hour with peak traffic volumes. Congestion results in slower speeds, which substantially reduces traffic noise levels. The loudest hour is typically an hour where traffic flows freely at or near capacity conditions. Peak-hour (a.m. or p.m.) traffic conditions were assumed to be at Level of Service C to reflect conservative loudest-hour noise levels for each condition (a summary of volumes is provided in Appendix A of the Noise Study Report).

Traffic mix was based on the average of traffic counts reported in the *2004 Annual Average Daily Truck Traffic on the California State Highway System* report (Caltrans, August 2005). This mix was similar to that counted during the noise measurement survey by Illingworth & Rodkin, Inc. (I&R) on November 1-10, 2005, although the I&R traffic mix included about 6 percent more trucks than the Caltrans report in the downtown section. This is likely due to the time of day and season when the I&R counts were conducted. Table 2-40 shows the vehicle mix. The I&R traffic counts were used to calibrate the traffic model. The reported Caltrans truck percentages were used to calculate Year 2004, Year 2040 No Build, and Year 2040 Build traffic noise levels.

Table 2-40. Vehicle Mix for US 50

	I & R Counts			**2004 Truck Volumes**		
Count Location	**Light-duty**	**Medium Trucks**	**Heavy Trucks**	**Light-duty**	**Medium Trucks**	**Heavy Trucks**
Watt Avenue	94%	4%	3%	96%	2%	2%
Howe Avenue	96%	2%	2%	96%	2%	2%
Alhambra Boulevard	92%	4%	4%	97%	2%	1%
20th Street	92%	4%	3%	98%	1%	1%

Free-flow traffic speeds observed in the field during the noise monitoring survey were approximately 65 mph for light-duty vehicles and medium-duty trucks and 60 mph for heavy-duty trucks.

Noise Level Predictions

Noise levels were predicted within the four receiver segments discussed below. There are no NAC Category C-E land uses in the project area that are considered to have outdoor activity areas with frequent human usage that would benefit from a lower noise level. Consequently, a detailed assessment of traffic noise impacts and abatement is not considered at Category C-E land uses in the project area. Noise levels discussed in this section are based on the adjusted modeled results, using traffic volumes for the a.m. and p.m. peak hours for Year 2004, Year 2030 No Build, and Year 2030 Build, Year 2040 No Build, and Year 2040 Build.

Segment 1: Westernmost Project Limit (I-5 I/C) to Alhambra Boulevard

Two long-term measurements and twelve short-term measurements were made within this section, with nine additional modeled receiver locations (MR-1.1 through MR-1.9). There are no existing noise barriers within this segment. The loudest-hour $L_{eq\ (h)}$ for the Year 2004 condition ranges from 62 to 72 dBA at first-tier residences and from 62 to 73 dBA at second-tier residences. Under Year 2030 and Year 2040 No Build conditions, noise levels at receiver locations are expected to range from 62 to 72 dBA at first-tier residences and from 62 to 73 dBA at second-tier residences.

The Year 2030 and Year 2040 Build condition is anticipated to increase the loudest- hour $L_{eq\ (h)}$ noise levels in this segment by 0 to 1 decibels, resulting in noise levels of 63 to 72 dBA at first-tier residences and from 62 to 74 dBA at second-tier residences. This increase in noise levels is a result of an increase in traffic volumes. The noise level increase is not enough to be considered a substantial increase. However, most first- and second-tier residences are predicted to experience noise levels that approach

or exceed the NAC. Noise abatement in the form of sound barriers on structure was considered throughout this area.

Segment 2: Alhambra Boulevard to 65th Street
Four long-term measurements and twenty-one short- term measurements were taken within this segment, and there are thirty-three additional modeled receiver locations. There are six existing sound walls within this section of roadway (Barriers H, I, J, Q-1, Q-2, and Q-3).

In unshielded locations, Year 2004 loudest-hour $L_{eq\ (h)}$ noise levels ranged from 62 to 74 dBA at first-tier residences and from 61 to 68 dBA at second-tier residences. Loudest-hour noise levels ranged from 57 to 65 at first- and second-tier residences under Year 2004 conditions in areas that were shielded from roadway noise by Barrier H, and from 58 to 63 dBA at receivers located behind Barriers Q-1, Q-2, and Q-3. At receivers located behind Barrier I, Year 2004 loudest-hour $L_{eq\ (h)}$ noise ranged from 65 to 70 dBA at first- and second-tier residences. Year 2004 loudest- hour $L_{eq\ (h)}$ noise levels ranged from 62 to 68 dBA at first- and second-tier residences with the shielding provided by Barrier J.

Under Year 2030 and Year 2040 No Build conditions, modeled noise levels are expected to vary from about -1 to +1 decibels as compared to the Year 2004. The resulting loudest-hour $L_{eq\ (h)}$ noise levels would range from 61 to 74 dBA at first- and second-tier residences in unshielded areas, 57 to 65 dBA with the shielding provided by Barrier H, 58 to 64 dBA with the shielding provided by Barriers Q-1, Q-2, and Q- 3, 65 to 70 dBA with the shielding provided by Barrier I, and 62 to 68 dBA with the shielding provided by Barrier J.

The Year 2040 Build condition is anticipated to increase the noise levels at modeled locations by 0 to 1 decibel. Resulting loudest-hour $L_{eq\ (h)}$ noise levels range from 61 to 74 dBA at first- and second-tier residences in unshielded areas, 58 to 65 dBA with the shielding provided by Barrier H, 59 to 64 dBA with the shielding provided by Barriers Q-1, Q-2, and Q-3, 65 to 71 dBA with the shielding provided by Barrier I, and 62 to 69 dBA with the shielding provided by Barrier J.

The noise level increase anticipated under the Year 2040 Build condition is not enough to be considered a substantial increase. However, predicted noise levels approach or exceed the NAC in most first- and second-tier residences that are located in unshielded areas and at first-tier residences located behind Barriers I and J, which are in fair condition.

Segment 3: 65th Street to Howe Avenue
One long-term measurement and one short-term measurement were taken within this region, and there are two additional modeled receiver locations. There are no sound walls within this segment. The loudest-hour $L_{eq\ (h)}$ noise levels under Year 2004 conditions range from 55 to 71 dBA. Under Year 2030 and Year 2040 No Build conditions, noise levels at modeled locations are expected to decrease between 0 and 1 decibel to range from 55 to 70 dBA.

The Year 2030 Build condition will increase the noise levels at modeled locations by 0 to 1 decibels to range from 55 to 71 dBA. This increase in noise levels is a result of the increase in traffic volumes. The noise level increase is not enough to be considered a substantial increase. The church parking areas are not considered to be areas of frequent human use that would benefit from a lowered noise level. The baseball field was analyzed for feasibility and reasonableness; however, it did not meet FHWA criteria. Therefore, no noise abatement is considered for this area.

Segment 4: Howe Avenue to Watt Avenue
Two long-term measurements and fifteen short-term measurements were taken within this region, and there are 21 additional modeled receiver locations. Existing sound walls (Barriers G-1, G-2, K, L-1, and L-2) provided acoustical shielding to all measured and modeled receivers in this segment. The loudest-hour $L_{eq\ (h)}$ for the Year 2004 conditions ranges from 62 to 72 dBA at first- tier residences and from 59

to 66 dBA at second-tier residences. Under Year 2030 No Build conditions, noise levels at modeled locations are expected to increase by less than 1 decibel to range from 62 to 72 dBA at first-tier residences and from 59 to 66 dBA at second-tier residences.

The Year 2030 and Year 2040 Build condition will increase noise levels at modeled locations by 0 to 1 decibels. Resulting noise levels are anticipated to be 63 to 72 dBA at first-tier residences and 60 to 66 dBA at second-tier residences. This increase in noise levels is a result of the increase in traffic volumes. The noise level increase would not be considered a substantial increase. However, many first-row receivers would continue to approach or exceed the NAC of 67 dBA; therefore, noise abatement, in the form of increasing the existing wall heights in the area, was considered for this region.

Avoidance, Minimization, and/or Abatement Measures

Noise abatement, in the form of sound walls, was assessed for sensitive receptors that approached or exceeded the NAC. Sound wall heights were evaluated in 2 foot increments ranging in height from 6 feet to16 feet. Replacement sound walls were assessed for noise barriers that were in fair to poor condition and for those that potentially did not break the line of sight between residents in the area and traffic on U.S. 50. The replacement wall of equal height to the existing wall would not be anticipated to change the noise environment behind the wall, therefore, the insertion loss was calculated based on wall height increases over the existing wall height.

A full assessment of noise impacts and abatement options is included in the Noise Study Report.

Segment 1: Westernmost Project Limit (I-5 I/C) to Alhambra Boulevard
There are currently no barriers in this segment. The predicted Year 2040 Build loudest-hour noise levels within this segment range from 62 to 74 dBA, with 17 Category B receivers approaching or exceeding the NAC of 67 dBA. Caltrans evaluated barriers throughout this segment to mitigate these potential impacts, SWWB1 and SWEB1. The barriers would reduce noise levels by 2 to 11 decibels at 150 affected receivers. A minimum barrier height of 8 ft would break the line of sight between a 3.5 m (11.5 ft)-high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol ranges from $6,105,000 to $9,655,000.

As shown in Table 2-41, SW WB1 and SW EB1 met the design noise goal reduction of 7 dBA; but the construction cost exceeds the federal reasonable allowances. Therefore, these barriers are not considered Reasonable to build with regard to cost and they are not eligible for federal funds. However, if these sound walls have public support and local funding then some or all of these sound walls can be constructed.

Segment 2: Alhambra Boulevard to 65th Street
There are currently seven barriers in this segment: Barriers H, I, Q-1, Q-2, Q-3, Q-4, and J. Barriers I and J are in fair condition but may not break the line of sight between receivers, and traffic on U.S. 50 and Barriers H, Q-1, Q-2, Q-3, and Q-4 are in good condition. The predicted Year 2040 Build loudest-hour noise levels within this segment range from 58 to 74 dBA, with 27 Category B receivers approaching or exceeding the NAC of 67 dBA Leq (h).

Caltrans considered seven barriers throughout this segment: SW WB2, SW EB2/2A, SW EB3, SW EB4, SW EB5, SW EB6 and SW EB7/7A. Table 2-41 shows reasonable allowances for all barriers.

> **SW WB2** would reduce noise levels by 5 to 9 decibels for up to 25 sensitive receptors. A minimum barrier height of 10 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol is $1,775,000.

SW EB2-2A would reduce noise levels by 5 to 10 decibels for 58 sensitive receptors. A minimum barrier height of 8 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol ranges from $355,000 to $3,763,000.

SW EB3: Raising the existing sound wall height to 16 ft would not provide the required 5-dBA reduction; therefore, this barrier is not considered. Replacing this barrier with a taller barrier was considered. However, under the FHWA protocol, it is not feasible or reasonable to replace SW EB3 with a taller barrier; replacement would require local funding if it becomes available.

SW EB4 would reduce noise levels by 5 to 7 decibels for 2 sensitive receptors. A minimum barrier height of 8 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol is $142,000.

SW EB5 will reduce noise levels by 6 to 12 decibels for 7 sensitive receptors. A minimum barrier height of 6 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol is $497,000, for this barrier.

SW EB6 would reduce noise levels by 5 to 9 decibels for 26 sensitive receptors. A minimum barrier height of 6 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The reasonable allowance calculated in accordance with the Protocol is $1,491,000.

SW EB7A-7B is comprised of two parts, the new barrier construction and the barrier height extension for existing Barrier J. A minimum barrier height of 6 ft would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver in the first row of residences. The new barrier construction would reduce noise levels by 5 to 7 decibels for 4 sensitive receptors, and the reasonable allowance calculated in accordance with the Protocol is $284,000. For Barrier J height extension, raising the existing sound wall height to 16 ft would not provide the required 5-dBA reduction; therefore, this portion of the barrier is not considered to be feasible.

The reasonable allowance for all of these sound walls was less than the construction costs; these sound walls are not eligible for federal re-imbursement or state funding. However, these sound walls have support from the adjacent community. If local funding is identified, some or all of these sound walls can be constructed.

Segment 3: 65th Street to Howe Avenue
There are no Category B-E receivers in this segment that approach or exceed the NAC of 67 dBA. Therefore, no barriers are proposed for this segment.

Segment 4: Howe Avenue to Watt Avenue
There are three existing barriers in this segment: Barriers G, K, and L. Barrier K is in fair condition and barriers G and L are considered to be in good condition. The predicted Year 2040 Build loudest-hour noise levels within this segment range from 60 to 72 dBA, with 24 Category B receivers approaching or exceeding the NAC of 67 dBA. The only proposed barrier in this segment is barrier SWEB8, which is the height extension for Barrier K. Raising the existing sound wall height to 16 ft would not provide the required 5-dBA reduction; therefore, this barrier is not considered to be feasible and no abatement measures are recommended for this segment of the project.

If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision to include sound walls in the proposed project design must consider reasonableness factors, such as cost-effectiveness, as well as other feasibility considerations including topography,

access requirements, other noise sources, safety, and information developed during the design and public review process.

Table 2-41. Reasonable Allowances for All Barriers

Sound Wall Designation*	Description	H (ft)	L (ft)	Total Reasonable Allowance	Estimated Construction Cost	Meet Reasonable Criteria?**
SW WB1	WB 7th St. to 13th St.	8	2,464	$9,655,000	$19,125,000	No
	WB 13th St. to 16th St.	8	1,112			
	WB 16th St. to 18th St.	8	936			
	WB 18th St. to 26th St.	8	4,276			
SW WB2	WB 50-51 Connector	10	1,090	$1,775,000	$2,098,000	No
	WB on Elmhurst Viaduct	10	347			
SW EB1A	EB 9th St. to 13th St.	8	1,710	$6,105,000	$18,048,000	No
	EB 13th St. to 16th St.	8	1,066			
	EB 16th St. to 18th St.	8	872			
	EB 18th St. to EB50-SB99 connector	8	4,418			
SW EB2	NB99-EB50 connector-Elmhurst Viaduct	10	1,242	$3,763,000	$8,791,000	No
	EB Elmhurst Viaduct to Stockton Blvd	10	1,860			
SW EB2A	EB Stockton on-ramp to 39th St	10	1,223	$355,000	$566,000	No
SW EB3	39th St Undercrossing	8	135	$0	$963,000	No
	39th St to 41st St	10	1002			
Barrier I (Exist)	EB 41st St to 45th St	10	1302	$0	$1,133,000	No
SW EB4	EB 45th St to 48th St	10	978	$142,000	$1,138,000	No
SW EB5	EB 48th St to 51st St	10	1,153	$497,000	$1,322,000	No
SW EB6	EB 51st St to 59th St	8-10	2,563	$1,491,000	$3,161,000	No
SW EB7A	EB 59th St to 62nd St	12	1,574	$284,000	$781,000	No
SW EB7B	EB 62nd St to 65th St	10	1,058	$0	$490,000	No
		Total	32,381	$24,067,000	$57,616,000	

Notes: *The project sound wall designation column is required for distinguishing between sound wall on structure or original ground.
**Even though these sound walls are not eligible for federal re-imbursement, these sound walls have support from the adjacent community and if local funding is identified, some or all of these sound walls may be constructed.

Construction Noise Impact

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14.8-02. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise.

CEQA Considerations

When determining whether a noise impact is significant under CEQA, comparison is made between the baseline noise level and the build noise level. The CEQA noise analysis is completely independent of the NEPA-23 CFR 772 analysis discussed above, which is centered on noise abatement criteria. Under CEQA, the assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include: the uniqueness

of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected and the absolute noise level.

Design year noise levels are predicted to be between 1 and 2 dBA higher than existing noise levels for all receivers. This 1-2 dBA increase between existing noise levels and predicted noise levels under proposed project would be barely perceptible to the human ear and is therefore less than significant under CEQA.

2.17 Biological Environment

Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.18 below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

Affected Environment

Caltrans biological staff completed a Natural Environmental Study No Effects Memorandum in August 2014 and updated in May 2015. The project area is located in urban or semi-urban areas which consists primarily of asphalt, concrete and weedy ruderal vegetation surrounded mainly by older homes and businesses. The project does not affect any animal species.

Original biological surveys were completed in 2005. New surveys were conducted on March 12 and July 16, 2014. The same biological resources were identified in 2014 as were originally identified in 2005: cliff swallows nesting and bats roosting within 11 structures, all of which have weep holes.

Environmental Consequences

All work will be done from the roadway. Cliff swallows could potentially nest within the Brighton Overhead Crossing. Under Alternatives 1 and 2, birds could potentially nest within all 11 structures, all of which have weep holes. Bats are also known to roost within the joints of the Camellia Viaduct structure. All 11 structures have areas where bats could potentially roost. No other biological resources

were identified. In addition, no wetlands or other waters of the U.S. will be affected. No permits are required.

Alternatives 3 and 4 would not affect nesting bird or roosting bats at the structures.

Avoidance and Minimization Measures

The contractor will install and maintain exclusionary devices for birds and bats in the joints and weep holes of 11 structures. (Elmhurst Viaduct, Brighton Overhead, Folsom Blvd. Undercrossing, and State College Undercrossing, Southside Park, 9th Street, 10th Street, Riverside Blvd., 15th-16th Streets, 18th Street- 24th Streets (Camellia City Viaduct) and 26th Street)

If any work on structures suitable for bird nesting or bat roosting will occur between February 1st and August 31st, the construction crews shall take such measures as necessary to prevent bird nesting or bat roosting on portions of the structures that will cause a conflict between performing necessary work and nesting birds or roosting bats. Prior to February 1st, existing nests shall be removed and exclusionary devices such as netting or one-way doors shall be used to prevent migratory species from occupying said structures.

Daily scraping, between February 1st and September 1st, of partially completed bird nests on structures is permitted to discourage nesting. If new nests are built or existing nests become occupied, then any work that would interfere with or discourage birds from returning to their nests will not be permitted in the area. If day roosting bats are found during biological surveys, Caltrans shall consult with CDFW to and implement CDFW recommended measures to comply with provisions of the Fish and Game Code of California.

2.18 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a No Effect finding. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct." California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the CDFW. For species listed under both the FESA and CESA requiring a Biological Opinion under

Section 7 of the FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

Caltrans biological staff completed a Natural Environmental Study No Effects Memorandum in August 2014 and updated in May 2015. Appendix I includes the U.S. Fish and Wildlife Service Federal Threatened and Endangered Species list and the California Department of Fish and Wildlife California Natural Diversity Database.

Environmental Consequences

A no effect determination has been made for all species on the FWS list in Appendix I, dated June 13, 2016.

CEQA Considerations

Project alternatives will not 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 Game or U.S. Fish and Wildlife Service, 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 Game or US Fish and Wildlife Service, have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

During construction, following the avoidance and/or minimization measures regarding excluding birds and bats reduces the impact to these animals. This is a less than significant impact.

2.18 Cumulative Impacts

Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors,

changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

Cumulative Impacts Area

This analysis considers the overall cumulative effects of the proposed project when taken together with past, present, and reasonably foreseeable future projects. For resources not affected by the project no cumulative impact assessment was performed, as the project could not contribute to a cumulative impact. The following resources are not discussed in this section because no impacts resulting from the proposed project were identified, the resources are in generally good health, the project would result in beneficial impacts, or impact would be avoided, minimized or mitigated. Please note that climate change is not addressed in this section. For a comprehensive discussion of climate change, please see Chapter 3.

- Land Use and Planning
- Farmland/Timberland
- Growth
- Community Impacts
- Cultural Resources
- Energy
- Geology/Soils/Seismic/Topography
- Hydrology/Floodplain
- Utilities
- Pedestrian and Bicycle Facilities
- Recreational Facilities
- Wetlands, Other Waters
- Natural Resources (plants and animals)

Resources discussed in this section include air quality, water quality, and traffic/transportation. The area for cumulative impacts evaluation related to major transportation projects was the Study Area corridor around US 50 between downtown Sacramento and Watt Avenue, including portions of US 50, SR 99, a I-80. A larger area encompassing Rancho Cordova was used for evaluating the cumulative impacts related to major development projects. These areas were selected because they would be most influenced by projects on US 50 and would rely on US 50 as a major transportation link.

Projects Considered in the Cumulative Impacts Evaluation

Table 2-42 at the end of this section lists the projects that have been included in the cumulative impacts evaluation. These projects were largely taken from the SACOG 2016 MTP/SCS. Additional projects were included from city and county websites. A total of 29 major transportation projects and 10 major development projects are included in the cumulative impact analysis.

Potential Cumulative Impacts

For a cumulative impacts analysis to be effective, it must be limited to the effects that can be evaluated meaningfully. While there is no universally accepted approach to preparing a cumulative impacts analysis, Caltrans guidelines state that a cumulative impact analysis should focus only on 1) those

resources adversely impacted by the project and 2) those resources in poor or declining health or at risk (Caltrans 2005). Quantifiable impacts are generally not available for some of the proposed projects listed in Table 2-42, because these projects are still in the planning phase and environmental studies have not been completed. However, a qualitative cumulative impacts assessment can be completed based on anticipated and known impacts from other, similar transportation and development projects that have been completed.

The proposed project has potential impacts to circulation, access, and traffic safety. However, measures put in place would reduce impacts. These impacts are discussed further in terms of their cumulative effects below. In addition, the project would have less than significant impacts to air, water quality, hazardous materials, and visual resources. The cumulative effects of these impacts are discussed below as well.

Alternative 1

Air Quality

Air quality in the study areas has been steadily improving over the last several decades, due primarily to improved air quality emissions of mobile sources and regulations that have mandated reduced emission levels. Data from the California Air Resources Board (CARB) show that the levels of ozone, PM2.5, and PM 10 have fallen over the past 17 years (1999 to 2015). Please go to the CARB website to access the air quality summary tables for the monitoring station on T Street in Sacramento (www.arb.ca.gov/adam/trends/trends1.php).

The project conforms to regional and project-level conformity requirements of CAA and its Transportation Conformity Rule. The project-specific traffic-related operational emissions would also be below the standard levelss recommended by the SMAQMD for project compliance with CEQA requirements. The project area is currently designated (based on national and/or state standards) as a nonattainment area for O_3, PM_{10} and $PM_{2.5}$, and as an attainment/maintenance area for CO.

Transportation projects, such as the proposed HOV lane project and those listed in Table 2-42, must be included in the SACOG MTP and Metropolitan Transportation Improvement Plan (MTIP), which conform to the State Implementation Plan (SIP). Before adopting the MTP and MTIP, SACOG performed a quantitative analysis to determine if implementation of the set of projects included in these documents would result in violations of the ozone and PM_{10} air quality standard. Based on this analysis, SACOG has concluded that the set of projects included in the MTP and MTIP would not result in a violation of the ozone standard and would result in reduction of PM_{10} emissions. Cumulative impacts to air quality are not anticipated.

Water Quality

Storm water from the project area indirectly runs into the American River. The reach of the American River within the project area is listed under Clean Water Act section 303(d) as impaired for water quality. The pollutants are listed as mercury and an unknown toxicity.

In 1999, the SWRCB issued “NPDES Permit, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for Caltrans Order No. 99-06-DWQ, NPDES No. CAS00003” (Caltrans Statewide Permit) that covers Caltrans’ highways, highway-related properties, facilities, and activities, such as maintenance stations, roadside rest areas, weigh stations, park-and-ride lots, and construction sites. In addition, the Caltrans Statewide Permit covers both wet- and dry-weather discharges from storm water conveyance systems. Caltrans is required to reduce pollutants in storm water discharges to the maximum extent practicable. For discharges from a construction site, toxic pollutants must be reduced using the best available technology that is economically achievable, and conventional pollutants must be reduced using the best conventional technology.

For construction activities that disturb greater than 1 acre of soil, Caltrans shall obtain coverage under the "NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity Order No. 99-08-DWQ, NPDES No. CAS000002" (Construction General Permit) once a Notice of Construction has been filed for a specific project. The Construction General Permit is incorporated by reference into the Caltrans Statewide Permit.

For projects that will disturb greater than 1 acre (0.4 hectares) of soil during construction, the Construction General Permit requires that an effective SWPPP be developed and implemented to reduce construction effects on receiving water quality.

Adherence to NPDES permits and SWPPP preparations are standard measures for all projects. No cumulative impacts to water quality are anticipated.

Circulation and Access

In general, the traffic within the study area has been getting steadily worse over the years. For example, the Annual Average Daily Traffic (AADT) at US 50 and Stockton Boulevard in 1993 was approximately 184,000 vehicles; in 2014, the AADT at this location was approximately 210,000 vehicles. For more traffic data within the project limits, please access Caltrans Traffic Operations website at www.dot.ca.gov/trafficops/census/.

The project would provide greater connectivity and accessibility to the existing HOV lane system and other projects planned on US 50, SR 99, I-80, and I-5. The project would directly connect to an existing HOV lane on US 50 from Sunrise Boulevard to east of the Sacramento-El Dorado County line. The Oak Park and I-5 Interchange projects (Table 2-42) would connect the US 50 HOV lane to HOV lanes on SR 99 and I-5, respectively. Additional projects would link HOV lanes on I-5 with those on I-80 from Sacramento into Placer County.

Overall, the cumulative impact of this project as well as the transportation projects listed in Table 2-42 would be beneficial to circulation and access. There are several projects that would lead to greater connectivity of the road and highway network and increase road capacity. These projects would reduce congestion.

Noise

Noise generated from construction activities may intermittently dominate the noise environment in the immediate area of construction.

Equipment involved in construction is expected to generate noise levels ranging from 70 dB to 90 dB at a distance of 50 ft. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. No substantial noise impacts from construction are anticipated because construction activity would be conducted in accordance with Caltrans' standard specifications Section 14-8.02, "Sound Control Requirements", and would be short-term, intermittent, limited in physical extent, and in most cases dominated by local traffic noise. Standard specifications Section 14-8.02 state that noise levels generated during construction shall comply with applicable local, state, and federal regulations, and that all equipment shall be fitted with adequate mufflers according to the manufacturers' specifications.

Construction Related Traffic Impacts

While project construction is not anticipated to have any adverse impacts to traffic, construction is scheduled at the same time as several other road and highway improvement projects. Table 2-42 lists the transportation projects that are programmed between 2006 and 2015. The projects listed are those within the vicinity of the Study Area for which a schedule was available; there are several other road projects, both within the Study Area vicinity and throughout the Sacramento region, that are planned for the same time period. Further, many of the development projects listed in Table 2-42 will be under construction during this period as well.

There are number of major projects scheduled to take place simultaneously on US 50, SR 99, I-5, and I-80. There are also several extension and widening projects that are anticipated for the major roads within or intersecting the Study Area, including a series of downtown road network improvements to improve access to Sacramento's central business district.

Cumulative impacts related to the construction of these projects could include temporary road and lane closures, which could lead to traffic delays and impaired access to local businesses, commercial and tourist destinations, public recreational areas, and private residences. Temporary impacts may occur throughout the US 50/SR 99/I-5/I-80 highway network, as well as in downtown Sacramento and throughout the Study Area. These temporary impacts could adversely impact the provision of emergency services, public transportation, school buses, and other services dependent on the road and highway network. However, transportation projects develop transportation management plans (TMPs). A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies including public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. Cumulative traffic impacts associated with construction activities are not anticipated.

Paleontology

This project may encounter paleontological resources during the excavations of new columns at the W-X freeway, Brighton overhead, and Elmhurst Viaduct. However, each project where potential paleontological resources were identified are required to prepare and implement a paleontological mitigation plan that will reduce impacts. No cumulative impacts to paleontological resources are anticipated.

Hazardous Materials

This project may encounter soil containing aerially deposited lead from vehicle emissions, asbestos and lead-based paint on bridge structures, soil and groundwater contamination due to leaking underground storage tanks, railroad operations, and abandoned or existing service stations. However, laws for the management of hazardous materials are designed to protect human health and the environment. Each project is required to remove exposed hazardous waste and follow disposal regulations. Hazardous materials/waste cumulative impacts are not anticipated.

Public Services

This project would not adversely impact parks, utilities, schools, or other public services. The HOV lane is anticipated to reduce traffic congestion along US 50, which would improve emergency response times for police, fire, and medical first responders. As a result, this project would have a beneficial cumulative impact to public services.

The transportation and development projects listed in Table 2-42 would increase the demand for public facilities and services including parks, utilities, schools, and emergency services. As community development plans typically require the provision of these services relative to the potential demand of any new development, the cumulative impact to public services may be beneficial for the region.

While the cumulative effect of the transportation projects in Table 2-42 is expected to be beneficial in terms of reducing congestion and increasing connectivity, emergency response times could be temporarily affected if multiple projects are constructed concurrently along emergency response routes. However, emergency responders would be notified in advance of any construction plans and schedules. As a result, no cumulative impacts to public services are expected.

Visual Resources
The project impacts to visual resources will be low and temporary. Measures to reduce impacts include use of compatible materials for sound wall construction, restoration of disturbed areas, and development of a highway planting plan.

The development projects may change the character of the landscape from agricultural or undeveloped land to that of residential, mixed use, and commercial areas. Certain transportation projects would widen and add roads where none existed before. These projects would be subject to design guidelines, public processes, and other measures to ensure that any impact to visual resources would be minimal. In addition, several of these projects may have positive impacts to visual resources, such as those that improve streetscapes or redevelop abandoned industrial areas.

Alternative 2

Alternative 2's footprint and features are the same as Alternative 1. Potential cumulative impacts will be the same as well.

Alternative 3

Alternative 3's temporary and construction related cumulative impacts are similar to, but less than, the temporary and construction-related impacts of Alternative 1 for traffic/transportation, visual resources, water quality, hazardous materials, air quality, public services, and noise. Alternative 3 does not involve new columns on the W-X freeway; no cumulative paleontological impacts are anticipated.

Alternative 4
The No Build Alternative would not involve construction; therefore, this alternative would not result in any temporary, construction-related, or permanent cumulative impacts.

CEQA Considerations

The project will include standard project features typical of large transportation projects. These features include Transportation Management Plans (TMPs), Water Quality and Hazardous Waste best management practices included in the project and its contract specifications, coordination with emergency service providers, incorporate standard specifications, and implement landscape planting plans. The project is not anticipated to result in a considerable contribution to cumulative water quality, hazardous materials, public/emergency services, noise, visual resources, and construction related traffic impacts. Therefore, for the reasons discussed above, cumulative impacts to water quality, hazardous materials, public/emergency services, noise, visual resources, and construction related traffic impacts are anticipated to be less-than-significant.

Air Quality

As the SACOG analysis considered all planned and programmed transportation projects included in the MTP and MTIP, the transportation projects listed in Table 2-42 have been analyzed and found not to contribute to a cumulatively considerable impact to air quality. Therefore, the impact of the project on regional air quality is considered to be less-than significant.

In addition, the development projects in Table 2-42 are also subject to air quality permitting requirements. Projects that are in conformance with the regional air quality plan and that meet regional air pollutant budgets (based on air quality models and analyses) would not be expected to have a negative cumulative impact.

The proposed project would not exceed federal or state ambient air quality standards for project level (localized) emissions of CO and would not generate PM_{10} and $PM_{2.5}$ hot spots.

The project would not expose receptors to significant levels of MSATs and would not have an adverse health effect to sensitive receptors.

Project construction would not expose sensitive receptors to significant levels of toxic air contaminants, or objectionable odors.

Temporary construction-related dust and vehicle emissions would occur during site preparation and project construction. During construction, the proposed project would be subject to Caltrans and SMAQMD rules that require best available fugitive dust control measures to be incorporated into construction practices. Construction of the project would take approximately 15 months to complete and the impacts would not have any adverse effect with incorporation of best management practices and the applicable rules requirements. However, both fugitive dust and equipment emissions would be short-term and transitory in nature. Caltrans Standard Specifications are a required part of all construction contracts and should effectively reduce and control emission impacts during construction, as do local air district controls. As all transportation construction activity within the study area would be subject to these specifications and controls, the cumulative construction impacts to air quality for the projects listed in Table 2-42 would be less than significant.

Table 2-42. Cumulative Impacts Project List: Major Transportation and Development Projects 2010-2025

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
Road and Highway					
Caltrans					
Interchange reconstruction including bus/carpool connectors	Planned, SACOG 2016 MTP/SCS	Oak Park Interchange	2036	Interchange reconstruction including bus/carpool connectors.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
Construct transition lanes	Planned, SACOG 2016 MTP/SCS	Northbound Howe Ave. on-ramp to southbound Howe Ave. on-ramp	2036	Northbound Howe Ave. on-ramp to southbound Howe Ave. on-ramp.	• Air quality • Noise • Traffic • Hazardous materials • Emergency services
Construct auxiliary lanes	Planned, SACOG 2016 MTP/SCS	US 50, Bradshaw Road to Mather Field Road.	2036	Construct auxiliary lanes from Bradshaw Road overcrossing to Mather Field Road overcrossing.	• Air quality • Noise • Traffic • Hazardous materials • Emergency services
Interchange modification	Planned, SACOG 2016 MTP/SCS	US 50, Mather Field Road	2036	Modify the Mather Field Road interchange.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
65th Street to Sunrise rehabilitation, US 50	Planned	Sacramento County	2020	In Sacramento County, from 65th St. to .03 mile west of Watt Ave. and 0.3 mile east of Sunrise Blvd. to 1.6 miles west of Hazel Avenue - Rehabilitate roadway.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Camellia City Viaduct	Completed	US 50 in downtown Sacramento	2015	In the City and County of Sacramento, on Sac-50, at Camellia City Viaduct - Rehab bridge decks.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
US 50 Westbound HMA Overlay	Completed	US 50 from Watt Ave. to Sunrise Blvd.	2014	RHMA (open-graded) overlay.	• Air quality • Noise • Traffic • Emergency services
Oak Park Interchange MBGR	Planned	Oak Park Interchange, Sacramento		Replace metal beam guard rail (MBGR) at the Oak Park Interchange (US 50 – SR 99).	• Traffic • Hazardous materials
Fort Sutter Viaduct	Planned	SR 51, Sacramento	2017	Overlay deck of the Fort Sutter Viaduct along SR 51 in downtown Sacramento.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Bridge deck rehabilitation	In construction	I-5, US 50 at the West End Viaduct and Sacramento River Viaduct	2016	In Sacramento and West Sacramento, rehabilitate the decks of the West End and Sacramento River viaducts.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Replace Portland Cement Concrete Pavement (PCCP), place hot mix asphalt (HMA), widen bridges and construct sound walls	In construction	I-80 in Yolo and Sacramento counties	2016	In Yolo and Sacramento Counties in and near West Sacramento and Sacramento from the I-80/SR84 Separation to Watt Avenue Overcrossing.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Eastbound US 50 ramp metering	Planned	Sacramento County	2020	In Sacramento County at various locations, from the Stockton Blvd. Undercrossing to the Natoma Overhead - Install ramp metering.	• Air quality • Traffic • Hazardous materials
I-5 HOV Lanes	Planned	Sacramento County	2020	I-5, from Pocket Road to US 50 in Downtown Sacramento: Construct HOV (high occupancy vehicle) lanes; construct sound walls in various locations.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
System Management/Traffic Operations System on SR 51 between U.S. 50 and I-80	Planned	Sacramento County	2020	Operational Improvements: traffic monitoring stations, closed circuit television, highway advisory radio, changeable message signs, and other system management infrastructure.	• Traffic • Hazardous materials

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
US 50 Rehab	Planned	Oak Park I/C to Howe Ave.	2020	Pavement rehabilitation of US 50 from the Oak Park interchange to Howe Ave. Project is within the project limits of the Sac 50 HOV Project.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Install Fiber Optic Cable	Planned	Sacramento River to Watt Ave.	2020	Install fiber optic cable within the State right of way of US 50 from the Sacramento River to Watt Ave. Project is within the project limits of the Sac 50 HOV Project.	• Traffic
Hornet Drive Ramp Widening	Planned	Hornet Drive, US 50	2020	Widen Hornet Drive eastbound off ramp. Project is within the project limits of the Sac 50 HOV Project.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
HM-3 Treat Decks of 10 Bridges	Planned	Four bridges are along US 50	2020	Remove existing thin chip seal overlay from deck; clean and treat bridge deck with methacrylate resin to seal crack; replace joint seals and replace pavement delineations. Project includes 4 bridges on US 50 (9th Street, Folsom Blvd., Mayhew, and Routier Road.	• Air quality • Noise • Traffic • Hazardous materials • Emergency services
City of Sacramento					
I-5 Riverfront Reconnection Project (Bridging I-5)	Construction begun in 2015	Sacramento	2017	Improve access to Sacramento Riverfront from Downtown from O St to Capitol Mall	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
J St & Folsom Blvd 4 to 3 Lanes Conversion	Planned	Sacramento	Unknown	J St (42 to 56) & Folsom (34 to 47), 4 to 2 lane Conversion with bike lanes and left turn lane	• Air quality • Noise • Traffic • Emergency services
14th Avenue Extension	Planned	Sacramento	2020	Four-lane extension of 14th Avenue from Power Inn Rd to Watt Ave.	• Air quality • Noise • Traffic • Visual • Hazardous materials

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
Ramona Avenue Extension	Planned	Sacramento	2020	Extend Ramona Avenue to the north to connect to Folsom Blvd.	• Air quality • Noise • Traffic • Visual • Hazardous materials
City of Rancho Cordova					
Douglas Road Phase II, Rancho Cordova Parkway to Americanos Blvd	Planned	Rancho Cordova	2020	Two lanes north of ultimate centerline and a median generally from Rancho Cordova Parkway to Borderlands Drive. A full fine lane improvement would extend to Americanos Blvd. The final striping will be installed allowing three eastbound lanes and two westbound lanes. New signals will be installed at the intersections of Rancho Cordova Parkway, Timberlands Drive and an interim signal at Americanos Blvd.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
Easton Valley Pkwy Phase 1	Planned	Rancho Cordova	2020	Construct Easton Valley Parkway as a new 6-lane road from Rancho Cordova Parkway to the City Limits including intersection improvements at Rancho Cordova Parkway.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
Femoyer Road	Planned	Rancho Cordova	2021-2036	Femoyer Road, from Mather Blvd. to Peter A McCuen Road: reconstruct and widen from 2 to 4 lanes and connect to Air Park Drive. The roadway section will include bike lanes, medians and/or turn pockets, landscape and sidewalk.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
Rancho Cordova Parkway, Douglas Road to Chrysanthy Boulevard	Planned	Rancho Cordova	2020	Construct a new four lane road Rancho Cordova Parkway, from Douglas Road to Chrysanthy Boulevard.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
Sacramento County					

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
South Watt Avenue Widening	Planned	Sacramento County	By 2020	Widen South Watt Avenue from Elder Creek to Route 16 from 2 to 4 lanes	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services • Paleontology
U.S. 50 / Watt Ave. Interchange Modification	Completed	Sacramento County	2015	In Sacramento County: at U.S. 50 and Watt Ave., modify the freeway interchange. On Watt Ave., from Folsom Blvd. to La Riviera Dr., construct multimodal improvements. Project will construct a dedicated transitway for Bus Rapid Transit and dedicated bicycle and pedestrian pathways through the interchange.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Hazel Ave Widening	Planned	Sacramento County	2020	In Sacramento County, Hazel Ave, between Folsom Boulevard and US Highway 50: multi-modal corridor improvements and interchange improvement.	• Air quality • Noise • Traffic • Visual • Hazardous materials • Emergency services
Bradshaw Landing US 50 On Ramp Widening	Approved	Sacramento County	2016	Westbound on ramp widening.	• Air quality • Noise • Traffic • Hazardous materials • Emergency services
Development					
CITY OF SACRAMENTO					
Curtis Park Village	In construction	Sacramento	Ongoing	70-acre mixed use development; approximately 335-365 units	• Air quality • Noise • Traffic • Visual • Hazardous materials
McKinley Village	In construction	Sacramento	Ongoing	The McKinley Village project application is requesting entitlements to subdivide approximately 48.8 acres for the construction of 336 single family homes.	• Air quality • Noise • Traffic • Visual • Hazardous materials

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
Stockton and T Street	Planned	Sacramento	2025	The proposed project, located at 3675 T Street, would remove the existing 120,000-square foot (sf) vacant office building (formerly AT&T) and associated parking lot, and subdivide the property for construction of a mixed-use residential (a 214-unit, five-story, multi-family housing complex and approximately 24 single-family homes) and commercial development. The project site consists of approximately 4.9 acres (213,444 sf).	• Air quality • Noise • Traffic • Visual • Hazardous materials
Sacramento Entertainment and Sports Center	In construction	Sacramento	2016	The proposed project, located in downtown Sacramento between J Street, L Street, 3rd Street, and 5th Street, includes a 17,500-seat regional sports and entertainment center and up to 1.5 million square feet of retail, restaurant, office, hotel, and residential space.	• Air quality • Noise • Traffic • Visual • Hazardous materials
Totals for City of Sacramento				**151 acres / 1,489 units**	
RANCHO CORDOVA					
Westborough Specific Plan	Planned	Rancho Cordova	Pending	1,695-acre mixed use development; approximately 6,078 units located south of US 50 and north of White Rock Road.	• Air quality • Noise • Traffic • Visual • Hazardous materials
Arboretum-Waegell Specific Plan	Planned	Rancho Cordova	Pending	1,349 acres that will provide a diversity of housing types, retail and commercial opportunities, and public uses. The completed project will provide 5,037 dwelling units. Sunrise Boulevard to the west, Jackson Highway to the south, Keifer Road, and Grant Line Road to the east	• Air quality • Noise • Traffic • Visual • Hazardous materials
Totals for Rancho Cordova				**3,044 acres / 11,115 units**	

Project	Status	Location	Completion Year	Description	Potentially Affected Resources in Common With Proposed Project
SACRAMENTO COUNTY					
West Jackson		Sacramento County	By 2025	17,893 dwelling units on 5,900 acres and is generally bounded on the west by Watt Avenue, on the north by Jackson Highway, on the east by Excelsior Road and on the south by Elder Creek Road.	• Air quality • Noise • Traffic • Visual • Hazardous materials
Jackson Township Specific Plan		Sacramento County	By 2025	1,328 acres with 1,271 dwelling units, bounded by Excelsior Road on the west, both sides of Keifer Blvd on the north, and Jackson Highway on the south.	• Air quality • Noise • Traffic • Visual • Hazardous materials
NewBridge Specific Plan		Sacramento County	By 2025	1,150 acres with 2,975 dwelling units, bounded by Kiefer Avenue on the north, Sunrise Blvd and the Folsom South Canal on the east, and Jackson Highway on the south.	• Air quality • Noise • Traffic • Visual • Hazardous materials
Mather Specific Plan		Sacramento County	By 2025	1,271 dwelling units on 850 acres bounded on the west by Zinfandel Drive, north of Kiefer Blvd, west of the Folsom South Canal, and south of Douglas Road.	• Air quality • Noise • Traffic • Visual • Hazardous materials
Totals for Sacramento County				**9,228 acres / 23,410 units**	
Grand total for development				**12,396 acres / 35,464 units**	

Sources: Caltrans, SACOG, County of Sacramento, Sacramento Transportation Authority, City of Sacramento, and the City of Rancho Cordova

2.19 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including CO_2, CH_4, nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” "Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. “Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[6].

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively. [7]

Regulatory Setting

This section outlines state and federal efforts to comprehensively reduce GHG emissions from transportation sources.

State

With the passage of several pieces of legislation including State Senate and Assembly bills and Executive Orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate change.

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order (EO) S-3-05 (June 1, 2005): The goal of this EO is to reduce California’s GHG emissions to 1) year 2000 levels by 2010, 2) year 1990 levels by 2020, and 3) 80 percent below

[6] http://climatechange.transportation.org/ghg_mitigation/
[7] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

the year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 (AB 32), Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97 (SB 97) Chapter 185, 2007, Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires CARB to set regional emissions reduction targets from passenger vehicles. The MPO for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

Federal

Although climate change and GHG reduction are a concern at the federal level, currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the USEPA nor the FHWA has issued explicit guidance or methods to conduct project-level GHG analysis. [8] FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

[8] To date, no national standards have been established regarding mobile source GHGs, nor has USEPA established any ambient standards, criteria or thresholds for GHGs resulting from mobile sources.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 - *Federal Leadership in Environmental, Energy and Economic Performance*.

EO 13514 (October 5, 2009): This order is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

USEPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, USEPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six greenhouse gases constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and USEPA's assessment of the scientific evidence that form the basis for USEPA's regulatory actions. USEPA in conjunction with NHTSA issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010.[9]

The USEPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On August 28, 2012, USEPA and NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model year 2017-2025 standards this program is projected to save approximately four billion barrels of oil and two billion metric tons of GHG emissions.

The complementary USEPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut greenhouse gas emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish greenhouse gas emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce CO2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

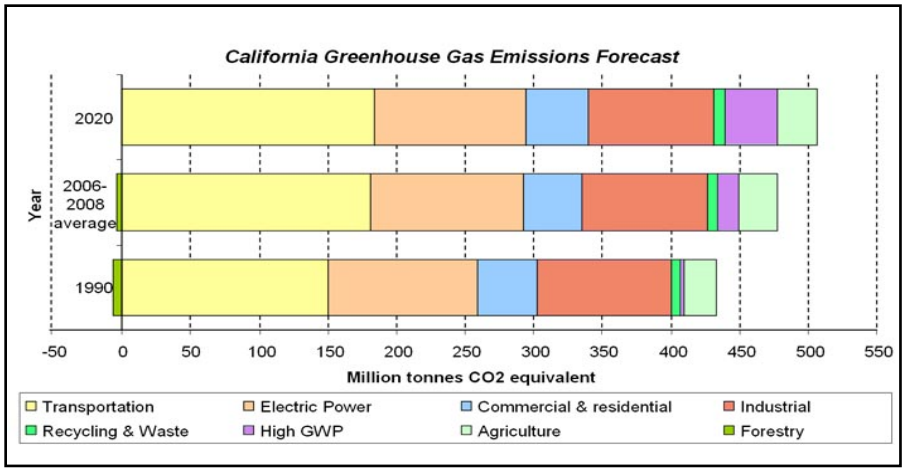
[9] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[10] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, the ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

Figure 2-7. California Greenhouse Gas Forcast



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

The Department and its parent agency, the Transportation Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006.[11]

[10] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

[11] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide (CO_2) from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0-25 miles per hour (see Figure 2-8 below). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, may be reduced.

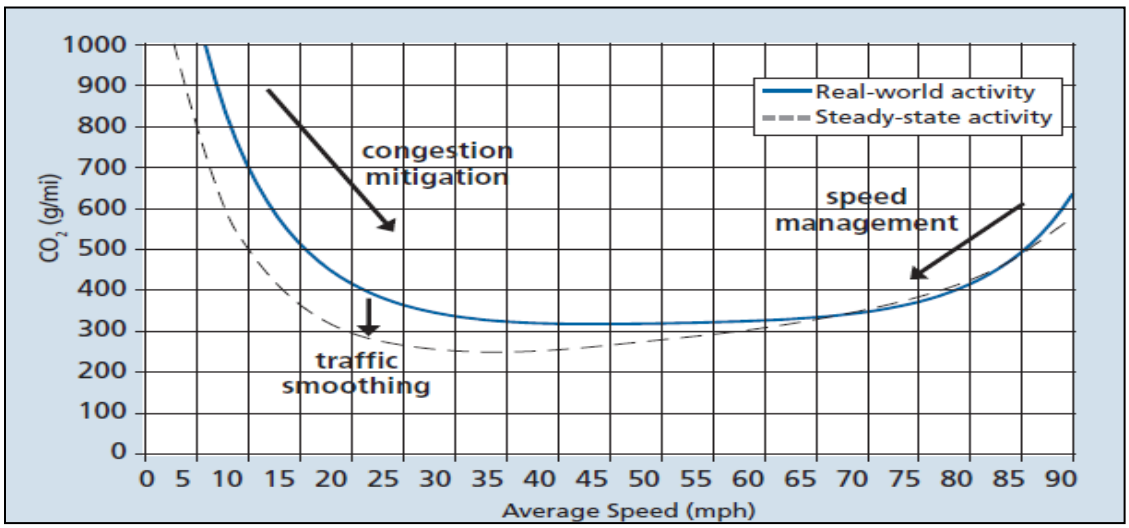


Figure 2-8. Possible Effect of Traffic Operation Strategies in Reducing On-Road CO2 Emissions

The purpose of the proposed project is to construct a transportation facility, although the project itself would not generate additional traffic as a land use development project would, but rather is intended to accommodate projected regional growth while maintaining acceptable roadway operations. However, it is anticipated that as a result of the increased vehicle flow, some vehicles would divert their routes from local roadways to the project's segments of US 50. As determined in the traffic study, the proposed project could result in an average 4.4% increase in mainline ADT volumes on US 50 in 2040 compared to No Build alternative. Alternative 1 with 4.3%, Alternative 2 with 4.4%, and Alternative 3 with -0.6%, respectively. Under current conditions, the ADT is approximately 15% more than the proposed project and 19% more than the No Build alternative.

According to Caltrans *Climate Action Program* (Caltrans 2006), one of the main strategies in the program for reducing GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0 to 25 mph) and speeds over 55 mph (see Figure 2-8). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

Pursuant to the Climate Action Program, the proposed project would improve road operations by reducing traffic congestion on the segments of US 50 along the project corridor (increase of 4.3% and 4.4% with Alternatives 1 and 2, decrease of 0.6% with Alternative 3). The potential also exists for vehicles that currently qualify to use the HOV lanes but drive in the general-purpose lanes to transfer to the more efficient HOV lanes, which would also allow the general-purpose lanes to operate more efficiently. In addition, as described above, the vehicles that would divert their route from local roadways (where stop-and-go speeds are the primary flow of traffic) to US 50 would reduce GHG emissions by operating at more efficient speeds. Hence, the

proposed project would contribute to reducing fuel consumption from idling vehicles by minimizing stop-and-go activity and allowing smoother traffic flow on HOV and general-purpose lanes of the US 50 project segment. Although it is projected that certain project segments of US 50 could experience additional traffic, it is anticipated that there will be increased efficiency of vehicles on the project segments of US 50 compared with Alternative 4.

The project also includes the bicycle and pedestrian improvemments on 65th Street (plaese refer to the rpoject description at the fron of this document).

Project-related GHG emissions were calculated using the emission factors from EMFAC2014 Model, with project-specific total VMT by speed bin distribution. The quantitative analysis was performed following the guidelines outlined in the GHG Protocol (Greenhouse Gas Analysis Protocol for Transportation Projects), and separate model runs were conducted for existing conditions as well as the opening year and horizon year for the build and no-build alternatives. The results are presented in Table 2-43. Table 2-43 compares the add a lane alternatives. Table 2-43 indicates that:

- The annual operational emissions of CO_2 in 2020 would decrease under the No Project alternative and Alternative 3, and slightly increase under Alternatives 1 and 2, compared with the base year 2013, even with increase in VMT.
- The horizon year (2040) GHG emissions for all alternatives will decrease compared with the existing conditions (2013). This is due to the statewide implementation of the control measures to comply with the goal of state regulations such as AB-32 and AB-1493 (Pavley I), low carbon fuel standard, and Low-Emission Vehicle (LEV III GHG) standards[12]. EMFAC2014 incorporates these changes in calculation of emission factors for future years.
- While the VMTs in the project area increased under Alternatives 1 and 2 for the horizon year 2040, total CO_2 emission would also increase due to more traffic and better operational efficiency with high speed bins over 65+ mph with the following VMTs: Alternative 1 with 117,456, Alternative 2 with 50,303, Alternative 3 with 16,007, and Alternative 4 with 0 (Table 2-23 and Fig 2-6).

Table 2-43. Annual CO_2 Emissions for Existing Conditions (2013) and Future No Build and Alternatives 1 and 2 (Opening Year [2020] and Horizon Year [2040]

Year	Scenario	VMT (miles)		CO_2 Emission (metric tons/year)	% Change from 2013 emission
		Daily	Annual		
2013	Base Year	1,979,279	722,436,780	312,292	-
Opening Year 2020	Alternative 4 (no build)	2,216,162	808,899,013	302,005	-3.3%
	Alternative 1	2,282,138	832,980,538	320,096	2.5%
	Alternative 2	2,285,628	834,254,111	317,995	1.8%
	Alternative 3	2,202,424	803,884,636	305,356	-2.2%
	Change from No-Build (Emission Increment and % change)				
	Alternative 1			18,091 (6%)	
	Alternative 2			15,990 (5.3%)	
	Alternative 3			3,351 (1.1%)	
	Alternative 4 (no build)	2,617,566	955,411,725	257,671	-17.5%

[12] Clean Car Standard (Pavley I) – reduces GHG emissions in model years 2009 through 2016 passenger vehicles;
Low Carbon Fuel Standard (LCFS) – calls for a reduction of at least 10% of the carbon intensity of California's transportation fuels by year 2020; and
Third stage of Low-Emission Vehicle standards (LEV III GHG) – reduces GHG emissions in model years 2017 through 2025 passenger vehicles.

Horizon Year 2040	Alternative 1	2,730,769	996,730,601	279,731	-10.4%
	Alternative 2	2,733,443	997,706,779	280,298	-10.2%
	Alternative 3	2,602,167	949,790,970	262,169	-16.1%
	Change from No-Build (Emission Increment and % change)				
	Alternative 1			22,060 (8.6%)	
	Alternative 2			22,627 (8.8%)	
	Alternative 3			4,498 (1.7%)	
EMFAC2014 was used in combination with the VMT speed distribution and daily and Annual VMTs, and model default for fleet mix in Sacramento County. *Source: AECOM, 2015.*					

As Table 2-43 shows, for future studied years the build alternatives' annual GHG operational emissions show a relatively small increase compared with Alternative 4, ranging from approximately 5 to 9 percent increases for the following alternatives: Alternative 1 (6%) and Alternative 2 (5.3%) in the opening year 2020, and Alternative 1 (8.6%) and Alternative 2 (8.8%) in the horizon year 2040. This increase is due to the proposed new additional lanes causing an increase in traffic volumes and VMT along the project corridor.

Alternative 3 also results in a net increase in annual GHG emissions compared to Alternative 4 in the 2020 opening year and 2040 horizon year. When compared to Alternative 1, Alternative 3 would result in a 4.6% and 6.3% reduction in annual GHG emissions in year 2020 and 2040, respectively.

The SACOG 2016 MTP/SCS estimated regional GHG emissions to demonstrate that the plan meets the SB 375 targets set by ARB. The SB 375 emission reduction targets are 7 percent below 2005 emissions levels by 2020 and 16 percent below 2005 levels by 2035. The 2012 MTP/SCS estimated that the per capita emissions for the region would be 10 percent below 2005 emissions levels in 2020 from 2005, and 16 percent below 2005 emissions levels in 2035. The design concept and scope of the proposed project is consistent with the project description in the MTP and the GHG analysis. Therefore, although the project could result in a slight increase in GHG emissions compared with the No-Project scenario, the effect of the proposed project has been accounted for by SACOG when determining if the region will meet SB 375 GHG reduction targets. Because SACOG has determined in its current 2016 MTP/SCS that it would meet its GHG reduction targets and accounts for the proposed project, the proposed project would not impede regional GHG reduction goals.

<u>Limitations and Uncertainties with Modeling</u>

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO_2 emissions due to impacts on traffic. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study[13], brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's CO_2 emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idling) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by EPA and the CARB is underway on modal-emission

[13] Matthew Bartha, Kanok Boriboonsomsin. 2009. *Energy and emissions impacts of a freeway-based dynamic eco-driving system.* Transportation Research Part D: Transport and Environment Volume 14, Issue 6, August 2009, Pages 400–410

models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling.

CARB is currently not using EMFAC to create its inventory of greenhouse gas emissions. It is unclear why the CARB has made this decision. Their website only states:

> REVISION: Both the EMFAC and OFFROAD Models develop CO_2 and CH_4 [methane] emission estimates; however, they are not currently used as the basis for [CARB's] official [greenhouse gas] inventory which is based on fuel usage information. . . However, ARB is working towards reconciling the emission estimates from the fuel usage approach and the models.[14]

Other Variables

With the current science, project-level analysis of greenhouse gas emissions has limitations. Although a greenhouse gas analysis is included for this project, there are numerous key greenhouse gas variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2012 ,"[15] which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now at a record high. Corporate Average Fuel Economy (CAFE) standards remained the same between model years 1995 and 2003 and subsequently began setting increasingly higher fuel economy standards for future vehicle model years. The EPA estimates that light duty fuel economy rose by 16% from 2007 to 2012. Table 2-44 shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025 as available from the National Highway Traffic Safety Administration for the 2012-2016 and 2017-2025 CAFE Standards.

Table 2-44. Average Required Fuel Economy (mpg)

	2012	**2013**	**2014**	**2015**	**2016**	**2018**	**2020**	**2025**
Passenger Cars	33.3	34.2	34.9	36.2	37.8	41.1 - 41.6	44.2 - 44.8	55.3 - 56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.6 - 30.0	30.6 - 31.2	39.3 - 40.3
Combined	29.7	30.5	31.3	32.6	34.1	36.1 - 36.5	38.3 - 38.9	48.7 - 49.7
Source: EPA 2013, http://www.epa.gov/fueleconomy/fetrends/1975-2012/420r13001.pdf								

Second, near zero carbon vehicles will come into the market during the design life of this project. According to the 2013 Annual Energy Outlook (AEO2013):

> "LDVs that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent GHG emissions and CAFE standards over the projection period. Sales of such vehicles increase from

[14] http://www.arb.ca.gov/msei/offroad.htm

[15] http://www.epa.gov/oms/fetrends.htm

20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case."[16]

The greater percentage of alternative fuel vehicles on the road in the future will reduce overall GHG emissions as compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

Third, California has recently adopted a low-carbon transportation fuel standard in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations, Sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

Lastly, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "Effects of Gasoline Prices on Driving Behavior and Vehicle Market,"[17] the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists adjust to higher gas prices by making fewer trips and driving more slowly; 2) the market share of sports utility vehicles is declining; and 3) the average prices for larger, less-fuel-efficient models declined from 2003 to 2008 as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles. More recent reports from the Energy Information Agency[18] and Bureau of Economic Analysis[19] also show slowing re-growth of vehicle sales in the years since its dramatic drop in 2009 due to the Great Recession as gasoline prices continue to climb to $4 per gallon and beyond.

Limitations and Uncertainties with Impact Assessment

Taken from p. 5-22 of the National Highway Traffic Safety Administration Final EIS for MY2017-2025 CAFE Standards (July 2012), Figure 2-9 illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

"Moss and Schneider (2000) characterize the 'cascade of uncertainty' in climate change simulations. As indicated in Figure 2-9, the emission estimates used in this EIS have narrower bands of uncertainty than the global climate effects, which are less uncertain than regional climate change effects. The effects on climate are, in turn, less uncertain than the impacts of climate change on affected resources (such as terrestrial and coastal ecosystems, human health, and other resources […] Although the uncertainty bands broaden with each successive step in the analytic chain, all values within the bands are not equally likely; the mid-range values have the highest likelihood."[20]

[16] http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf
[17] http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf
[18]http://www.eia.gov/oiaf/aeo/tablebrowser/aeo_query_server/?event=ehExcel.getFile&study=AEO2013&region=0-0&cases=ref2013-d102312a&table=114-AEO2013&yearFilter=0
[19] Historical Vehicle Sales: www.bea.gov/national/xls/gap_hist.xls
[20] http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf. page 5-22

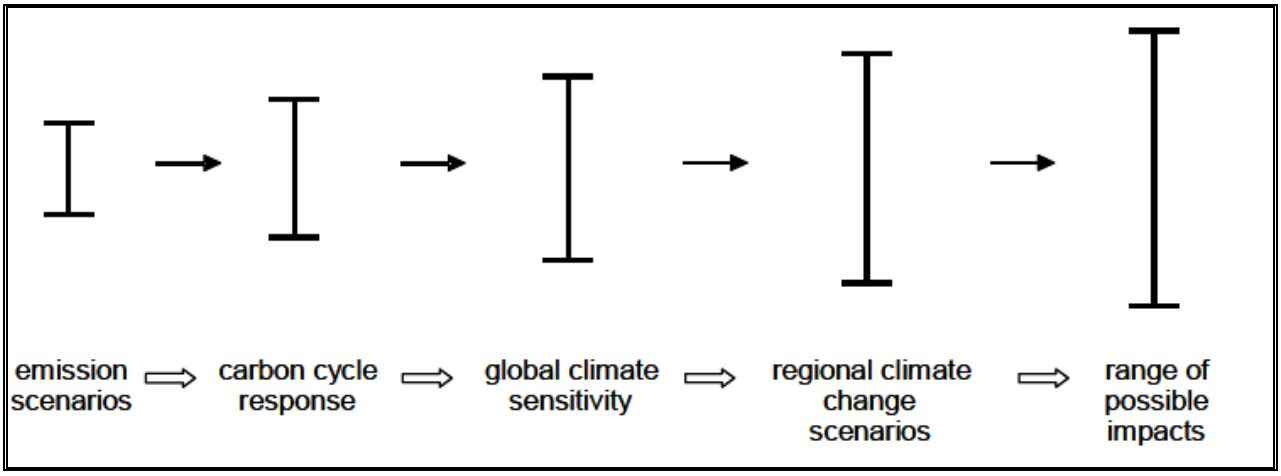


Figure 2-9. Cascade of Uncertainties.

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled increase in CO_2 emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of CO_2 equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons CO2 from 2000 to 2030, which represents an increase of between 25 and 90%.[21]

The assessment is further complicated by the fact that changes in greenhouse gas emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of greenhouse gas emissions, rather than causing "new" greenhouse gas emissions. It is difficult to assess the extent to which any project level increase in CO_2 emissions represents a net global increase, reduction, or no change; there are no models approved by regulatory agencies that operate at the global or even statewide scale.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

[21] Intergovernmental Panel on Climate Change (IPCC). February 2007. Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. http://www.ipcc.ch/SPM2feb07.pdf.

Construction GHG emissions include emissions produced as a result of onsite construction equipment, material delivery and haul trucks trips, construction worker vehicles, and from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. Project construction emissions of CO_2 were estimated to result in 1,080 tons for the 15 month duration of construction. Estimates were calculated using the SMAQMD's Road Construction Model (Version 7.1.5.1, December 2013) and the results are presented in Table 2-37. Furthermore, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction would even be lower than the estimated values in Table 2-37.

CEQA Conclusion

As discussed above, in 2020 all build alternatives show an increase in CO_2 emissions, except for the no build and Alternative 3 which show a decrease in emissions In 2040, all build and no build alternatives show a decrease in CO_2 emissions . In addition, as discussed above, there are also limitations with EMFAC and with assessing what a given CO_2 emissions increase means for climate change. Therefore, it is Caltrans determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from Former Governor Arnold Schwarzenegger's Strategic Growth Plan for California The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figure 2-10: The Mobility Pyramid.

Figure 2-10. The Mobility Pyramid.

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities, but does not have local land use planning authority. Caltrans also assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, that control of fuel economy standards is held by the U.S. EPA and ARB.

Caltrans is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under Senate Bill (SB) 375 (Steinberg 2008), SB 391(Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32.

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce greenhouse gas (GHG) emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future, statewide, integrated, multimodal transportation system.

The purpose of the CTP is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the CTP 2040 will identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs.

Table 2-45 summarizes the Department and statewide efforts that it is implementing to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 2-45. Climate Change/CO_2 Reduction Strategies						
Strategy	**Program**	**Partnership**		**Method/Process**	Estimated CO_2 Savings Million Metric Tons (MMT)	
		Lead	**Agency**		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012): is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013)[22] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

- Caltrans and the California Highway Patrol are working with regional agencies to implement intelligent transportation systems (ITS) to help manage the efficiency of the existing highway system. ITS is commonly referred to as electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system. ITS include ramp meters, fiber optic cable, CCTV, EMSs, and CMSs. All on-ramps within the projects limits have operational ramp meters. A fiber optic communication system project is programmed for the 2014 SHOPP within the project limits.
- In addition, the Sacramento County of Governments provides ridesharing services and park-and-ride facilities to help manage the growth in demand for highway capacity. Numerous park and ride facilities serve the US 50 corridor (please refer to the Traffic and Transportation/Pedestrian and Bicycle Facilities section). No additional park and ride facilities are planned for this project.
- The City of Sacramento's 65th Street improvements includes several bicycle and pedestrian features, including bicycle lanes, pedestrian pork chop islands at the 65th Street / WB US 50 off-ramp intersection, wider sidewalks within the 65th Street / WB US 50 interchange vicinity, and new raised sidewalks with railings under the US 50 undercrossing structure. These features improve safety for pedestrians and bicyclists using 65th Street from the 65th Street Light Rail Station in the north to 4th Avenue in the south. These features will be constructed by the City of Sacramento regardless with alternative is selected as the project preferred alternative.
- Landscaping reduces surface warming, and through photosynthesis, decreases CO2. The project proposes planting in the intersection slopes, drainage channels, and seeding in areas next to frontage roads as well as planting a variety of different-sized plant material and scattered skyline trees where appropriate but not to obstruct the view of the mountains. The Department has committed to planting at least 40 trees. These trees will help offset any potential CO2 emissions increase.
- The project will utilize energy efficient lighting, which will be defined during final design.

Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on California's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat, increasing storm damage from flooding and erosion, and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Economic and strategic ramifications may result from these types of impacts to the transportation infrastructure.

[22] http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency task force progress report on October 28, 2011[23], outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks .

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state and federal public and private entities to develop The California Climate Adaptation Strategy (Dec 2009)[24], which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[25] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.

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23 http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation

24 http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

25 Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (2012), available at http://www.nap.edu/catalog.php?record_id=13389.

- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise.

In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

All projects that have filed a Notice of Preparation as of the date of EO S-13-08, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The proposed project is outside the coastal zone and direct impacts to transportation facilities due to projected sea level rise are not expected.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding, the increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to Executive Order S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment.

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Chapter 4 – Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization and/or mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including Project Development Team (PDT) meetings, interagency coordination meetings, and presentations to neighborhood groups. This chapter summarizes the results of the Department's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

Consultation and coordination with public agencies

- In January 2016, Caltrans met with the City of Sacramento public works department and city council staff to discuss project scope and anticipated local traffic impacts. Caltrans staff identified two local streets that will require detours and several other local streets that will have traffic handling plans during structure construction.

- Caltrans staff have met with City of Sacramento staff on various occasions to discuss elements of the project, such as sound walls, traffic detours, and emergency services. This dialog is continuing.

- Caltrans right-of-way staff have met with the City of Sacramento and the California Department of Motor Vehicles (current leases of the parking areas under the W-X freeway) to discuss temporary relocation options. Discussions are on-going.

- Caltrans continues to meet with Regional Transit and UPRR regarding construction over the light rail line and railroad tracks at 20th Street and Brighten OH.

Public participation

- In January 2016, Caltrans staff attended a public outreach meeting in the Land Park community on 1/13/16 as an informal information sharing. The public was generally receptive to the project.

- On several occasions in 2012, Caltrans staff met with members of the Elmhurst neighborhood and their city council member to discuss sound walls.

- Caltrans right of way staff met with the storage unit tenant under the W-X freeway between 15th and 16th Streets to discuss options regarding continued operations at their current location, including moving the current entrance on 15th Street to W or X Street.

- As part of the public circulation of the draft environmental document, Caltrans is preparing for several workshops within the limits of the project.

Chapter 5 – List of Preparers

The following Caltrans and consultant staff contributed to the preparation of this Initial Study.

Rajive Chadha, Environmental Engineer, Hazardous Waste/Materials; Contribution: Initial Site Assessment (ISA)

Jason Lee, Transportation Engineer, Air Quality; Contribution: Air Quality Assessment

Joan Fine, Associate Environmental Planner, Cultural Resources; Contribution: Cultural Resources Studies

Soka Soka, Hydraulics Engineer; Contribution: Floodplain Hydraulic Study

Kathleen Grady, Associate Landscape Architect; Contribution: Visual Impact Assessment (VIA)

Sean Cross, NPDES Coordinator; Contribution: Water Quality Assessment Report

Ken Lastufka, Associate Environmental Planner; Contribution: Environmental document preparation, Community Impact Assessment (CIA)

Richard Olson, Associate Environmental Planner, Cultural Resources; Contribution: Cultural Resources Studies

Mark Rayback (Wood Rogers), Transportation Engineer; Contribution: Traffic Study

Michele Lukkarila, Associate Environmental Planner, Natural Resources; Contribution: Natural Environment Study (NES)

Saeid Zandian, Transportation Engineer, Noise; Contribution: Noise Assessment

Chapter 6 – Distribution List

Federal, State, and Local Agencies

National Marine Fisheries Service
United States Army Corps of Engineers
United States Environmental Protection Agency
United States Fish and Wildlife Service
United States Department of the Interior
California Air Resources Board
California Department of General Services
California Department of Housing and Community Development
California Department of Toxic Substances Control
California Department of Water Resources
California Department of Fish and Game
California Department of Parks and Recreation
California Energy Commission
California Highway Patrol
California Department of Resources Recycling and Recovery (CalRecycle)
California Office of Historic Preservation
California Public Utilities Commission
California Natural Resources Agency
California Transportation Commission
California Department of Motor Vehicles
Central Valley Regional Water Quality Control Board
California State University, Sacramento
Native American Heritage Commission

Local Agencies

City of Sacramento
Sacramento County
City of West Sacramento
City of Rancho Cordova
Sacramento Air Quality Management District
Sacramento Regional Transit
El Dorado County Transit Authority
Sacramento Transportation Authority
Paratransit
Sacramento Area Council of Governments
Sacramento Housing and Redevelopment Agency
Sacramento Metropolitan Chamber of Commerce
Sacramento Sheriff's Department
Sacramento City Police Department
Sacramento City Fire Department
Sacramento Metro Fire District
Sacramento Regional Sanitation District
Sacramento Area Flood Control Agency
Los Rios Community College District

Sacramento City Unified School District

Neighborhood Associations, Organizations, Other

Southside Park Neighborhood Association
East Sacramento Improvement Association
East Sacramento Chamber of Commerce
Sierra Curtis Neighborhood Association
Land Park Community Association
Sacramento Old City Association
Boulevard Park Neighborhood Association
Capitol Area Development Association
Capitol Area R Street Association
Greater Broadway Partnership Business Improvement District
Sierra Oaks Neighborhood Association
Newton Booth Neighborhood Association
Beverly Way Neighborhood Association
R Street Sacramento Partnership
Richmond Grove Neighborhood Association
River Park Neighborhood Association
River City Commons
Upper Land Park Neighbors
Oak Park Neighborhood Association
Oak Park Business Association
Elmhurst Neighborhood Association
Midtown Neighborhood Association
Midtown Business Association
Folsom Blvd. Alliance
Medical Center Neighborhood Association
Campus Commons Homeowners Association
Downtown Sacramento Partnership
Old Sacramento Business Association
Environmental Council of Sacramento
Downtown Min-Storage

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Senator Diane Feinstein
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State Capitol
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Government Representatives

Sacramento Council Member Jay Schenirer
Sacramento Council Member Jeff Harris
Sacramento Councilmember Steve Hansen
Sacramento Councilmember Eric Guerra

Sacramento County Supervisor Phil Serna
Sacramento County Supervisor Susan Peters
Sacramento County Supervisor Don Nottoli

Native American Tribes

Ione Band of Miwok Indians
Shingle Springs Band of Miwok Indians
Nashville-El Dorado Miwok
Sierra Native American Council
Wilton Rancheria
United Auburn Indian Community of the Auburn Rancheria

Libraries

Central
E.K. McClatchy
McKinley
Rancho Cordova
Colonial Heights

APPENDICES

Appendix A. CEQA Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Initial Study/Environmental Assessment (IS/EA). Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or mitigation measures is under the appropriate topic headings in Chapter 2.

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FOREST 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 Dept. 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 the 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management 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?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: 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 Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
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 Game or US Fish and Wildlife Service?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
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?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 risks to life or property?	☐	☐	☐	☒
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?	☐	☐	☐	☒

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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 for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) 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 where residences are intermixed with wildlands?	☐	☐	☐	☒

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) 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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) 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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)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 mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
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:	☐	☐	☒	☐
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) 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?	☐	☐	☒	☐
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)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Appendix B. Resources evaluated relative to the requirements of Section 4(f)

Section 4(f) of Department of Transportation Act of 1966, codified in federal law at 49 USC 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

This section of the document discusses parks, recreational facilities, wildlife refuges and historic properties found within or next to the project area that do not trigger Section 4(f) protection because either: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

Parks

The following five parks are publically-owned and adjacent to the proposed project:

- ***O'Neil Field***: O'Neil Park is at 715 Broadway and includes a full-sized soccer field and two softball fields.
- ***Southside Park***: Southside Park is a 19 acre parl at 6th and W street and includes a swimming pool, wading pool, three-quarter mile jogging trail, Southside Clubhouse, lake with fishing piers, accessible playground, par course with four fitness stations, amphitheater, and picnic areas.
- ***Coloma Park:*** Coloma Park, located on T Street south of US 50, is a three acre park that includes basketball courts and a play area. It's part of the Coloma Community Center.
- ***Oki Park:*** Oki Park is located south of US 50 on Wissemann Drive, is 14 acres, and includes a swimming pool, picnic areas, basketball courts, and soccer fields.
- ***Glenbrook Park:*** Glenbrook Park is located on La Rivera Drive north of US 50, is approximately 19 acres, and includes picnic areas, a ball field, soccer fields, tennis courts, and play areas.

Coloma Park

Coloma Park is part of the Coloma Community Center located at 4623 T Street in Sacramento. A sound wall may be constructed along the northern boundary of the Coloma Community Center in the existing US 50 right-of-way. Temporary construction easements in

the parking lot may be required for the construction of a sound wall. The TCE will involve using several parking spaces during sound wall construction. According to 23 CFR 774, a Section 4(f) evaluation must be prepared when a project will require the use of land from a publicly owned recreational facility (among other categories of land). This use may include temporary occupancy. However, Section 4(f) does not apply to temporary occupancy when the following five conditions are met:

1. Duration (of the occupancy) must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the 4(f) resource are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

No park facilities will be affected. No other parks or recreational facilities will be affected by any project alternatives. Temporary occupancy has been meet. The construction of the sound wall will take less time than the project as a whole and there will be no change in ownership; the scope of the work will be minor; there are no permanent adverse impacts or interference with Coloma Park; any damage to the parking lot will be repaired to a condition as good or better than before the project; and the City of Sacramento has concurred that the project would not have an adverse effect on this property (Caltrans received this concurrence on June 28, 2016; see Appendix C). As a result, 4(f) does not apply to Coloma Park.

Historic Properties

Two historic properties are either within or adjacent to the project: (1) the Sacramento Valley Railroad, which crosses under the project east of 65th Street, and (2) the Coloma Community Center, a former school building located at 4623 T Street in Sacramento. Both of these resources are protected under Section 4(f).

Sacramento Valley Railroad (SVRR)

The SVRR (Primary No. 34-455, trinomial CA-SAC-428H) was previously determined eligible for National Register listing in 1993. The railroad meets National Register criteria A and B, as the state's first passenger railroad and for its association with Theodore Judah. It is also California Historical Landmark number 526.

The SVRR segment within the project area, now part of Union Pacific Railroad, was also determined to be a contributor to the First Transcontinental Railroad, a resource eligible for National Register listing under criterion A for its importance in American history. A longer portion of the transcontinental railroad, which includes the segment in the project area, was previously recorded as CA-SAC-478H (P-34-505). It is also California Historical Landmark 780-8. The railroad segment passes under Interstate 80 at the eastern end of the project area, with bridges 24-0193L and 24-0193R carrying the freeway over the railroad. The two bridges were both constructed in 1970 and are not contributors to the historic railroad.

US 50 crosses over the SVRR on a bridge, the Brighton Overhead (bridge 24-0289L/R). The Brighton Overhead will be widened in the median area, with additional columns in the line of the existing columns. The tracks of the historic railroad beneath the bridges will not be altered. Widening of the freeway bridges will slightly increase the area of the railroad that is

shaded by the bridges and will slightly alter the railroad's setting at this location. These changes are so minor that they will not have an adverse effect on the historic railroad, diminish the qualities that make it eligible for National Register listing,. The SHPO concurred with a No Adverse Effect on August 30, 2006. Further, the proposed project would not directly or indirectly affect the activities, features, and attributes that qualify the SVRR as a Section 4(f) resource; therefore, Section 4(f) does not apply.

Coloma Community Center

The Coloma Community Center (formerly Elmhurst School), located within the boundary of Coloma Park at 4623 T Street in Sacramento, meets NRHP criterion C, at the local level of significance, for its architectural distinction and as a significant example of the work of prominent Sacramento architectural firm of Dean and Dean.

A proposed sound wall along eastbound US 50 in the Elmhurst Neighborhood will extend along the northern property boundary of the Coloma Community Center. The proposed sound wall will require a temporary construction easement (TCE) extending approximately ten feet onto a parking lot on the northern end of the Coloma Community Center property. The sound wall at this location would block the view north from the first floor windows at the rear end of the CCC and from the rear grounds of the property. However, this view was altered substantially in the 1970s by highway construction and has been determined to not be an important characteristic of the property's setting (Hope 2006). The TCE would extend only onto the northernmost row of parking spaces in the paved parking lot, which is considered a modern, non-contributing feature of the property. The TCE will have no effect on the characteristics that qualify the CCC for the NRHP. Construction of a sound wall along the northern property boundary will not have an effect on this historic property, as it will not diminish any of the qualities that qualify the property for the NRHP. Section 4(f) does not apply to the Coloma Center.

Appendix C: Concurrence Letter

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3
703 B STREET
MARYSVILLE, CA 95901
PHONE (530) 741-4233
FAX (530) 741-4245
TTY 711
www.dot.ca.gov/dist3

Serious Drought.
Serious drought.
Help save water!

June 16, 2016

Mr. Chris Conlin
Director
City of Sacramento, Parks and Recreation Department
915 I Street, 3rd Floor
Sacramento, CA 95814

Dear Mr. Conlin:

Caltrans is proposing eastbound and westbound High Occupancy Vehicle (HOV) lanes in the median of US Highway 50 (US 50) between the Sacramento River and Watt Avenue. As a result of this project, a sound wall may be built along eastbound US 50 adjacent to Coloma Park. The proposed sound wall may require a temporary construction easement (TCE) extending approximately ten feet onto a parking lot on the northern end of the Coloma Community Center property. The area would be used for construction equipment and materials related to the sound wall. It's anticipated that the TCE would be necessary for one (1) construction season. The TCE would extend only onto the northernmost row of parking spaces in the paved parking lot; up to 15 spaces may be affected. The small locked fenced area in the northeast corner used for storage may also need to be temporarily relocated. The parking lot would be restored to its pre-existing condition following construction of the sound wall, if constructed. The TCE would not affect any park or recreational facilities.

The proposed project is an action that is subject to the U.S. Department of Transportation Act of 1966 (49 USC 303 and 23 USC 138). Section 4(f) of this legislation seeks to protect publicly owned public parklands, recreation areas, waterfowl and wildlife refuges, and historic sites from impacts—the "use" of these resources—by the US Department of Transportation actions. After the evaluation of the impacts of an action upon Section 4(f) resources, a finding must be made.

According to 23 CFR 771, a Section 4(f) evaluation must be prepared when a project will require the use of land from one of the aforementioned categories. This use may include temporary occupancy.

However, Section 4(f) does not apply to temporary occupancy when the following conditions are met:

a) duration (of the occupancy) must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
b) scope of the work must be minor, i.e., both the nature and the magnitude of the changes

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to the 4(f) resource are minimal;

c) there are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
d) the land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project; and
e) there must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

The proposed project complies with each of these criteria. As such, Caltrans requests that City of Sacramento Park and Recreation Department provide its concurrence that the proposed HOV lane project constitutes a temporary occupancy and does not require a Section 4(f) evaluation. Please sign below and send the original to the following address:

DEPARTMENT OF TRANSPORTATION
ATTN: Ken Lastufka
District 3, Sacramento Area Office
2379 Gateway Oaks Drive, Suite 150
Sacramento, CA 95833

If you would like to discuss this issue further, please feel free to call Ken Lastufka at (916) 274-0586 or myself at (916) 274-0621.

Sincerely,

Kendall Schinke

KENDALL SCHINKE, Environmental Branch Chief

By signature below, the City of Sacramento Parks and Recreation Department concurs that the proposed project complies with CFR 771.135 regarding temporary construction use and does not require a Section 4(f) evaluation.

Print Name: U.S. Bureau of Reclamation Staff, Title

Director, Parks & Recreation 6/28/16

Signature Date

Appendix D. Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
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March 2013

NON-DISCRIMINATION
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, 1823 14th Street, MS-79, Sacramento, CA 95811. Telephone: (916) 324-0449, TTY: 711, or via Fax: (916) 324-1949.

MALCOLM DOUGHERTY
Director

"Caltrans improves mobility across California"

Appendix E. Avoidance, Mitigation, and/or Minimization Summary

Resources Requiring Mitigation Measures

Paleontology

- The presence or absence of paleontological resources usually cannot be known until construction excavation for the project is underway. Due to the presence of sensitive rock formations within the project limits, a Preliminary Paleontological Mitigation Plan was prepared to address potential discoveries during construction of the proposed project (Appendix F). A final Paleontological Mitigation Plan will be prepared by a qualified paleontologist near completion of the final design. The plan will be implemented during project construction. Please refer to Appendix F for specific measures.

Resources Requiring Avoidance/Minimization Measures

Land Use

- Phased construction in the W-X freeway section will be examined as a possible strategy to reduce impacts to the airspace lease tenants beneath US 50. This would involve constructing one viaduct segment at a time, so that not all the uses would be affected concurrently.

Utilities/Emergency Service

- Coordinate with utility companies regarding relocating utilities affected by the project prior to construction
- Coordinate with RT to relocate the light rail line wire east of 65th Street prior to construction.
- Coordinate with all emergency public services, such as medical services, law enforcement agencies, fire departments, and local ambulance services prior to construction.
- Caltrans will prepare Transportation Management Plan (TMP) in order to minimize disruptions to traffic and to emergency services during construction. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies including public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. Typical components of a TMP can include measures such as the implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts to traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public of construction activities.
- A public participation plan will be formulated, involving public workshops, press releases, project website, construction updates, etc.

Traffic and Transportation/Pedestrian and Bicycle Facilities

- Caltrans will prepare a Transportation Management Plan (TMP) in order to minimize disruptions to traffic and to emergency services during construction. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies including public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce overall duration of work activities where appropriate. Typical components of a TMP can include

measures such as the implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts to traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public and emergency vehicles of construction activities.

- Caltrans will continue coordination with Regional Transit regarding the temporary relocation of bus stops within the project area. Bus stop relocation would be temporary; in most cases, relocation would last six months or less.
- Caltrans will also continue coordinating with Regional Transit regarding the temporary suspension of light rail service during construction at US 50 at 19th Street and the Brighton Overhead. The suspended service would be temporary and would occur at night to minimize disruption of light rail operations.

Visual/Aesthetics

- Use materials, treatments, and/or color similar to those incorporated into other sound walls along the project corridor in order to provide visual continuity with the existing sound walls along the corridor.
- Transparent sound barriers may be considered for the viaduct section of US 50. If the transparent sound barriers are used in these areas, motorists would continue to have elevated views of the city and surrounding residential and commercial areas. Consideration of this concept is predicated by cost and acceptance by the City of Sacramento and the general public.
- All areas of ground disturbance used for staging, access or other construction related activities will be restored to its original condition. This can best be accomplished by contour grading the area and applying a hydro-seed consisting of an indigenous, native seed mix. This will help to blend these areas to the surrounding typography.
- Limit vegetation removal for sound wall construction.
- Develop highway planting and irrigation plans to replace highway planting and irrigation removed during construction activities in order to better bland the roadside into the surrounding community, hide visually unappealing roadside elements and beautify the corridor.

Cultural Resources

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.
- If buried archaeological deposits are revealed at the column installation locations, further review by a Caltrans PQS Archaeologist is required to assess and evaluate the nature of the find.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendent. At this time, the person who discovers the remains will contact the project's District environmental construction liaison and cultural resources specialist so that they may work with the Most Likely Descendent, when designated, on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Water Quality and Storm Water Runoff

Adherence to the following (in addition to other items not listed) is recommended to prevent

receiving water pollution as a result of construction activities and/or operations related to this project:

- All temporary equipment and material storage areas on State property must be accounted for and included in the total disturbed soil area (DSA) estimate, unless a stabilization method has been implemented, reviewed, and approved by NPDES or Storm Water staff.
- Caltrans' SWMP, Project Planning and Design Guide Section 4, and Evaluation Documentation Form provide detailed guidance in determining if a specific project requires the consideration of permanent Treatment BMPs. Line Item BMPs may be required during the PS&E phase of the project.
- The project shall adhere to the conditions of the Caltrans Statewide NPDES MS4 Permit CAS No. 000003 (Order No. 2012- 0011-DWQ).
- Projects with DSA equal to or exceeding 1 acre must adhere to the compliance requirements of the NPDES Construction General Permit CAS No. 000002 (Order No. 2009-0009-DWQ) for General Construction Activities (see special considerations within the SWDR). Under certain conditions, a rainfall erosivity value can be calculated to determine if a project qualifies for a waiver and exemption from CGP requirements. In which case, a SWPPP would not be necessary and the project could be covered under a WPCP. Both of these (SWPPP and WPCP) specify the level of temporary pollution control measures required for a project.
- Follow all applicable guidelines and requirements in the 2015 Caltrans Standard Specifications (2015 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.

    - Attention and focus (by the Contractor and field staff) should be given to 2015 CSS, Section 13-4 (Job Site Management), to control and manage potential sources of water pollution, such as material pollution, waste products and non-storm water related pollutants before they encounter storm water conveyance systems or receiving waters within the project limits.
    - Additional scrutiny should also include 2015 CSS, sections 13-9.02C and 13-9.02D (when and where applicable) for requirements related to the handling and disposal of concrete waste during construction operations.

- The Contractor prepared and Department approved SWPPP (or WPCP, if a CGP exemption is pursued) shall incorporate and describe appropriate strategies to address the effective implementation, handling, storage, use and disposal practices of temporary construction site BMPs during the course of construction operations and project activities.
- Shoulder backing areas should be stabilized by temporary construction site BMPs, or rolled and compacted in place, by the end of each day and prior to the onset of any precipitation.
- Existing drainage facilities should be identified and protected by the application of appropriate construction site BMPs.

Hazardous Waste/Materials

- Groundwater and soil contamination:
  Potential hazardous materials in soil and groundwater will be avoided to the extent feasible by design provisions. If infeasible soil and groundwater will be controlled and discharged pursuant to regulatory and permit requirements during construction.
- Treated wood waste:
  The project will be designed to avoid removal of metal beam guard rail posts and other treated wood and otherwise minimize the quantity requiring removal. Any metal beam guardrail posts and other treated wood removed will be disposed consistent with Caltrans Standard Special Provision 14-11.09 (Treated Wood Waste). The quantity will be determined during design.
- Asbestos Containing Material (ACM):

ACM will be avoided to the extent practicable. Any ACM on bridges requiring removal will be removed and disposed by a licensed and certified asbestos abatement contractor implementing an Asbestos Compliance Plan to prevent or minimize exposure to asbestos. Non-Standard Special Provisions addressing ACM will be included in the project specifications.

- Aerial Deposited Lead (ADL):
  The quantity of ADL soil requiring special handling will be minimized during design by identifying and restricting special handling areas to those above regulatory limits. Any ADL soil requiring removal will be managed pursuant to Standard Special Provision 7-1.02K(6)(j)(iii) when non-hazardous or SSP 14-11.03 when hazardous.
- Yellow Traffic Stripes
  Grindings (which consist of the roadway material and the yellow color traffic stripes) will be removed and disposed of in accordance with Caltrans Standard Special Provision 15-1.03B (Residue Containing High Lead Concentration Paints). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings shall be removed and disposed of in accordance with the same specification.

Air Quality

Project alternatives would comply with the requirements of Caltrans requirements and SMAQMD rules and Best Management Practices (BMPs), which would further reduce emissions during construction activities. The project would implement the following practices during construction:

- Construction contractors would comply with Caltrans Standard Specification Provisions which uses newer/retrofit engines for construction equipment;
- Comply with District's Rule 403 for fugitive dust emissions;
- Prohibit truck idling in excess of 10 minutes, whenever practical;
- Use only well-maintained equipment;
- Utilize proper planning to reduce rework and multiple handling of earth materials.

Noise

- Noise abatement, in the form of sound walls, may be constructed at the following locations:

  Westernmost Project Limit (I-5 I/C) to Alhambra Boulevard
  SWWB1 and SWEB1 would reduce noise levels by 2 to 11 decibels at 150 affected receivers.

  Alhambra Boulevard to 65th Street:

  SWWB2 would reduce noise levels by 5 to 9 decibels for up to 25 sensitive receptors.
  SWEB2-2A would reduce noise levels by 5 to 10 decibels for 58 sensitive receptors.
  SWEB3: Raising the existing sound wall height to 16 ft would not provide the required 5-dBA reduction; therefore, this barrier is not considered. However, replacing this barrier with a taller barrier is being considered depending on funding and final project design.
  SWEB4 would reduce noise levels by 5 to 7 decibels for 2 sensitive receptors.
  SWEB5 will reduce noise levels by 6 to 12 decibels for 7 sensitive receptors.
  SWEB6 would reduce noise levels by 5 to 9 decibels for 26 sensitive receptors.
  SWEB7A-7B would reduce noise levels by 5 to 7 decibels for 4 sensitive receptors.

The reasonable allowance for all of these sound walls was less than the construction costs; these sound walls are not eligible for federal re-imbursement or state funding. However, these sound walls have support from the adjacent community. If local funding is identified, some or all of these sound walls can be constructed.

- No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14.8-02. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise.

Biological Resources

- The contractor will install and maintain exclusionary devices for birds and bats in the joints and weep holes of all 11 structures [Elmhurst Viaduct, Brighton Overhead, Folsom Blvd. Undercrossing, and State College Undercrossing, Southside Park, 9th Street, 10th Street, Riverside Blvd., 15th-16th Streets, 18th Street- 24th Streets (Camellia City Viaduct) and 26th Street].
- If any work is anticipated on structures suitable for bird nesting or bat roosting that occurs between February 1st and August 31st, the construction crews shall take such measures as necessary to prevent bird nesting or bat roosting on portions of the structures that will cause a conflict between performing necessary work and nesting birds or roosting bats. Prior to February 1st, existing nests shall be removed and exclusionary devices such as netting or one-way doors shall be used to prevent migratory species from occupying said structures.
- Daily scraping, between February 1st and September 1st, of partially completed bird nests on structures is permitted to discourage nesting. If new nests are built or existing nests become occupied, then any work that would interfere with or discourage birds from returning to their nests will not be permitted. If day roosting bats are found during biological surveys, Caltrans shall consult with CDFW to and implement CDFW recommended measures to comply with provisions of the Fish and Game Code of California.

Appendix F. Preliminary Paleontological Mitigation Plan

Evaluation of Site-Specific Impact Potential
Caltrans will retain a qualified paleontologist to prepare the final Paleontological Mitigation Plan. They will evaluate the potential for impacts on paleontologically sensitive strata including strata that may be present in the subsurface in areas with strata of Holocene age exposed at the surface. The evaluation will be based on available geologic and geotechnical information; project design; proposed construction and/or maintenance methods, including anticipated depth of disturbance; and existing site conditions, including pre-existing disturbance, if any.

Preconstruction Meeting and Worker Awareness Training
Caltrans will provide a time for paleontological resources awareness training for all construction personnel prior to the start of site preparation and construction activities. Construction personnel involved with earthmoving activities will be informed of the possibility of encountering fossils; the types of fossils likely to be seen during construction activities (based on finds in the Riverbank and Modesto Formations in Sacramento County) and their appearance; and proper procedures in the event fossils are encountered.

Worker training will be prepared and presented by a qualified paleontologist or other appropriate personnel (e.g., California licensed professional geologist with appropriate experience) experienced in teaching non-specialists. It may be delivered at the same time as other planned construction worker education, or it may be presented separately.

Paleontological Monitoring
Full-time paleontological monitoring will be conducted for portions of the proposed project that have the potential to affect significant paleontological resources (i.e., all activities involving excavation or other ground disturbance in native substrate materials of Pleistocene age).
A trained paleontological monitor will oversee all ground-disturbing activities that affect native or potentially native substrate materials of Pleistocene age or older, including vegetation removal, site preparation, and construction grading and excavation. Paleontological monitoring will consist of observing operations and periodically inspecting disturbed, graded, and excavated surfaces. Under the direction of the Resident Engineer, the monitor will have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely, and/or recover fossils. The paleontologist will be responsible for coordinating with the Caltrans Resources Specialist and Construction Resident Engineer to ensure that monitoring is thorough but does not result in unnecessary delays.

Construction Contract Specifications
Caltrans Standard Specifications Section 14-7.04 Paleontological Resources Mitigation will be included in the construction contract to alert the construction contractor that mitigation activities will occur and coordination will be necessary.

Fossil Recovery
If fossil materials are discovered during project-related activities, the paleontologist will be responsible for determining whether recovery and curation are warranted. All materials warranting recovery will be stabilized on the site and then salvaged consistent with currently accepted procedures and the prevailing standard of care for paleontological materials collection. The paleontologist will be responsible for coordinating with the Caltrans Resources Specialist and Construction Resident Engineer to ensure that specimen recovery proceeds in a timely manner.

Fossil Preparation and Analysis
Recovered fossils will be prepared for identification consistent with currently accepted procedures and the prevailing standard of care. They will be identified by the paleontologist and additional

competent specialists if necessary. If possible, identification will include genus, species, and, if applicable, subspecies. If species-level identification is not feasible, the maximum feasible level of specificity will be provided. A faunal list will be developed.

Curation of Specimens
The Paleontological Mitigation Plan will include a curation agreement with an appropriate facility, approved by Caltrans, that will make specimens found available for later study by qualified individuals.

Preparation of Final Report
The paleontologist will prepare a final report that includes at least the following components:

- Information on site geology and stratigraphy, including a stratigraphic column;
- A description of field and laboratory methods;
- A faunal list, with stratigraphy ranges/occurrences for each taxon;
- A concise discussion of the significance of the site and its relationship to other nearby and/or similar fossil localities;
- A list of references consulted during the project, including published geologic maps for the site and vicinity; and
- A complete set of field notes, field photographs, and any new geologic maps developed for or during the project.

Appendix G: List of Acronyms and Abbreviations

AADT: average annual daily traffic
AASHTO: American Association of State Highway and Transportation Officials
ACM: Asbestos containing materials
ACP: Asbestos Compliance Plan
ADA: Americans with Disabilities Act
ADL: aerially deposited lead
ADT: average daily traffic
APCD: Air Pollution Control District
APE: Area of Potential Effects
AQMD: Air Quality Management District
AQMP: Air Quality Management Plan
BMP: Best Management Practice
BP: Before past
CalEPA: California Environmental Protection Agency
CAA: Clean Air Act
CAAQS: California Ambient Air Quality Standard
CARBH: California Air Resources Board
CCAA: California Clean Air Act
CCR: California Code of Regulations
CCRD: California Historical Landmark
CCTV: Closed circuit television
CDFW: California Department of Fish and Wildlife
CEQ: Council on Environmental Quality
CEQA: California Environmental Quality Act
CERLA: Comprehensive Environmental Response, Compensation, and Liability Act
CESA: California Endangered Species Act
CFR: Code of Federal Regulations
CGP: Construction general permit
CGS: California Geological Survey
CH_4: methane
CHRIS: California Historical Resources Information System
CIDH: cast-in-drilled-hole
CO: carbon monoxide
CO_2: carbon dioxide
CSS: Caltrans standard specifications
CTP: California Transportation Plan
CWA: Clean Water Act
dBA: A-weighted decibel
dBA Leq: A-weighted noise level
DOT: Department of Transportation
DPM: Diesel particulate matter
DSA: Disturbed Soil Area
EA: Environmental Assessment [NEPA}
EB: East bound
EDF: Evaluation documentation form
EJ: Environmental Justice
EMS: Extinguishable message sign
EO: Executive Order
ESA: Environmentally Sensitive Area
ESA: Endangered Species Act
FESA: Federal Endangered Species Act
FHWA: Federal Highway Administration
FOE: Finding of Effect
FONSI: Finding of No Significant Impact
GHG: greenhouse gas

HAP: Hazardous air pollutant
HCP: Hydrofluorocarbon
HEI: Health Effects Institute
HOV: High-Occupancy Vehicle
HPSR: Historic Property Survey Report
HOV: Hydrologic sub-area
IC: Interchange
IPCC: Intergovernmental Panel on Climate Change
IRRS: Interregional Road System
IS: Initial Study [CEQA]
ISA: Initial Site Assessment
ITS: Intelligent Transportation System
LOS: Level of Service
LCP: Lead Compliance Plan
mph: miles per hour
MPO: Metropolitan Planning Organization
MSA: Metropolitan Statistical Area
MSAT: Mobile Source Air Toxics
MTP: Metropolitan Transportation Plan
MTIP: Metropolitan Transportation Improvement Program
NAAQS: National Ambient Air Quality Standards
NAC: Noise Abatement Criteria
NCIC: North Central Information Center
NHS: National Highway System
ND: Negative Declaration [CEQA]
NEPA: National Environmental Policy Act
NESHAP: National Emissions Standards for Hazardous Air Pollutants
NHPA: National Historic Preservation Act
NHTSA: National Highway Traffic Safety Administration
NOA: naturally occurring asbestos
NO_2: nitrogen dioxide
N_2O: nitrus oxide
NOx: nitrogen oxide
NPDES: National Pollutant Discharge Elimination System
NRHP: National Register Historic Places
NSSP: Nonstandard Special Provision
O_3: ozone
OC: Overcrossing
OGAC: Open grade asphalt-cement
OH: Overhead
OSHA: Occupational Safety Hazard Administration
Pb: lead
PCC: Portland Cement Concrete
pcplpm: Passenger cars per lane mile of roadway
PGandE: Pacific Gas and Electric
PM: particulate matter
PM: post mile
PM_{10}: particulate matter less than 10 microns in diameter
$PM_{2.5}$: particulate matter less than 2.5 microns in diameter
POAQC: Project of Air Quality Concern
PPDG: Project Planning and Design Guide
ppm: parts per million
PRC: [California] Public Resources Code
PS&E: Plans, Specifications, and Estimates
RCRA: Resource Conservation and Recovery Act of 1976
RM: Ramp meter
ROG: Reactive organic gas
ROW: right-of-way

RT: Regional Transit
RWQCB: Regional Water Quality Control Board
SACOG: Sacramento Area of Council of Governments
SACSIM: Sacramento Activity-Based Travel Simulation Model
SAFCA: Sacramento Area Flood Control Agency
SCS: Sustainable Communities Strategy
SER: Standard Environmental Reference
SHPO: State Historic Preservation Officer
SIP: State Implementation Plan
SMAQMD: Sacramento Metropolitan Air Quality Management District
SMFO: Single mode fiber optic
SMUD: Sacramento Municipal Utility District
SO_2: sulfur dioxide
SOV: Single occupant vehicle
SR: State Route
SSP: Standard Special Provision
STIP: Statewide Transportation Improvement Program
SVAB: Sacramento Valley Air Basin
SVP: Society of Vertebrate Paleontology
SVRR: Sacramento Valley Railroad
SWMP: Storm Water Management Plan
SWPPP: Storm Water Pollution Prevention Plan
SWRCB: State Water Resources Control Board
TAC: Toxic air contaminant
TASAS: Traffic Accident Surveillance and Analysis System
TCE: Temporary construction easement
TCM: Transportation control measures
TDM: Transportation Demand Management
TMDL: Total Maximum Daily Load
TMP: Traffic Management Plan
TMS: Traffic monitoring stations
TOS: Traffic Operations System
UC: Undercrossing
UPRR: Union Pacific Railroad
US: United States
USDOT: United States Department of Transportation
USEPA: United States Environmental Protection Agency
USACE: United States Army Corps of Engineers
USC: United States Code
USFWS: United States Fish and Wildlife Service
VMT: Vehicle Miles of Travel
WB: West bound
WDR: Waste Discharge Requirement
WPCP: Water Pollution Control Program
WQP: Water Quality Planning

Appendix H: List of Technical Studies

Below is a list of the technical studies used to prepare this document. A copy of these reports are available by contacting Ken Lastufka at ken_lastufka@dot.ca.gov or (916) 274-0586.

- Air Quality Technical Report, Revised September 2016
- Community Impact Assessment, March 2015
- Floodplain Hydraulics Study, September 2014
- Historic Property Survey Report, Revised August 2016
- Initial Site Assessment, June 2015
- Natural Environment Study No Effects Memorandum, August 2015
- Noise Study Report, Revised August 2016
- Paleontological Evaluation Report for the US Highway 50 High Occupancy Lane and Community Enhancements Project, March 2006
- Traffic Report, Revised August
- Visual Impact Assessment, Revised August 2016
- Water Quality Assessment, Revised August 2016

Appendix I: Threatened and Endangered Species Lists

U.S. Fish & Wildlife Service

03-3f360 US-50

IPaC Trust Resources Report

Generated June 27, 2016 10:29 AM MDT, IPaC v3.0.8

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.

IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

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U.S. Fish & Wildlife Service

IPaC Trust Resources Report

NAME

03-3f360 US-50

LOCATION

Sacramento County, California

IPAC LINK

https://ecos.fws.gov/ipac/project/UAN3T-IW2T5-HPBLG-SRDIU-LNPKYE

U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Amphibians

California Red-legged Frog Rana draytonii — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=D02D

California Tiger Salamander Ambystoma californiense — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=D01T

Birds

Least Bell's Vireo Vireo bellii pusillus — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B067

Crustaceans

Conservancy Fairy Shrimp Branchinecta conservatio — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K03D

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K03G

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K048

Fishes

Delta Smelt Hypomesus transpacificus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E070

Steelhead Oncorhynchus (=Salmo) mykiss — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E08D

Flowering Plants

Sacramento Orcutt Grass Orcuttia viscida — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q1ZQ

Slender Orcutt Grass Orcuttia tenuis — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q1AZ

Insects

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=I01L

Reptiles

Giant Garter Snake Thamnophis gigas — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=C057

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

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1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
  http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data
  http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Burrowing Owl Athene cunicularia — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0NC

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Wintering

Least Bittern Ixobrychus exilis
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092

Lesser Yellowlegs Tringa flavipes — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MD

Lewis's Woodpecker Melanerpes lewis — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ

Loggerhead Shrike Lanius ludovicianus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S

Marbled Godwit Limosa fedoa — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JL

Mountain Plover Charadrius montanus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B078

Nuttall's Woodpecker Picoides nuttallii — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HT

Oak Titmouse Baeolophus inornatus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MJ

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD

Swainson's Hawk Buteo swainsoni — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B070

Tricolored Blackbird Agelaius tricolor — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06P

Western Grebe aechmophorus occidentalis — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA

Williamson's Sapsucker Sphyrapicus thyroideus — Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX

Yellow-billed Magpie Pica nuttalli — Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0N8

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Forested/shrub Wetland

PSSC

Freshwater Pond

PUBHx

A full description for each wetland code can be found at the National Wetlands Inventory website: http://107.20.228.18/decoders/wetlands.aspx

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Carmichael (3812153) OR Folsom (3812162) OR Folsom SE (3812151) OR Sacramento East (3812154) OR Sacramento West (3812155))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Clarkia biloba ssp. brandegeeae Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eryngium pinnatisectum Tuolumne button-celery	PDAPI0Z0P0	None	None	G2	S2	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T2	S2	1B.2
Hydrochara ricksecker Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Navarretia myersii ssp. myersii pincushion navarretia	PDPLM0C0X1	None	None	G2T2	S2	1B.1
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool Northern Volcanic Mud Flow Vernal Pool	CTT44132CA	None	None	G1	S1.1	
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oncorhynchus tshawytscha chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	G5	S1	
Oncorhynchus tshawytscha chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5	S1	
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 55

Appendix J: Project in Regional Transportation Plan (MTP/SCS) and Transportation Implementation Program (MTIP) Project Listings

MTP/SCS 2016 Listing

Appendix A1: 2016 MTP/SCS Project List

Projects listed as "Project Development Only" are anticipated to begin early stages of development including project planning, design, preliminary engineering, environmental clearance, and ROW acquisition by 2036. These projects remain eligible to seek federal and state funding, but under the financial constraint requirements for projecting revenues, the construction phase is not included in the DPS. If/when additional revenues for these projects become available to cover full construction costs, these projects can be considered as part of an amendment to the MTP/SCS following a technical analysis and consistency with plan requirements. While total costs are shown for these projects, for budgeting purposes, no more than 10% of the total project costs are anticipated to be captured within the MTP/SCS planning period. Year of expenditure costs are not provided since construction of these projects is not part of the financially constrained project list.

Project ID	Included in DPS	COUNTY	LEAD AGENCY	CATEGORY	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	YEAR OF EXPENDITURE COST
CAL20551	Yes	Sacramento	Caltrans D3	G- System Management, Operations, and ITS	US 50 Fiber Optics	In Sacramento, on SR 50, from Yolo County line to 0.2 mile west of Watt Avenue Overcrossing [PM L0.0/R5.1] - Install fiber optic cable [CTIPS ID 107-0000-1005] (Toll credits for PE, ROW, CON)	Completion by 2020	$9,500,000	$9,500,000
CAL18838	Yes	Sacramento	Caltrans D3	B- Road & Highway Capacity	US 50 HOV Lanes (I-5 to Watt Ave.)	US 50 HOV Lanes - Construct High Occupancy Vehicle (HOV) lanes on US 50 [project covers PE: from I-5 to 0.8 mile east of Watt Avenue (PM L0.2/R6.1) and CON: from 0.3 mile west of SR 99 to 0.8 mile east of Watt Avenue (PM L2.2/R6.1)]	2021-2036	$70,251,000	$70,251,000
CAL20488	Yes	Sacramento	Caltrans D3	C- Maintenance & Rehabilitation	US 50 Maintenance - Watt Ave. to Sunrise Blvd.	In Sacramento County, US 50, from Watt Ave. to Sunrise Blvd., WB Lanes - Maintenance Asphalt Overlay [Sac-50-5.3/12.8] [HM1 - Pavement Preservation [Fed-Funded)] (Toll credits for CON)	Completion by 2020	$4,556,500	$4,556,500
CAL20484	Yes	Sacramento	Caltrans D3	D- Programs & Planning	US 50 Plantings	Sacramento County, in and near Rancho Cordova, along US 50, from Bradshaw Rd. to Sunrise Blvd.: Improve, enhance and establish planting along designated HOV lane(s) as a continuation of plant establishment period for US 50 HOV Watt Ave. to Sunrise Blvd. project. [03-44161/CAL16790] [PM R07.4/R12.2)	Completion by 2020	$1,250,000	$1,250,000
CAL20549	Yes	Sacramento	Caltrans D3	G- System Management, Operations, and ITS	US 50 RTMC Video Display Upgrade	In Rancho Cordova at the Regional Transportation Management Center (RTMC) [PM 12.5] - Replace and upgrade video monitor and the supporting control system for US 50 within Sacramento County. [CTIPS ID 107-0000-1002]	Completion by 2020	$1,820,000	$1,820,000
CAL20648	Project Development Only	Sacramento	Caltrans D3	B- Road & Highway Capacity	US 50 Transition and Auxiliary Lane	In Sacramento County on US 50, construct an eastbound transition lane from the Folsom Blvd slip off ramp to the Prairie City Rd slip off ramp, and construct an auxiliary lane from the Prairie City Rd slip on ramp to the Folsom Blvd slip off ramp	Completion after 2036	$5,000,000	
CAL20641	Project Development Only	Sacramento	Caltrans D3	B- Road & Highway Capacity	US 50 Transition Lane	US 50 Westbound Transition Lane from Stockton Blvd off-ramp to Rt-51 connector on-ramp. Realign and add acceleration taper to Stockton loop off ramp	Completion after 2036	$6,000,000	
VAR56138	Yes	Sacramento	Caltrans D3, City of Rancho Cordova, Sacramento County	B- Road & Highway Capacity	Auxilary Lane	Auxiliary lane from Rancho Cordova Parkway to East of Folsom	2021-2036	$3,000,000	$4,692,000
CAL20435	Yes	Sacramento	Caltrans Division of Rail	E- Transit Capital (Major)	Sacramento Layover and Maintenance Facility	Building Construction: new layover and servicing facility in Sacramento area for San Joaquin & Capitol Corridor trainsets. Project will be coordinated with Sacramento Station Rail Realignment.	Completion by 2020	$110,000,000	$115,379,000
CAL20559	Yes	Sacramento	Caltrans HQ	E- Transit Capital (Vehicles)	FTA 5310 - Asian Community Center Expansion Minivans	Purchase four minivans to expand the ACC Rides Service that provides transportation to the ACC Rides Service client base of seniors and their caregivers to medical appointments and other activities of daily living. Transportation Development Credits/Toll Credits are being used as match, and as allowable under FTA Section 5310 federal funds will fund 100% of this project.. Toll Credits for CON	Completion by 2020	$192,000	$192,000

Amendment to the 2015/2018 MTIP

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1415 L Street, Suite 300, Sacramento, CA 95814 — tel: 916.321.9000, fax: 916.321.9551, tdd: 916.321.9550, www.sacog.org

AMEND THIS PROJECT

PROJECT TITLE: US 50 HOV Lanes (I-5 to Watt Ave.)

SACOG ID: CAL18838 **VERSION:** : 7 **MTIP:** 17-00 - UPDATE **STAUS:** Programmed **COMP YEAR:** 2030 **TOTAL COST** $70,251,000

LAST MODIFIED BY: Jose Luis **LAST MODIFIED DATE:** 4/8/2016 LAST MODIFIED HISTORY EXPORT THIS VERSION (PDF) ALL VERSION(S)

TIP PROGRAMMING | FED OBLIGATION | MAP | PROJECT IDS | PROJECT DOCUMENT | PREV VER

THIS IS READ-ONLY
[CLICK HERE TO ENABLE FIELDS TO COPY TEXT]

THIS PROJECT VERSION IS PENDING APPROVAL.*
PLEASE CLICK HERE TO SEE THE LATEST FEDERALLY APPROVED VERSION .

PROJECT ALTERNATE IDS

FTA GRANT#:	EA #:	PPNO:	FEDERAL ID:	EFIS ID:	LOCAL PROJECT ID:	BRIDGE NUMBER:	CTIPS ID:
	3F360	3301		0312000216			20700001167

PROJECT INFO

PROJECT TITLE: US 50 HOV Lanes (I-5 to Watt Ave.)
MTIP: 17-00

PROJECT DESCRIPTION / LIMITS - GUIDELINES

US 50 HOV Lanes - Construct High Occupancy Vehicle (HOV) lanes on US 50 [project covers PE: from I-5 to 0.8 mile east of Watt Avenue (PM L0.2/R6.1) and CON: from 0.3 mile west of SR 99 to 0.8 mile east of Watt Avenue (PM L2.2/R6.1)]

LEAD AGENCY: Caltrans D3
COUNTY:
PRIMARY CONTACT (Optional):
PHONE (10-DIGIT):
EMAIL:
Show this contact on public web site

PROJECT TYPE: Expansion
% BIKE/PED:
TCM: No

EXEMPT CATEGORY: Non-Exempt

LUMP SUM: No
LUMP SUM NAME:

TRANS SYSTEM: State
ROUTE: 50
NOT MAPPABLE:

PROGRAMMING & SCHEDULE INFORMATION ($0) [GRAPH REVENUES] [HISTORICAL REVENUES]

COMPLETION YEAR (Jan-Dec): 2030
STIP / SHOPP

TOLL CREDIT

FFY (Oct-Sept)	FUND TYPE (PROGRAMMED REVENUE SOURCE)	PA&ED / PS&E	ROW / SUP	CON / SUP	TOTAL	
2013	Local - Sacramento Co Measure A	$1,138,000	$0	$0	$1,138,000	X
2014	Local - Sacramento Co Measure A	$1,707,000	$0	$0	$1,707,000	X
2015	Local - Sacramento Co Measure A	$1,776,000	$930,000	$0	$2,706,000	X
2016	Local - Sacramento Co Measure A	$1,785,000	$1,064,000	$0	$2,849,000	X
2017	Local - Sacramento Co Measure A	$1,785,000	$930,000	$0	$2,715,000	X
2018	Local - Sacramento Co Measure A	$1,200,000	$736,000	$0	$1,936,000	X
2027	Future Need - Unfunded Need (outside MTIP)	$222,000	$0	$56,978,000	$57,200,000	X
					$0	
					$0	
					$0	
					$0	
					$0	
	FFY 2013	$1,138,000	$0	$0	$1,138,000	
	FFY 2014	$1,707,000	$0	$0	$1,707,000	
	FFY 2015	$1,776,000	$930,000	$0	$2,706,000	
	FFY 2016	$1,785,000	$1,064,000	$0	$2,849,000	
	FFY 2017	$1,785,000	$930,000	$0	$2,715,000	
	FFY 2018	$1,200,000	$736,000	$0	$1,936,000	
	FFY 2027	$222,000	$0	$56,978,000	$57,200,000	
	Local - Sacramento Co Measure A	$9,391,000	$3,660,000	$0	$13,051,000	
	Future Need - Unfunded Need (outside MTIP)	$222,000	$0	$56,978,000	$57,200,000	
	ALL YEARS GRAND TOTAL -	$9,613,000	$3,660,000	$56,978,000	$70,251,000	

EMISSION REDUCTIONS (kg/day)

ROG	CO	NOx	PM 10	PM 2.5	COST EFFECTIVENESS ($/LB)
					$

CHANGE REASON - HISTORICAL COMMENTS - HISTORICAL DENIED/APPROVED COMMENTS

- COMPLETED PROJECT
- DELAY PROJECT
- DELETE PROJECT
- CARRY OVER FROM 15-06 MTIP

PROJECT CHANGES (FROM PREVIOUS VERSION):

-

Total project cost stays the same $70,251,000

SPONSOR COMMENTS (Required)

4/1/16 - Carry Over for 2017 MTIP; no comments/revisions received from project manager. -plb

3.14s 1200 EMAIL SACTRAKHELP@ECOINTERACTIVE.COM

Appendix K: Project of Air Quality Concern (POAQC) Determination Email

From: Jose Luis Caceres [mailto:JCaceres@sacog.org]
Sent: Thursday, April 28, 2016 4:17 PM
To: sspaethe@fraqmd.org; Wright Molly (mwright@airquality.org); Heather.Phillips@arb.ca.gov; sharon.tang@dot.ca.gov; douglas.coleman@dot.ca.gov; shalanda_christian@dot.ca.gov; Lee Jason (jason.lee@dot.ca.gov); rodney.tavitas@dot.ca.gov; alexander.fong@dot.ca.gov; jbarton@edctc.org; dave.johnston@edcgov.us; Ungvarsky.John@epa.gov; oconnor.karina@epa.gov; Joseph.Vaughn@dot.gov; lmcneel-caird@pctpa.net; AGreen@placer.ca.gov; Renee DeVere-Oki; Jose Luis Caceres; CAnderson@airquality.org; ALETA KENNARD; pphilley@airquality.org; mjones@ysaqmd.org
Cc: Unger, Petra; pam.brunnmeier@dot.ca.gov; Paukovits, Jason; Lu, George
Subject: FW: POAQC: US 50 HOV Lanes, NOT a POAQC

Project Level Conformity Group,

The PLCG has determined that Caltrans D3's **US 50 HOV Lanes I-5 to Watt Ave., CAL18838, is not a Project of Air Quality Concern (POAQC).**

EPA concurred on April 20th and FHWA concurred on April 25th.

Thank you everyone.

Sincerely,

José Luis Cáceres
Transportation Planner, SACOG
(916) 340-6218

From: Joseph.Vaughn@dot.gov [mailto:Joseph.Vaughn@dot.gov]
Sent: Monday, April 25, 2016 10:14 AM
To: Jose Luis Caceres; oconnor.karina@epa.gov; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov
Subject: RE: POAQC: US 50 HOV Lanes, Comments/Questions DUE 5/2

FHWA concurs that that this project is not a project of air quality concern.

Joseph Vaughn
Environmental Specialist
FHWA, CA Division
(916) 498-5346