Hazel Avenue/U.S. 50 Interchange Project

SACRAMENTO COUNTY AND CITY OF RANCHO CORDOVA, CALIFORNIA
DISTRICT 3–SAC–50, (15.0/17.2)
03-3E380/0300020439
County Control Number 2011-70062

Public Draft Environmental Impact Report/ Environmental Assessment

Volume 1: Environmental Analysis



Prepared by the
State of California Department of Transportation
and County of Sacramento

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

February 2020

General Information about This Document

What's in this document:
The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), and County of Sacramento (County), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the Hazel Avenue/U.S. Route 50 Interchange Project located in Sacramento County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). The County is the lead agency under the California Environmental Quality Act (CEQA). The document includes information on why the project is being proposed, what alternatives have been 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 the related technical studies are available for review at the Sacramento County Office of Planning and Environmental Review, 827 7th Street, Room 225, Sacramento, CA 95814. This document may be downloaded at the following website: http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
- Attend the public meeting on Tuesday, February 25, 2020 between 6:00 pm and 7:00 pm at the Sacramento County Department of Transportation (SacDOT) Offices located at 4111 Branch Center Road, Sacramento, CA 95827.
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public meeting and/or send your written comments to Sacramento County by the deadline. Send comments via postal mail to:

  Carol Ann Gregory, Associate Planner
  Sacramento County, Office of Planning and Environmental Review
  827 7th Street, Room 225
  Sacramento, CA 95814

- Send comments via email to: gregoryc@saccounty.net
- Be sure to send comments by the deadline: March 22, 2020

What happens next:
After comments are received from the public and reviewing agencies, the County and Caltrans, as assigned by the 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, the County and Caltrans could design and construct all or part of the project.

Alternative formats:
For individuals with sensory disabilities, for assistance please contact Carol Ann Gregory, Associate Planner Sacramento County, Office of Planning and Environmental Review
827 7th Street, Room 225, Sacramento, CA 95814.

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SCH#: 2016022009
03-SAC-50, (15.1/17.5)
EA 03-3E380
County Control # 2011-70062

Hazel Avenue/U.S. Route 50 Interchange Project

Modify the interchange on U.S. Route 50 at Hazel Avenue from Postmile 15.1 to Postmile 17.5 and modify Hazel Avenue south of U.S. Route 50

Draft
Environmental Impact Report/ Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2) C and 49 USC 303

STATE OF CALIFORNIA
Department of Transportation
and the
COUNTY OF SACRAMENTO

Cooperating Agencies: U.S. Army Corps of Engineers
Responsible Agencies: City of Rancho Cordova, Department of Fish and Wildlife, Regional Water Quality Control Board, State Lands Commission

1/30/2020
Date

for
Suzanne Melim, Office Chief
North Region Environmental Services, South
California Department of Transportation
NEPA Lead Agency

1/31/2020
Date

Marianne Biner
Marianne Biner
County of Sacramento
CEQA Lead Agency

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

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Summary

S.1 National Environmental Policy Act Assignment

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 United States Code (USC) 327, for more than 5 years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (Public Law 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the California Department of Transportation (Caltrans) entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (National Environmental Policy Act [NEPA] Assignment MOU) with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016 for a term of 5 years. 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 (CEs) that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

S.2 Introduction

The County of Sacramento (County), in cooperation with Caltrans and the City of Rancho Cordova, is proposing the Hazel Avenue/U.S. Route 50 (US 50) Interchange Project (proposed project) to modify the existing interchange, and extend and grade-separate Hazel Avenue over Folsom Boulevard and the Sacramento Placerville Transportation Corridor Joint Powers Authority (SPTC-JPA) rail corridor. Accordingly, project documentation is being prepared in compliance with both the California Environmental Quality Act (CEQA) and NEPA. The County is the lead agency under CEQA, and Caltrans is the lead agency under NEPA.

S.3 Overview of Project Area

The project is located at the existing Hazel Avenue/US 50 interchange within Sacramento County and the City of Rancho Cordova (Figure 1-1). The project area is bounded along Hazel Avenue by the Tributary Point/westbound off-ramp intersection to the north, and extends approximately 1,000 feet south of Folsom Boulevard to a future intersection within the Easton Place development (Figure 1-2). The project limits along US 50 begin approximately 3,200 feet west of the existing Hazel Avenue Overcrossing and extend 2,500 feet east of the Natoma Overhead (post miles 15.0 to 17.2). Improvements along Folsom Boulevard would extend from

approximately 1,200 feet west of the Hazel Avenue intersection to 900 feet east of the intersection.

Hazel Avenue is a six-lane arterial trending north-south and terminating at the Folsom Boulevard intersection south of US 50.

In the Sacramento County General Plan, the area surrounding the proposed project is designated as transit-oriented development, core area, recreation, commercial and offices, natural preserve, and extensive and intensive industrial (County of Sacramento 2013). The land uses in the portion of the project in the city of Rancho Cordova are parks and open space, estate residential, commercial mixed-use, and office mixed-use (City of Rancho Cordova 2006).

North of US 50 and east of Hazel Avenue is land primarily designated for recreation and natural preserve uses, including the Lake Natoma Sub-unit of the Folsom Lake State Recreation Area (Lake Natoma), the American River, and the American River Parkway and Bike Trail. The American River flows west through this portion of the study area and contains bike trails on both river banks. West of Hazel Avenue are commercial and office development, medium- and low-density residential development, and intensive industrial uses. Commercial uses along US 50 and Hazel Avenue include gas stations, furniture stores, hotels, and fast food restaurants. This area also contains recreation and natural preserve uses, including the Folsom South Canal and the continuation of the American River and the American River Parkway and Bike Trail.

The area south of US 50, east of Hazel Avenue, contains transit-oriented development with mixed-use corridors, commercial and office development, medium- and low-density residential development, and both intensive and extensive industrial uses. The Nimbus Winery retail development is located on Folsom Boulevard just south of US 50 and east of Hazel Avenue.

South of US 50, west of Hazel Avenue is primarily intensive industrial uses. However, a small portion of the area in proximity to the Hazel Avenue/US 50 interchange contains commercial and office development (e.g., storage facility, hotel, and fire station) intermixed with restaurants (City of Rancho Cordova 2015). The approved Boroughs of Easton development is planned for the area south of US 50 between Hazel Avenue and Prairie City Road.

At Folsom Boulevard, south of US 50, a private driveway extends south of the intersection of Hazel Avenue and Folsom Boulevard into the Aerojet facility. The driveway contains an at-grade crossing of the SPTC-JPA rail corridor.

S.4 Purpose and Need

S.4.1 Purpose

The primary purpose of the proposed project is to modify the existing interchange to reduce congestion, improve traffic operations, accommodate travel demand due to planned and approved developments, and improve safety of all modes of travel, including bicycles and pedestrians.

The proposed build alternatives will meet the following objectives.

- Improve operations by removing the close intersection spacing between the eastbound ramps and Folsom Boulevard, and minimizing conflict with heavy rail and light rail.
  - Proposed alternatives accomplish this by grade-separating Hazel Avenue over Folsom Boulevard.
- Provide sufficient capacity in the ramps and roadways for future traffic volumes.
  - Proposed alternatives accomplish this by widening and/or lengthening the on- and off-ramps and Hazel Avenue as required by their respective traffic analyses.
- Maintain the Aerojet Road off-ramp connection to the approved development while improving the mainline operations.
  - Proposed alternatives accomplish this by removing the Aerojet Road exit from US 50 but still providing direct access to Aerojet Road through the eastbound Hazel Avenue off-ramp.

S.4.2 Need

The proposed project is needed for the following reasons.

- Existing and forecasted traffic operations and congestion are below acceptable operating standards at the Hazel Avenue/US 50 interchange.
- Planned and approved developments identified by the adopted Sacramento County General Plan and the Sacramento Area Council of Governments' Regional Transportation Plan, including the increased traffic volumes associated with the proposed Easton Project, will increase the traffic volumes at the Hazel Avenue/US 50 interchange beyond acceptable operating standards.
- Implementation of mitigation identified in the Easton Project Final Environmental Impact Report (EIR) (County of Sacramento 2008) is required in order to accommodate the increased traffic volumes associated with that development. The Easton Project mitigation includes reconstruction of the Hazel Avenue/US 50 interchange as well as grade separation of Hazel Avenue over Folsom Boulevard and the light rail tracks. The Easton Project will contribute its fair share of funding to the improvements.

S.5 Proposed Action

The project under consideration in this Environmental Impact Report/Environmental Assessment (EIR/EA) is modification of the existing interchange, and extension and grade separation of Hazel Avenue over Folsom Boulevard and the SPTC-JPA rail corridor.

Hazel Avenue would be extended south to a proposed intersection with the future Atlanta Street (a new roadway that will be constructed as part of the Easton Place development). The project also includes:

- Construction of a portion of an eastbound transition auxiliary lane on US 50 from Hazel Avenue through the Folsom Boulevard Overcrossing, also known as the Natoma Overhead.
- The modification of the existing Aerojet Road off-ramp from US 50.
- Reconstruction of the US 50 westbound loop on-ramp.
- Reconstruction of the US 50 eastbound diagonal off-ramp, and both eastbound on-ramps.
- Eastbound US 50 on- and off-ramp auxiliary lanes, from west of the Hazel Avenue eastbound off-ramp, and from the loop on-ramp extending to the Folsom Boulevard interchange.
- Roadway and pedestrian improvements constructed along approximately 2,300 feet of Folsom Boulevard. Improvements include sidewalks, street lighting, and landscaping along the north side of Folsom Boulevard, and landscaping and lighting along the south.

Two build alternatives, with one sub-alternative, have been developed for the interchange. They are summarized below.

- Alternative 1: L-9 Interchange with Viaduct Connector

Alternative 1 consists of a modified type L-9 interchange configuration. A Caltrans Type L-9 interchange involves a ramp configuration that includes a diagonal off-ramp, a diagonal on-ramp, and a loop on-ramp. This alternative would provide a viaduct connection to Aerojet Road.

- Alternative 1A: L-9 Interchange with Undercrossing Connector

Alternative 1A is a sub-alternative to Alternative 1. It is the same as Alternative 1 except that the eastbound off-ramp would split and introduce a direct tunnel ramp under Hazel Avenue to carry eastbound off-ramp traffic to Aerojet Road and Folsom Boulevard.

- Alternative 2: Direct Flyover to Hazel Avenue with Connector

Alternative 2 consists of a modified type L-9 interchange configuration, with a flyover ramp carrying vehicles travelling from eastbound US 50 to northbound Hazel Avenue over the freeway to join with the westbound off-ramp.

S.6 Joint California Environmental Quality Act/National Environmental Policy Act Documentation

The proposed project is subject to Federal, as well as County of Sacramento and State environmental review requirements because the County and Caltrans propose the use of Federal funds from FHWA and/or the project requires an approval from FHWA. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. Under CEQA, the County is the lead agency. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the MOU dated December 23, 2016 and executed by FHWA and Caltrans. With NEPA Assignment, FHWA assigned and

Caltrans assumed all of the 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 CEs that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, quite often a "lower level" document is prepared for NEPA. One of the most common joint document types is an EIR/EA.

After receiving comments from the public and reviewing agencies, a Final EIR/EA will be prepared. The County or Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative. If the decision is made to approve the project, a Notice of Determination will be published for compliance with CEQA, and Caltrans will decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement for compliance with NEPA. A Notice of Availability of the FONSI will be sent to the affected units of Federal, State, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

S.7 Potential Environmental Consequences and Avoidance, Minimization and/or Mitigation Measures

Project impacts would occur in the following resource areas: land use, traffic and transportation, aesthetics, cultural resources, water quality, paleontology, air quality, noise, natural communities, animal species, and endangered species. Significant and unavoidable impacts under CEQA would occur related to temporary aesthetic changes, including temporary construction lighting (all alternatives), and permanent aesthetic changes (Alternative 2). The project would contribute to cumulatively considerable effects related to traffic and transportation, visual resources, air quality, noise, and biological resources. Project effects under NEPA are discussed fully in Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*. Table S-2, located at the end of this summary, summarizes the impacts of the project under NEPA. Chapter 3, *California Environmental Quality Act Evaluation*, addresses impacts under CEQA. Table S-3, which follows Table S-2, summarizes the impacts under CEQA.

S.8 Coordination with Other Public Agencies

S.8.1 Notice of Preparation

A Notice of Preparation (NOP) was published on January 29, 2016. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties. A copy of the NOP is included in Appendix G, *Agency Letters*.

An agency scoping meeting for the EIR/EA was held on March 3, 2016, from 2:00 p.m. to 4:00 p.m. at the Governor's Office of Planning and Research, Large Conference Room 202 at 1400 10th Street in Sacramento, California. The meeting was announced in the NOP. The purpose of the scoping meeting was to identify agency concerns in order to clearly define the environmental issues and alternatives to be examined in the Draft EIR/EA. Maps and other project information were presented during the meeting, and County and Caltrans staff were on hand to answer questions and receive comments regarding the scope and content of the EIR/EA.

S.8.2 Necessary Permits and Approvals

In addition to the completion of CEQA and NEPA documentation and project approvals by the lead agencies, the following permits, licenses, agreements, and certifications (PLACs) are required for project construction.

Table S-1. Permits and Approvals

Agency	PLAC	Status
United States Fish and Wildlife Service	Coordination and consultation regarding threatened and endangered species	Not yet initiated
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States	Not yet initiated
State Water Resources Control Board	Construction general permit Stormwater Pollution Prevention Plan, Municipal Separate Storm Sewer System Permit requirements, NPDES NO. CAS082597	Not yet initiated
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification and coverage under the existing Waste Discharge Requirements Cities Of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, And County Of Sacramento Storm Water Discharges From Municipal Separate Storm Sewer System Sacramento County (Order NO. R5-2015-0023)	Not yet initiated
California Department of Fish and Wildlife	1602 Agreement for Streambed Alteration and coordination regarding State Species	Not yet initiated
Sacramento Metropolitan Air Quality Management District	Formal notification prior to construction	Not yet initiated
City of Rancho Cordova	City Council approval of the project and/or issuance of encroachment permit	Not yet initiated

S.9 References Cited

City of Rancho Cordova. 2006. Rancho Cordova General Plan Land Use Policy Map. Adopted June 2006. Available: http://www.cityofranchocordova.org/home/showdocument?id=715. Accessed: June 1, 2016.

City of Rancho Cordova. 2015. Rancho Cordova General Plan. Available: http://www.cityofranchocordova.org/i-want-to-/learn-about/generalplan. Accessed: March 30, 2015.

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128.

County of Sacramento. 2013. General Plan Land Use Diagram. November 2011. Updated November 2013. Available: http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx. Accessed: June 1, 2016.

Table S-2. Comparison of Alternatives

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
HUMAN ENVIRONMENT					
2.1—Land Use					
Consistency with Sacramento County General Plan	Not consistent with mobility goal Consistent with bike and pedestrian facilities goal	Consistent	Consistent	Consistent	None required
Consistency with Rancho Cordova General Plan	Not consistent	Consistent	Consistent	Consistent	None required
Consistency with Sacramento Area Council of Governments Metropolitan Transportation Plan/Sustainable Communities Strategy	Not consistent	Consistent	Consistent	Consistent	None required
Coastal Zone	No effect	No effect	No effect	No effect	None required
Wild and Scenic Rivers	No effect	No effect	No effect	No effect	None required
Effects on American River Parkway, Lake Natoma, or the Jedediah Smith Memorial Trail	No effect	Access maintained during construction	Access maintained during construction	Access maintained during construction	None required
Effects on California State Parks Land	No effect	Access impeded due to placement of unauthorized construction equipment within park facilities	Access impeded due to placement of unauthorized construction equipment within park facilities	Access impeded due to placement of unauthorized construction equipment within park facilities	Avoidance and Minimization Measure Prevent Unauthorized Use of State Parks Land
Effects on traffic to Lake Natoma	No effect	Potential traffic delays or detours for recreationists traveling to the Lake Natoma on US 50 or Hazel Avenue	Potential traffic delays or detours for recreationists traveling to the Lake Natoma on US 50 or Hazel Avenue	Potential traffic delays or detours for recreationists traveling to the Lake Natoma on US 50 or Hazel Avenue	Avoidance and Minimization Measure A Transportation Management Plan (TMP) would be developed for use during project construction. The TMP would utilize strategies described in Caltrans' Transportation Management Plan Guidelines (TMP Guidelines) (Caltrans 2015), selected in accordance with the scale and scope of the project. The TMP Guidelines identify the general categories of public information, motorist information, incident management,

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					construction strategies, demand management, and alternate routes or detours.
2.2—Growth					
Potential to induce growth	No effect	Does not induce growth; accommodates planned growth	Does not induce growth; accommodates planned growth	Does not induce growth; accommodates planned growth	None required
2.3—Community Impacts					
Effects on community character and cohesion	No effect	Minimal due to distance from established neighborhoods; some benefits include improved traffic operations, enhanced safety, and new bicycle and pedestrian facilities	Minimal due to distance from established neighborhoods; some benefits include improved traffic operations, enhanced safety, and new bicycle and pedestrian facilities	Minimal due to distance from established neighborhoods; some benefits include improved traffic operations, enhanced safety, and new bicycle and pedestrian facilities	Avoidance and Minimization Measure A TMP would be developed for use during project construction. The TMP would utilize strategies described in Caltrans' Transportation Management Plan Guidelines (TMP Guidelines) (Caltrans 2015), selected in accordance with the scale and scope of the project. The TMP Guidelines identify the general categories of public information, motorist information, incident management, construction strategies, demand management, and alternate routes or detours.
Relocations and Real Property Acquisition	No effect	17 parcels would be affected from ROW acquisitions 16 parcels permanently affected through ROW acquisitions or easements Full acquisition and demolition of Chevron gas station, and acquisitions and building impacts are anticipated at Cattlemens restaurant and Sentry Storage Temporary construction easement (TCE) required at approximately 2 parcels	17 parcels would be affected from ROW acquisitions 16 parcels permanently affected through ROW acquisitions or easements Full acquisition and demolition of Chevron gas station and, acquisitions and building impacts at Cattlemens restaurant and Sentry Storage TCE required at approximately 2 parcels	16 parcels would be affected from ROW acquisitions 15 parcels permanently affected through ROW acquisitions or easements Full acquisition and demolition of Chevron gas station, Cattlemens restaurant, and Nimbus Winery TCE required at approximately 2 parcels	None required
Effects on environmental justice populations	No effect	No effect	No effect	No effect	None required

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
2.4—Utilities/Emergency Services					
Effects on schools	No effect	No effect	No effect	No effect	None required
Effects on public and private utilities	No effect	Potential temporary interruption of service during relocation of utilities	Potential temporary interruption of service during relocation of utilities	Potential temporary interruption of service during relocation of utilities	None required
Effects on police, fire, and emergency service providers	No effect	Weekend and night work for bridge widening; Temporary construction lane closures and detours	Weekend and night work for bridge widening; Temporary construction lane closures and detours	Temporary construction lane closures and detours	Avoidance and Minimization Measure A TMP would be developed for use during project construction. The TMP would utilize strategies described in Caltrans' Transportation Management Plan Guidelines (TMP Guidelines) (Caltrans 2015), selected in accordance with the scale and scope of the project. The TMP Guidelines identify the general categories of public information, motorist information, incident management, construction strategies, demand management, and alternate routes or detours.
2.5—Traffic and Transportation/Pedestrian and Bicycle Facilities					
Existing (2015) Plus Project Conditions—Intersection Operations	No Effect	Does not worsen intersection operations; Improves operations at two study locations	Does not worsen intersection operations; Improves operations at two study locations	Does not worsen intersection operations; Improves operations at two study locations, but to a lesser degree than Alternative 1 and 1A	None required
Existing (2015) Plus Project Conditions—Freeway Operations	No Effect	Would maintain or improve existing freeway operations, except at eastbound Hazel Avenue exit where the level of service (LOS) would change from A to B in the AM peak hour and delay would increase slightly during AM and PM peak hours	Would maintain or improve existing freeway operations, except at eastbound Hazel Avenue exit where the level of service (LOS) would change from A to B in the AM peak hour and delay would increase slightly during AM and PM peak hours	Would maintain or improve existing freeway operations, except at eastbound Hazel Avenue exit where the level of service (LOS) would change from A to B in the AM peak hour and delay would increase slightly during AM and PM peak hours	None required
Existing (2015) Plus Project Conditions—Transit and Bicycle/Pedestrian Facilities	No effect	Continued access	Continued access	Continued access	None required

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Opening Year (2022) Intersection operations	Five intersections would operate at an unacceptable LOS during AM and PM peak hours	No adverse intersection operations	No adverse intersection operations	No adverse intersection operations	None required
Opening Year (2022) Freeway Operations	Two segments would not operate at an acceptable LOS (F)	No adverse intersection operations	No adverse intersection operations	No adverse intersection operations	None required
Opening Year (2022) Transit and Bicycle/Pedestrian Facilities	No effect	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	None required
Horizon Year (2042) Intersection Operations	Four intersections would operate at an unacceptable LOS	No adverse intersection operations; improved LOS at Hazel Avenue /US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps	No adverse intersection operations; improved LOS at Hazel Avenue /US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps	No adverse intersection operations; LOS and delay at the Hazel Avenue/US 50 westbound (Intersection #2) would improve during the PM peak hour and the delay would improve more than under Alternatives 1 and 1A.	None required
Horizon Year (2042) Freeway Operations	Ten freeway segments would operate at an unacceptable LOS during AM or PM peak hours	No adverse freeway operations	No adverse freeway operations	No adverse freeway operations	None required
Horizon Year (2042) Transit and Bicycle/Pedestrian Facilities	No effect	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	Continued access; addition of a separate pedestrian path/bicycle trail that would connect with the Jedediah Smith Memorial Trail	None required
Construction-related effects	No effect	Short-term delays and accessibility for vehicles, transit service, bicycles, and pedestrians during construction	Short-term delays and accessibility for vehicles, transit service, bicycles, and pedestrians during construction	Short-term delays and accessibility for vehicles, transit service, bicycles, and pedestrians during construction	Avoidance and Minimization Measure A TMP would be developed for use during project construction. The TMP would utilize strategies described in Caltrans' Transportation Management Plan Guidelines (TMP Guidelines) (Caltrans 2015), selected in accordance with the scale and scope of the

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					project. The TMP Guidelines identify the general categories of public information, motorist information, incident management, construction strategies, demand management, and alternate routes or detours.
2.6—Visual/Aesthetics					
Effects on scenic resources, visual character, and visual quality	No effect	Change in views on County scenic roadway; Elevated viaduct would have greater impact than Alternative 1A	Change in views on County scenic roadway; Would have least impact compared to Alternatives 1 and 2	Change in views on County scenic roadway; Flyover ramp and removal of Nimbus Winery would have most visual impact compared to Alternatives 1 and 1A	None required
Effects on light and glare	No effect	Temporary increase in light during construction; Increased glare from additional paved area Slightly increased light from traffic signals and ramp metering;	Temporary increase in light during construction; Slightly increased light from traffic signals and ramp metering; Increased glare from increased paved area	Temporary increase in light during construction; Slightly increased light from traffic signals and ramp metering; Increased glare from increased paved area	<u>Avoidance and Minimization Measures</u> Minimize Fugitive Light from Portable Sources Used for Construction
2.7—Cultural Resources					
Effects on built cultural resources	No effect	No effect	No effect	No effect	None required
Effects on unidentified cultural resources	No effect	Potential for unknown archaeological resources to be uncovered during ground-disturbing construction activities	Potential for unknown archaeological resources to be uncovered during ground-disturbing construction activities	Potential for unknown archaeological resources to be uncovered during ground-disturbing construction activities	<u>Avoidance and Minimization Measures</u> Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel Monitor for Archaeological Resources during Initial Ground Disturbance Implement Avoidance and Notification Procedures for Cultural Resources

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
PHYSICAL ENVIRONMENT					
2.8—Hydrology and Floodplain					
Impact flood water surface elevation and floodway/floodplain encroachment	No effect	No significant impact due to hydraulic force of floodwaters; no longitudinal encroachment on the base floodplain	No significant impact due to hydraulic force of floodwaters; no longitudinal encroachment on the base floodplain	No significant impact due to hydraulic force of floodwaters; no longitudinal encroachment on the base floodplain	None required
Impact on natural and beneficial floodplain values	No effect	Potential short-term adverse effects include loss of vegetation during construction and temporary disturbance of wildlife habitat along Lake Natoma and Alder Creek Long-term adverse impacts from the addition of piles within the channel under the auxiliary lane widening; displacement of habitat along the south side of US 50	Potential short-term adverse effects include loss of vegetation during construction and temporary disturbance of wildlife habitat along Lake Natoma and Alder Creek Long-term adverse impacts from the addition of piles within the channel under the auxiliary lane widening; displacement of habitat along the south side of US 50	Potential short-term adverse effects include loss of vegetation during construction and temporary disturbance of wildlife habitat along Lake Natoma and Alder Creek Long-term adverse impacts from the addition of piles within the channel under the auxiliary lane widening; displacement of habitat along the south side of US 50	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual
2.9—Water Quality					
Increased runoff from added impervious surfaces	No effect	Addition of 8.4 acres of new impervious surfaces	Addition of 8.6 acres of new impervious surfaces	Addition of 9.6 acres of new impervious surfaces	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual
Water quality impacts during construction	No effect	Potential for short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek generated during construction. Due to known groundwater contamination, groundwater should be tested in the event the project involves installation of piles.	Potential for short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek generated during construction. Due to known groundwater contamination, groundwater should be tested in the event the project involves installation of piles.	Potential for short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek generated during construction. Due to known groundwater contamination, groundwater should be tested in the event the project involves installation of piles.	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Alter existing drainage patterns	No effect	Removal and replacement of local drainage facilities and installation of new drainage facilities, due to interchange improvements and modifications to US 50	Removal and replacement of local drainage facilities and installation of new drainage facilities, due to interchange improvements and modifications to US 50	Removal and replacement of local drainage facilities and installation of new drainage facilities, due to interchange improvements and modifications to US 50	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual
Short-term impacts on aquatic habitats	No effect	Impacts on aquatic habitats due to fill or removal of jurisdictional wetlands or aquatic features, sediment and construction debris entering biological sensitive areas	Impacts on aquatic habitats due to fill or removal of jurisdictional wetlands or aquatic features, sediment and construction debris entering biological sensitive areas	Impacts on aquatic habitats due to fill or removal of jurisdictional wetlands or aquatic features, sediment and construction debris entering biological sensitive areas	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual
2.10—Geology/Soils/Seismic/Topography					
Risk of seismic hazard	No effect	Low to moderate risk of ground-shaking.	Low to moderate risk of ground-shaking.	Low to moderate risk of ground-shaking.	None required
Risk of slope instability	No effect	Excavation for footings of elevated viaduct could result in unstable slopes during deep excavation in native soils	Excavation of tunnel ramp could cause result in unstable slopes during deep excavation in native soils	Excavation for footings and flyover ramp could result in unstable slopes during deep excavation in native soils	None required
Increase in soil erosion rates and/or loss of topsoil	No effect	Ground disturbance could increase erosion	Ground disturbance could increase erosion	Ground disturbance could increase erosion	Avoidance and Minimization Measure Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual
Effects from expansive soil	No effect	No effect	No effect	No effect	None required
2.11—Paleontology					
Damage to fossils	No effect	Potential disturbance	Greatest potential disturbance due to excavation required for tunnel ramp	Potential disturbance greater than Alternative 1 but less than Alternative 1A	Avoidance and Minimization Measures Caltrans Standard Specification 14-7.03Prepare and Implement a Paleontological Mitigation Plan

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
2.12—Hazardous Waste/Materials					
Exposure to soil and/or groundwater contamination	No effect	High to moderate risk of encountering contaminated soil and/or groundwater during ground-disturbing activities on the Nimbus and Aerojet parcels due to known and suspected hazardous conditions.	High to moderate risk of encountering contaminated soil and/or groundwater during ground-disturbing activities on the Nimbus and Aerojet parcels due to known and suspected hazardous conditions.	High to moderate risk of encountering contaminated soil and/or groundwater during ground-disturbing activities on the Nimbus and Aerojet parcels due to known and suspected hazardous conditions.	Avoidance and Minimization Measures Develop and Implement Plans to Address Worker Health and Safety Conduct Site-specific Assessments and Prepare and Implement a Work Plan (Soil and Groundwater, Asbestos-Containing Materials and Lead-Based Paint) Conduct Sampling, Testing, Removal Storage, Transportation, and Disposal of Yellow Traffic Striping along Existing Roadways Appropriately Dispose of Soils Contaminated with Aerially Deposited Lead (ADL)
Exposure to previously unknown hazardous materials	No effect	Moderate risk of encountering previously unreported hazardous materials during construction	Moderate risk of encountering previously unreported hazardous materials during construction	Moderate risk of encountering previously unreported hazardous materials during construction	Avoidance and Minimization Measures Develop and Implement Plans to Address Worker Health and Safety Conduct Site-specific Assessments and Prepare and Implement a Work Plan (Soil and Groundwater, Asbestos-Containing Materials and Lead-Based Paint)
Exposure of known hazardous materials to humans or the environment	No effect	Potential for presence of hazardous materials in the form of asbestos-containing material and lead-containing paint, aerially deposited lead, lead or chromium in yellow/white traffic striping. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/ replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances	Potential for presence of hazardous materials in the form of asbestos-containing material and lead-containing paint, aerially deposited lead, lead or chromium in yellow/white traffic striping. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/ replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances	Potential for presence of hazardous materials in the form of asbestos-containing material and lead-containing paint, aerially deposited lead, lead or chromium in yellow/white traffic striping. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/ replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances	Avoidance and Minimization Measures Develop and Implement Plans to Address Worker Health and Safety Conduct Site-specific Assessments and Prepare and Implement a Work Plan (Soil and Groundwater, Asbestos-Containing Materials and Lead-Based Paint) Conduct Sampling, Testing, Removal Storage, Transportation, and Disposal of Yellow Traffic Striping along Existing Roadways Appropriately Dispose of Soils Contaminated with ADL

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Exposure to hazardous conditions from the accidental release of hazardous materials	No effect	Potential exposure of humans and the environment to hazardous conditions from accidental release of hazardous materials during construction	Potential exposure of humans and the environment to hazardous conditions from accidental release of hazardous materials during construction	Potential exposure of humans and the environment to hazardous conditions from accidental release of hazardous materials during construction	Avoidance and Minimization Measures Develop and Implement Plans to Address Worker Health and Safety Conduct Site-specific Assessments and Prepare and Implement a Work Plan (Soil and Groundwater, Asbestos-Containing Materials and Lead-Based Paint)
2.13—Air Quality					
Project-level conformity CO	No effect	Would not exceed National Ambient Air Quality Standards and California Ambient Air Quality Standards	Would not exceed National Ambient Air Quality Standards and California Ambient Air Quality Standards	Would not exceed National Ambient Air Quality Standards and California Ambient Air Quality Standards	None required
Project-level conformity PM2.5 and PM10	No effect	Not a Project of Air Quality Concern	Not a Project of Air Quality Concern	Not a Project of Air Quality Concern	None required
Roadway Vehicle Emissions/Criteria Pollutant Emissions	Worsened air quality likely	In Year 2022, decrease in emissions relative to No Build Alternative In Year 2042, minor increase in ROG, CO, and PM emissions and minor decrease in NOx compared to the No Build Alternative	In Year 2022, decrease in emissions relative to No Build Alternative In Year 2042, minor increase in ROG, CO, and PM emissions and minor decrease in NOx compared to the No Build Alternative	In Year 2022, decrease in emissions relative to No Build Alternative In Year 2042, minor increase in ROG, CO, and PM emissions and minor decrease in NOx compared to the No Build Alternative	None required
Construction	No effect	Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge and wall erection, and construction worker commuting patterns	Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge and wall erection, and construction worker commuting patterns	Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge and wall erection, and construction worker commuting patterns	Avoidance and Minimization Measures Implement California Department of Transportation Standard Specification Section 14 Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices)
Asbestos and Lead-Based Paint	No effect	Removal of Cattlemens restaurant may expose workers to asbestos and lead-based paint if materials were used during original building construction	Removal of Cattlemens restaurant may expose workers to asbestos and lead-based paint if materials were used during original building construction	Removal of both Cattlemens restaurant and Nimbus Winery may expose workers to asbestos and lead-based paint if materials were used during original building construction	Avoidance and Minimization Measures Implement California Department of Transportation Standard Specification Section 14

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices)
Mobile Source Air Toxics	No effect	Decrease of MSAT emissions relative to the No Build Alternative in Year 2022 Minor increases of benzene and DPM due to higher vehicle speeds; decreases of all other Mobile Source Air Toxics	Decrease of MSAT emissions relative to the No Build Alternative in Year 2022 Minor increases of benzene and DPM due to higher vehicle speeds; decreases of all other Mobile Source Air Toxics	Decrease of MSAT emissions relative to the No Build Alternative in Year 2022 Minor increases of benzene and DPM due to higher vehicle speeds; decreases of all other Mobile Source Air Toxics	None required
2.14—Noise					
Traffic noise	No effect	Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 41 dwelling units	Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 47 dwelling units	Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 49 dwelling units	Avoidance and Minimization Measures Noise Abatement Evaluation under 23 CFR 772
Construction noise	No effect	Temporary increase in noise levels due to transport and operation of construction equipment, and other construction activities	Temporary increase in noise levels due to transport and operation of construction equipment, and other construction activities	Temporary increase in noise levels due to transport and operation of construction equipment, and other construction activities	Avoidance and Minimization Measures Minimize Noise Effects from Construction
2.15—Energy					
Energy demands	No effect	Temporary energy consumption during construction	Temporary energy consumption during construction	Temporary energy consumption during construction	None required
BIOLOGICAL ENVIRONMENT					
2.16—Natural Communities					
Effects on Fremont Cottonwood-Oak Woodland	No effect	Permanent loss of up to 2.97 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland vegetation due to tree trimming required for construction of the jughandle road	Permanent loss of up to 2.97 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland vegetation due to tree trimming required for construction of the jughandle road	Permanent loss of up to 2.97 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland vegetation due to tree trimming required for construction of the jughandle road	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Protect Native Trees during Construction Mitigation Measure Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland
Effects on Valley Foothill Riparian Woodland	No effect	Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.03acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.03 acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.03 acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Protect Native Trees during Construction Mitigation Measure Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland
Effects on Wildlife Corridors	No effect	No effect	No effect	No effect	None required

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
2.17—Wetlands and Other Waters					
Effects on Emergent Wetlands	No effect	Permanent loss of up to 0.06 acres and temporary impacts of 0.06 acres due to project construction	Permanent loss of up to 0.06 acres and temporary impacts 0.06 acres due to project construction	Permanent loss of up to 0.06 acres and temporary impacts 0.06 acres due to project construction	Avoidance and Minimization Measures Implement best management practices (BMPs) to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Mitigation Measure Compensate for the permanent and temporary loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
Effects on Seasonal Wetlands	No effect	Permanent loss of up to 0.02 acres due to project construction	Permanent loss of up to 0.02 acres due to project construction	Permanent loss of up to 0.02 acres due to project construction	Avoidance and Minimization Measures Implement best management practices (BMPs) to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Mitigation Measure Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Effects on Perennial Drainages	No effect	Permanent loss of up to 0.10 acres and 0.18 acres of temporary impacts due to project construction including the placement of permanent fill in Alder Creek associated with widening US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.10 acres and 0.18 acres of temporary impacts due to project construction including the placement of permanent fill in Alder Creek associated with widening US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.10 acres and 0.18 acres of temporary impacts due to project construction including the placement of permanent fill in Alder Creek associated with widening US 50 to accommodate an auxiliary lane	Avoidance and Minimization Measures Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Mitigation Measure Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
Effects on Ephemeral Drainages	No effect	Permanent loss of up to 0.001 acres and 0.0003 acres of temporary impacts due to project construction including the placement of permanent fill in the ephemeral drainages associated with widening of US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.001 acres and 0.0003 acres of temporary impacts due to project construction including the placement of permanent fill in the ephemeral drainages associated with widening of US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.001 acres and 0.0003 acres of temporary impacts due to project construction including the placement of permanent fill in the ephemeral drainages associated with widening of US 50 to accommodate an auxiliary lane	Avoidance and Minimization Measures Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Mitigation Measure Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Effects on Ditches	No effect	Permanent loss of up to 0.14 acres and 0.03 acres of temporary impacts due to project construction including the placement of permanent fill in the ditch associated with widening of US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.14 acres and 0.03 acres of temporary impacts due to project construction including the placement of permanent fill in the ditch associated with widening of US 50 to accommodate an auxiliary lane	Permanent loss of up to 0.14 acres and 0.03 acres of temporary impacts due to project construction including the placement of permanent fill in the ditch associated with widening of US 50 to accommodate an auxiliary lane	Avoidance and Minimization Measures Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Conduct Environmental Awareness Training for Construction Employees
2.18—Plant Species					
Effects on Special-Status Plants	No effect	No effect	No effect	No effect	None required
2.19—Animal Species					
Effects on Midvalley Fairy Shrimp	No effect	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increase contaminants)	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increase contaminants)	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increase contaminants)	Avoidance and Minimization Measures Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Effects on Western Pond Turtle	No effect	Permanent loss of up to 0.34 acres and up to 0.48 acres of temporary impacts on western pond turtle habitat due to construction activities including of piers within the creek and construction of abutments, removal of riparian vegetation, and paving over and/or fencing of ruderal habitat near the creek	Permanent loss of up to 0.34 acres and up to 0.48 acres of temporary impacts on western pond turtle habitat due to construction activities including of piers within the creek and construction of abutments, removal of riparian vegetation, and paving over and/or fencing of ruderal habitat near the creek	Permanent loss of up to 0.34 acres and up to 0.48 acres of temporary impacts on western pond turtle habitat due to construction activities including of piers within the creek and construction of abutments, removal of riparian vegetation, and paving over and/or fencing of ruderal habitat near the creek	<u>Avoidance and Minimization Measures</u> Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work Restore Temporarily Disturbed Ruderal Habitat <u>Mitigation Measures</u> Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
Effects on White-Tailed Kite	No effect	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to tree removal, construction disturbance (noise/activity)	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to tree removal, construction disturbance (noise/activity)	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to tree removal, construction disturbance (noise/activity)	<u>Avoidance and Minimization Measures</u> Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Restore Temporarily Disturbed Ruderal Habitat Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Conduct Focused Surveys for Nesting Swainson's Hawk and White-tailed Kite Prior to Construction Mitigation Measures Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland
Effects on Yellow-breasted Chat	No effect	Permanent loss of up to 0.03 acres and temporary loss of up to 0.03 acres of habitat due to project construction and construction disturbance (noise/activity) during breeding season	Permanent loss of up to 0.03 acres and temporary loss of up to 0.03 acres of habitat due to project construction and construction disturbance (noise/activity) during breeding season	Permanent loss of up to 0.03 acres and temporary loss of up to 0.03 acres of habitat due to project construction and construction disturbance (noise/activity) during breeding season	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Preconstruction Surveys for Nesting Migratory Birds Mitigation Measure Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland
Effects on Song Sparrow (Modesto Population)	No effect	Permanent loss of up to 0.09 acres and temporary loss of up to 0.09 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Permanent loss of up to 0.09 acres and temporary loss of up to 0.09 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Permanent loss of up to 0.09 acres and temporary loss of up to 0.09 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Preconstruction Surveys for Nesting Migratory Birds <u>Mitigation Measures</u> Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
Effects on Special-Status Bats and Roosting Colonies of Non-Special-Status Bats	No effect	Removal of suitable roosting habitat due to removal or disturbance of trees and disturbance (vibrations/noise) of the Hazel Avenue bridge structure	Removal of suitable roosting habitat due to removal or disturbance of trees and disturbance (vibrations/noise) of the Hazel Avenue bridge structure	Removal of suitable roosting habitat due to removal or disturbance of trees	<u>Avoidance and Minimization Measures</u> Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures <u>Mitigation Measures</u> Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland
Effects on Migratory Birds	No effect	Removal of nesting and foraging habitat due to construction noise/activities, disturbance of Alder Creek box culvert	Removal of nesting and foraging habitat due to construction noise/activities, disturbance of Alder Creek box culvert	Removal of nesting and foraging habitat due to construction noise/activities, disturbance of Alder Creek box culvert	<u>Avoidance and Minimization Measures</u> Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Preconstruction Surveys for Nesting Migratory Birds <u>Mitigation Measures</u> Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
2.20—Threatened and Endangered Species					
Effects on vernal pool fairy shrimp	No effect	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increased contaminants)	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increased contaminants)	Temporary disturbance of potential habitat during construction and potential indirect impacts on habitat (from changes in hydrology and increased contaminants)	<u>Avoidance and Minimization Measures</u> Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminant from Entering Suitable Vernal Pool Branchiopod Habitat

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Effects on valley elderberry longhorn beetle	No effect	Removal of three (3) elderberry shrubs due to construction of the embankment for loop ramp, auxiliary lane, new intersection and at-grade railroad crossing for jughandle	Removal of three (3) elderberry shrubs due to construction of the embankment for loop ramp, auxiliary lane, new intersection and at-grade railroad crossing for jughandle	Removal of four (4) elderberry shrubs due to construction of the embankment for loop ramp, auxiliary lane, new intersection and at-grade railroad crossing for jughandle	Avoidance and Minimization Measures Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Fence Elderberry Shrubs to be Protected Mitigation Measure Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat
Effects on Swainson's Hawk	No effect	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to construction noise and activities during the nesting season, removal of suitable nest trees	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to construction noise and activities during the nesting season, removal of suitable nest trees	Permanent loss of up to 3.00 acres and temporary loss of up to 0.22 acres of nesting habitat due to construction noise and activities during the nesting season, removal of suitable nest trees	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Restore Temporarily Disturbed Ruderal Habitat Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Focused Surveys for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction Mitigation Measures Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Effects on tricolored blackbird	No effect	Permanent loss of up to 0.06 acres and temporary loss of up to 0.06 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Permanent loss of up to 0.06 acres and temporary loss of up to 0.06 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Permanent loss of up to 0.06 acres and temporary loss of up to 0.06 acres of habitat due to construction of the proposed project and construction disturbance (noise and/or activity)	Avoidance and Minimization Measures Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Restore Temporarily Disturbed Ruderal Habitat Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Preconstruction Surveys for Nesting Migratory Birds Mitigation Measure Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
2.21—Invasive Species					
Introduction and spread of invasive plant species	No effect	During construction, areas where temporary disturbance occurs would be more susceptible to introduction and colonization or spread of invasive plants	During construction, areas where temporary disturbance occurs would be more susceptible to introduction and colonization or spread of invasive plants	During construction, areas where temporary disturbance occurs would be more susceptible to introduction and colonization or spread of invasive plants	Avoidance and Minimization Measures Conduct Environmental Awareness Training for Construction Employees Avoid and Minimize the Spread of Invasive Plant Species during Project Construction
2.22—Cumulative Impacts					
Temporary contribution to cumulative increases in nighttime light	No contribution	Cumulatively considerable contribution during construction. The project would temporary contribute to increases in nighttime light through the use of extremely bright lights during an approximate 6-month period.	Cumulatively considerable contribution during construction. The project would temporary contribute to increases in nighttime light through the use of extremely bright lights during an approximate 6-month period.	Cumulatively considerable contribution during construction. The project would temporary contribute to increases in nighttime light through the use of extremely bright lights during an approximate 6-month period.	Avoidance and Minimization Measures Minimize Fugitive Light from Portable Sources Used for Construction
Contribution to permanent visual and aesthetic changes	No contribution	Less than cumulatively considerable contribution	Less than cumulatively considerable contribution	Cumulatively considerable contribution	None required

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
Contribution to temporary increase in criteria pollutants during construction	No contribution	Less than cumulatively considerable contribution	Less than cumulatively considerable contribution	Less than cumulatively considerable contribution	Mitigation Measures Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices) Utilize Model Year 2010 or Newer Engines to Reduce Construction-Related Exhaust Emissions from On-Road Vehicles Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related NOx Emissions
Contribution to cumulative increases in noise levels	No contribution	Cumulatively considerable contribution to noise levels from project operation Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 41 dwelling units	Cumulatively considerable contribution to noise levels from project operation Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 47 dwelling units	Cumulatively considerable contribution to noise levels from project operation Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 49 dwelling units	Avoidance and Minimization Measures Noise Abatement Evaluation under 23 CFR 772 Mitigation Measures Apply Quiet Pavement or Construct Noise Barrier along Aerojet Road
Contribution to the loss of Fremont cottonwood-oak woodland and valley foothill riparian woodland	No contribution	Cumulatively considerable contribution to the loss of the natural community Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland and 0.03 acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Cumulatively considerable contribution to the loss of the natural community Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland and 0.03 acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Cumulatively considerable contribution to the loss of the natural community Permanent loss of up to 0.03 acres and temporary disturbance of up to 0.19 acres of Fremont cottonwood-oak woodland and 0.03 acres of valley foothill riparian habitat due to tree trimming and vegetation removal	Mitigation Measures Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland
Contribution to the loss of wetlands and non-wetland waters	No contribution	Cumulatively considerable contribution Permanent loss of emergent wetland, seasonal wetland, perennial and ephemeral drainages and ditch habitats and temporary disturbances during construction	Cumulatively considerable contribution Permanent loss of emergent wetland, seasonal wetland, perennial and ephemeral drainages and ditch habitats and temporary disturbances during construction	Cumulatively considerable contribution Permanent loss of emergent wetland, seasonal wetland, perennial and ephemeral drainages and ditch habitats and temporary disturbances during construction	Avoidance and Minimization Measures Implement best management practices (BMPs) to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats <u>Mitigation Measure</u> Compensate for the permanent and temporary loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State
Contribution to loss of habitat for Midvalley fairy shrimp, western pond turtle, white-tailed kite, yellow-breasted chat, tricolored blackbird, song sparrow, special-status bats, and migratory birds	No contribution	Cumulatively considerable contribution Temporary and permanent impacts on suitable habitat including temporary construction disturbances and permanent loss of aquatic and terrestrial habitats	Cumulatively considerable contribution Temporary and permanent impacts on suitable habitat including temporary construction disturbances and permanent loss of aquatic and terrestrial habitats	Cumulatively considerable contribution Temporary and permanent impacts on suitable habitat including temporary construction disturbances and permanent loss of aquatic and terrestrial habitats	<u>Avoidance and Minimization Measures</u> Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work Restore Temporarily Disturbed Ruderal Habitat Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Focused Surveys for Nesting Swainson's Hawk and White-tailed Kite Prior to Construction Conduct Preconstruction Surveys for Nesting Migratory Birds Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures Protect Native Trees during Construction

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Mitigation Measures Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State Compensate for the Loss of Protected Trees
Contribution to loss of habitat for threatened and endangered Species (vernal pool fairy shrimp, valley elderberry longhorn beetle, and Swainson's hawk)	No contribution	Cumulatively considerable contribution Direct and indirect impacts on four Federal or State-listed species and their habitat Indirect effects on habitat for vernal pool fairy shrimp, direct loss of habitat for valley elderberry longhorn beetle, and direct loss of nesting habitat for Swainson's hawk and tricolored blackbird	Cumulatively considerable contribution Direct and indirect impacts on four Federal or State-listed species and their habitat Indirect effects on habitat for vernal pool fairy shrimp, direct loss of habitat for valley elderberry longhorn beetle, and direct loss of nesting habitat for Swainson's hawk and tricolored blackbird	Cumulatively considerable contribution Direct and indirect impacts on four Federal or State-listed species and their habitat Indirect effects on habitat for vernal pool fairy shrimp, direct loss of habitat for valley elderberry longhorn beetle, and direct loss of nesting habitat for Swainson's hawk and tricolored blackbird	Avoidance and Minimization Measures Implement BMPs to protect water quality and prevent erosion and sedimentation in drainages and wetlands Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources Conduct Environmental Awareness Training for Construction Employees Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat Fence Elderberry Shrubs to be Protected Restore Temporarily Disturbed Ruderal Habitat Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds Conduct Focused Surveys for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction Conduct Preconstruction Surveys for Nesting Migratory Birds.

Table S-2. Continued

Impact	No Build	Alternative 1	Alternative 1A	Alternative 2	Avoidance, Minimization, and/or Mitigation Measures
					Mitigation Measures Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat

Table S-3. Summary of CEQA Impacts

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Population/Housing									
Impact PH-1 (All Build Alternatives): Indirect growth inducement Transportation network improvements could alleviate effects of planned growth, including approved development projects and would not result in substantial unplanned population growth, either directly or indirectly.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Aesthetics									
Impact AE-1 (All Build Alternatives): Alteration of the viewshed of a designated scenic highway Construction of project features (e.g., flyover ramp structure, ramp viaducts, retaining walls) and removal of vegetation would alter the viewshed of the US 50 highway corridor, but not significantly.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact AE-2 (Alternatives 1 and 1A): Visual introduction of new transportation infrastructure and change in visual character Project features (e.g., flyover ramp structure, ramp viaducts, retaining walls) would result in a change in visual character by introducing new transportation infrastructure to the area. Changes include modern aesthetic treatments at the existing interchange.	NA	LTS	LTS	NA	None necessary	NA	LTS	LTS	NA
Impact AE-3 (Alternative 2): Visual introduction of new transportation infrastructure and change in visual character Alternative 2 would significantly change the visual character of the area immediately south of US 50. The new flyover ramp that would span over US 50 to connect the new eastbound off-ramp to the westbound US 50 off-ramp and northbound Hazel Avenue would remove the Nimbus Winery building. The building is not registered as a local historical property and it is not eligible for listing in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP), but it is part of the character of the area and there is local interest in preserving it.	NA	LTS	LTS	**PS**	Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce this impact to a less-than-significant level. However, the impact is not avoided if Alternative 2 is selected.	NA	NA	NA	**SU**

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LTS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce this impact to a less-than-significant level. The impact is unavoidable if Alternative 2 is selected. The selection of an alternative has not yet occurred. Therefore, this impact would remain significant and unavoidable.									
Impact AE-4 (All Build Alternatives): Creation of a temporary new source of nighttime light New temporary sources of light, (e.g., bright lights used during construction), would negatively affect highway users and nighttime views of and from the work area. Implementation of mitigation to minimize fugitive light would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM AE-1: Minimize Fugitive Light from Portable Sources Used for Construction At a minimum, the construction contractor will minimize project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights will be used. Portable lights will be operated at the lowest allowable wattage and height and will be raised to a height no greater than 20 feet. All lights will be screened and directed downward toward work activities and away from the night sky and roadway users and highway neighbors to the maximum extent possible. Lights will not be directed toward residential land uses after 10 p.m. The number of nighttime lights used will be minimized to the greatest extent possible.	NA	**SU**	**SU**	**SU**
Impact AE-5 (All Build Alternatives): Creation of new nighttime street lighting Street lighting could include use light-emitting diode (LED) lights which can increase nuisance light and glare; lighting would be installed according to Caltrans and County standards used for roadway lighting.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact AE-6 (All Build Alternatives): Creation of new daytime glare source Construction of additional paved area, retaining walls, and elevated structures that would reflect light could create a new source of daytime glare; however, visual buffers such as landscaping would minimize glare sources.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Public Services									
Impact PS-1 (All Build Alternatives): Possible temporary effects on public services, including emergency services Project construction could result in temporary effects on public services (e.g., traffic delays), including effects on emergency services; however, preparation and implementation of a Traffic Management Plan is standard practice for roadway construction projects and would minimize any potential disruption of traffic.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact PS-2 (All Build Alternatives): Potential for temporary access delays and impacts at recreational facilities Project construction (e.g., lane closures, separated bicycle route construction, park-and-ride lot reconfiguration, equipment staging) could result in temporary, intermittent access delays to recreational areas at Lake Natoma or could affect park facilities. Implementation of mitigation to prevent unauthorized use of State Park land would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM PS-1: Prevent Unauthorized Use of State Parks Land Construction-related staging, equipment, and worker parking will be kept within the approved project limits. The project boundary adjacent to State Parks Land will be delineated with Environmentally Sensitive Area fencing or other visible means. No unauthorized use of State Parks land will be allowed.	NA	LTS	LTS	LTS
Transportation/Traffic									
Impact TR-1 (All Build Alternatives): Changes in volumes of traffic at peak hours Intersection Operations Under existing conditions, intersection operations at two study locations (Intersections #1 and #2) would improve with the project. Alternatives 1 and 1A would also improve operations at Intersection #3 (Hazel Avenue & US 50 Eastbound Ramps). Alternative 2 would change the Hazel Avenue and US 50 eastbound ramps intersection (Intersection #3) to a free movement. The project would not change operations at Intersection #6 (Folsom Boulevard & Auto Mall Circle [West]). In 2022, the open-to-traffic year for the project, Alternatives 1 and 1A would improve LOS at Intersection #3, the eastbound ramps at the US 50/Hazel Avenue interchange, during both the AM and PM peak hours and the intersection would operate at an acceptable LOS.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Under Alternative 2, Intersection #3 would be changed to operate with free movement. In 2022 the Hazel Avenue/Folsom Boulevard intersection (Intersection #4) would be removed. A new street, the jughandle, would intersect Folsom Boulevard west of Hazel Avenue and Hazel Avenue south of Folsom Boulevard, creating two new intersections. Both new intersections would operate at an acceptable LOS under all build alternatives. By 2042, Alternatives 1 and 1A would improve traffic operations at the Hazel Avenue/US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps. Alternative 2 would improve the delay at the Hazel Avenue/US 50 westbound ramp (Intersection #2) during the PM peak hour more than under Alternatives 1 and 1A. Freeway Operations The project's effects on freeway operations are the same for each build alternative. None of the build alternatives would deteriorate an acceptable LOS to an unacceptable LOS. Under existing conditions, the project would maintain or improve existing freeway operation conditions with the exception of changes at the eastbound Hazel Avenue off-ramp segment. At that location, LOS would change from A to B in the AM peak hour and delay would increase very slightly during both the AM and PM peak hours. Traffic operations would be improved for the northbound Hazel Avenue slip on-ramp, and eastbound Aerojet Road and Folsom Boulevard off-ramps. In 2022, at the eastbound Folsom Boulevard off-ramp freeway operations would improve. By 2042, freeway operations would not deteriorate to unacceptable LOS. Eastbound freeway operations in the vicinity of Hazel Avenue would be improved.									

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact TR-2 (All Build Alternatives): Temporary and permanent changes in access and circulation During construction, the project could result in temporary changes in access and circulation through travel lane and sidewalk closures. Permanent roadway and route changes resulting from the project would not adversely affect access and circulation and would maintain or improve access.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Air Quality									
Impact AQ-1 (All Build Alternatives): Cumulatively considerable temporary net increase of criteria pollutants With implementation of the project, pollutant emissions would decrease for most pollutants except particulate matter. The project has the potential to result in a negligible change in ozone precursors (reactive organic gasses, nitrogen oxides), carbon monoxide, and particulate matter (10 and 2.5 micrometers or smaller). During project construction, a cumulatively considerable temporary net increase of criteria pollutants was modeled to occur, exceeding SMAQMD thresholds. Implementation of mitigation requiring use of SMAQMD's BMPs, use of newer model engines, and use of clean diesel-powered equipment would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM AQ-1: Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices) Measures to control and reduce fugitive dust from SMAQMD's Basic Construction Emission Control Practices (Sacramento Metropolitan Air Quality Management District 2017) will be implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of Caltrans' Standard Specifications, Special Provisions, the National Pollutant Discharge Elimination System (NPDES) permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water Act Section 401 Certification, and other permits issued for the project. The project-proponent will implement SMAQMD's basic construction emission control practices, including but not limited to the following measures. • Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads. • Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					• Limit vehicle speeds on unpaved roads to 15 miles per hour. • Pave all roadways, driveways, sidewalks, and parking lots as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site. • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated. MM AQ-2: Utilize Model Year 2010 or Newer Engines to Reduce Construction-Related Exhaust Emissions from On-Road Vehicles All on-road trucks will consist of model year 2010 or newer engines. Construction contractors will provide documentation to the County of efforts to secure such a fleet. The contractors will keep a written record of equipment usage during project construction for each piece of equipment and provide the County with annual reports documenting compliance. These reports will be submitted to SMAQMD. MM AQ-3: Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related NO_X Emissions The County will ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines. The County will submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 8 or more hours during any phase of the construction project. The inventory will include the following:				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					• CARB equipment identification number, equipment type, horsepower rating, engine model year (Tier 4 Final), and projected hours of use for each piece of off-road equipment. • Current Certificate of Reported Compliance for CARB's In-Use Off-Road Regulation for each construction company working on the project. • Anticipated construction timeline including start date, and name, phone number and email address of the project manager and on-site foreman. The construction inventory will be submitted to the SMAQMD at least 4 business days prior to the use of subject equipment.				
Impact AQ-2 (All Build Alternatives). Expose sensitive receptors to pollutant concentrations in excess of standards Temporary emissions of diesel particulate matter and carbon monoxide are not anticipated to exceed national ambient air quality standards or California ambient air quality standards. Construction of the project could expose workers to hazardous levels of lead and asbestos above Occupational Safety and Health Administration standards. Implementation mitigation requiring an abatement plan would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM AQ-4: Prepare and Implement a Lead and Asbestos Abatement Plan Following the requirements of SMAQMD Rule 902 and Sacramento County Standard Construction Specification Section 12-1.01.C, Task Specific Safety Plan (TSSP), the County or its contractor will prepare a plan for the abatement of asbestos during demolition and removal of structures. The plan will also address abatement of structural lead. The contents of the plan will conform to Federal, State and local regulations regarding preventing environmental exposure and ensuring worker health and safety standards are implemented, including for the proper handling, removal, and disposal of the pollutants.	NA	LTS	LTS	LTS
Impact AQ-3 (All Build Alternatives). Create objectionable odors affecting a substantial number of people Exhaust from construction equipment and activities (e.g., diesel engines, asphalt paving) could cause objectionable odors. However, odors would be temporary and would disperse rapidly with distance from the source.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Noise									
Impact NO-1 (Alternatives 1 and 1A): Permanent increases in traffic noise levels No receptors under Alternatives 1 or 1A would have with-project noise levels that exceed County allowable increase thresholds. Under Alternative 1, with-project noise levels would increase up to 1 decibel (dB) at several locations; however, terrain shielding by the proposed reconfiguration of Aerojet Road would result in a decrease of up to 9 dB under existing plus project conditions and 10 dB under year 2042 plus project conditions. Under Alternative 1A, with-project noise levels would increase up to 2 dB at residential locations. Terrain shielding under this alternative would result in a decrease of up to 2 dB under existing plus project conditions and 3 dB under year 2042 plus project conditions. However, both of these locations had with-project noise levels within General Plan noise compatibility standards.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact NO-2 (Alternative 2): Permanent increases in traffic noise levels above acceptable thresholds Noise modeling for Alternative 2 indicates that residential, hotel, and park noise receptors adjacent to the project would have noise levels exceeding the County General Plan noise compatibility standard. Alternative 2 could result in a permanent increase in traffic noise up to 3 dB. Implementation of noise reducing mitigation options would reduce impacts to less-than-significant levels.	NA	LTS	LTS	**PS**	MM NO-1: Apply Quiet Pavement or Construct Noise Barrier along Aerojet Road The County will implement one of two mitigation options. Option 1. Apply quiet pavement to the US 50 mainline from just west of Hazel Avenue to 0.25 mile east of Aerojet Road, at a minimum. The pavement will be designed to provide a minimum of 4 dB of noise reduction relative to standard pavement that would otherwise be used. Applying quiet pavement to the off-ramp only and exclusive of US 50 would have no noise-reducing effect. As such, quiet pavement will be applied to both the US 50 mainline and Aerojet Road to achieve the required noise level reduction. Option 2. Construct a noise barrier at a height of 14 feet along Aerojet Road in the location shown on EIR/EA Figure 2.14-5. It may not be possible to apply quiet pavement to the US 50 mainline given that it is located within State ROWs and regulated by Caltrans. Therefore, if Option 1 is	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					determined not to be feasible, the County will implement Option 2.				
Impact NO-3 (All Build Alternatives): Temporary increase in noise levels during construction Project construction activities, such as impact and/or vibratory pile-driving, could result in a temporary substantial increase in ambient noise levels (95 A-weighted decibels (dBA) at 50 feet) at residential and recreational outdoor use areas exceeding relevant standards set by the Federal Transit Administration for daytime construction noise thresholds during daytime hours. Construction work done at night would exceed the County ordinance standard of 55 dBA. Implementation of mitigation to reduce and control construction noise would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM NO-2: Employ Noise-Reducing Construction Practices during Construction During construction, the contractor will employ best practices to reduce construction noise at noise-sensitive land uses. Where possible, noise levels should not exceed 55 dBA during evening hours (8:00 p.m. to 10:00 p.m.) and 50 dBA during nighttime hours (10:00 p.m. to 6:00 a.m.) Measures used to limit construction noise include the following. • Limit noise-generating construction operations to daytime hours. • Locate stationary equipment (e.g., generators, compressors, cement mixers, idling trucks) as far as possible from noise-sensitive land uses. • Prevent excessive noise by shutting down idle vehicles or equipment. • During use of pile drivers, include noise control measures such as pile cushions or noise shrouds. • Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation. • Use noise-reducing enclosures around noise-generating equipment. • Construct barriers to block sound transmission from construction equipment to noise-sensitive land uses. The barriers will be designed to obstruct the line of sight from the noise-sensitive land uses to on-site construction equipment. MM NO-3: Initiate a Noise Control Plan for Mitigation of Construction Noise during Evening/Nighttime Hours	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					A construction noise control plan will be prepared by the County or its contractor that describes the specific methods the contractor will use to minimize construction equipment noise levels at nearby residences. The plan will include provisions for giving advance notification of construction activity schedules to occupants of potentially affected buildings. Prior to construction, the contractor will make a construction schedule available to residents living in the vicinity of the construction areas, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule. In the event of complaints by affected residents due to on-site construction noise generated during evening/nighttime hours, the contractor will monitor noise levels intermittently (between 8:00 p.m. and 6:00 a.m.) at or near the residence of the person lodging the complaint. If measured construction noise at the monitor location during nighttime hours exceeds 55 dBA L_{eq} between the hours of 8:00 p.m. to 10:00 p.m. or 50 dBA L_{eq} during nighttime hours (10:00 p.m. to 6:00 a.m.), the construction contractor will implement sound-attenuating mitigation measures where site conditions allow, such as limitations on use of noise-generating equipment or installation of additional temporary barriers or enclosures. If these measures are ineffective in reducing noise to the identified levels, or site conditions prohibit implementation of the measures, the affected residents will be offered short-term relocation assistance for the duration of the time that nighttime noise levels are expected to exceed the specified levels.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact NO-4 (All Build Alternatives): Temporary increase in groundborne vibration Vibration above a level of 0.04 inches per second peak particle velocity could result in distinctly perceptible levels of vibration at sensitive receptor locations. However, vibration caused by project construction would be intermittent and short-term and would only occur for the period of time that nearby piles are driven from the vantage point of a given receptor. Pile driving would be done during daytime hours and would not be expected to cause sleep disturbance, nor would it likely result in adverse community reaction.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Hydrology and Water Quality									
Impact HY-1 (All Build Alternatives): Potential for effects on groundwater supplies or recharge The project would result in increased impervious areas that could reduce infiltration capacities thereby hindering recharge of the underlying aquifer. A total area of 8.4 acres, 8.6 acres, and 9.6 acres of new impervious surfaces would result from Alternatives 1, 1A, and 2, respectively. If Alternative 1A is selected, construction dewatering would likely be needed during construction of the undercrossing connector ramp and could result in a temporary reduction in shallow groundwater volumes during excavation activities.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact HY-2 (All Build Alternatives): Risk of flooding on- or off-site due to changes in drainage patterns and increased surface runoff The project's increase in impervious surface would increase the quantity of stormwater runoff and could lead to increased flooding. The project would result in 8.4 acres, 8.6 acres, and 9.6 acres of new impervious surfaces from Alternatives 1, 1A, and 2, respectively. Temporary in-water work for the new bridge structure on US 50 and supports at Alder Creek would require excavation, mobilization, and grading within the creek and its banks, temporarily affecting drainage patterns. To	NA	**PS**	**PS**	**PS**	MM HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual As part of the final design process prior to project construction, the project engineers will develop and incorporate design features or BMPs into the project design. The features selected will comply with the Sacramento County SQIP and the Sacramento Region SQDM for project areas outside of Caltrans ROW, and Caltrans SWMP and Standard Specifications for project	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
prevent increased runoff or the possibility of flooding, the project would implement temporary diversion systems and dewatering operations, as appropriate. Once construction is completed, water flows would be restored, and drainage patterns would return to existing conditions. Implementation of mitigation requiring best management practices, compliance with requirements of permitting agencies and the requirements of the Stormwater Quality Design Manual would reduce impacts to less-than-significant levels.					areas within Caltrans ROW. The features will be designed to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan. For project areas outside of Caltrans ROW, the project engineers will follow the guidance in the SQDM including selecting measures from SQDM Table 3-3, Stormwater Quality Control Measure Selection Matrix, for street/road projects with new impervious areas larger than 5 acres. Measures that could be selected and implemented include source control, hydromodification control, treatment control, and low impact development measures such as vegetated swales, water quality detention basins, and bioretention planters. The project engineers and construction contractor will ensure compliance with the requirements of Caltrans and County NPDES MS4 permits to control stormwater and non-stormwater discharges associated with project construction activities and discharges within the jurisdiction of each permit. Temporary diversion systems and dewatering operations will be implemented, as appropriate. The controls required by all applicable permits will be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. The project engineers and the construction contractor will ensure that the requirements of the County SQIP will be followed to reduce the discharge of pollutants to the MS4. The project engineers and construction contractor will also ensure construction activities and project implementation complies with Section 401 (Water Quality Certification) from the Central Valley Regional Water Quality Control Board and the Section 404 Permit from the Sacramento District U.S. Army Corps of Engineers (USACE)				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact HY-3: (All Build Alternatives): Development within a 100-year floodplain The project would construct a bridge and auxiliary lane on US 50 over Alder Creek which is located within a 100-year floodplain. However, encroachment from the bridge pilings that would be placed in Alder Creek would be small and insignificant on the negligible effect on the Federal Emergency Management Agency (FEMA) Base Flood Elevation (BFE).	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact HY-4 (All Build Alternatives): Placement of structures within a 100-year floodplain The project would place a structure (bridge on US 50 over Alder Creek) within a 100-year floodplain. However, the bridge pilings that would be placed in Alder Creek would have a negligible effect on the height of water surface elevation during the base flood.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact HY-5 (All Build Alternatives): Develop an area subject to 200-year urban levels of flood protection The build alternatives would have a negligible effect on the 200-year floodplain. The project would construct a bridge and auxiliary lane on US 50 over Alder Creek located within an area subject to 200-year urban levels of flood protection. Encroachment from the bridge pilings that would be placed in Alder Creek would be small and insignificant.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact HY-6 (All Build Alternatives): Potential to expose people or structures to a substantial flood-related risk of loss, injury or death The proposed project would add piles to Alder Creek to support the widened culvert which would result in only a negligible impact on the height of water surface elevation during the base flood. Further, Nimbus Dam, Folsom Dam and Alder Creek Miners Dam act as hydraulic control structures preventing the force of flood waters to cause a threat to structures or people in the project area.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact HY-7 (All Build Alternatives): Changes in runoff volumes that could exceed stormwater drainage system capacity Increased runoff volumes from the project's increase in impervious surfaces may not be contained by the existing drainage system. Low impact development concepts and post-construction stormwater runoff BMPs would promote infiltration. Each build alternative would be designed to direct and control stormwater flows such that the existing stormwater drainage system would not need modification. Implementation of mitigation requiring best management practices, compliance with requirements of permitting agencies and the requirements of the Stormwater Quality Design Manual would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual The full text of this measure is included above in Impact HY-2.	NA	LTS	LTS	LTS
Impact HY-8 (All Build Alternatives): Potential source of polluted runoff and degradation of groundwater or surface water quality During construction, discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek and runoff from impervious surfaces) could result in degradation of surface water quality. Groundwater at the project area is affected by chlorinated solvents, including tricholorethene, tetrachloroethene, and perchlorate as a result of historical operations at the Aerojet facility and could be encountered during excavation for construction of the proposed project, and especially during construction of the direct tunnel ramp under Hazel Avenue proposed as part of Alternative 1A. Waterproofing is included in the project design of Alternative 1A to prevent contaminated water from reaching the ground surface. During operations, potential sources of pollutants from the roadway include total suspended sediments, nutrients, volatile and semivolatile organics, pesticides, metals, and litter. Implementation of mitigation requiring best management practices, compliance with requirements of permitting agencies and the requirements of the Stormwater Quality	NA	**PS**	**PS**	**PS**	MM HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual The full text of this measure is included above in Impact HY-2.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Design Manual would reduce impacts to less-than-significant levels.									
Geology and Soils									
Impact GS-1 (All Build Alternatives): Expose people or structures to risk of loss, injury, or death involving rupture of an earthquake fault Structures would be built according to County seismic design standards and Caltrans' Highway Design Manual to minimize the risk to construction workers or the traveling public	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact GS-2 (All Build Alternatives): Result in soil erosion, siltation, or loss of topsoil Ground disturbing activities during project construction could result in soil erosion, siltation, or loss of topsoil, the effects of which would be reduced with the implementation of appropriate BMPs	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact GS-3 (All Build Alternatives): Construction on geologic unit or soil that is unstable, or that would become unstable as a result of the project The constructed slopes in the project area could become unstable during excavation if the project were not designed and constructed properly. In addition, deep excavation in native soil material could also cause instability. All build alternatives would require extensive and deep excavation for road widening, retaining walls, and the railroad overhead. This excavation could range in depth from approximately 5 to 30 feet. Alternative 1A would require the greatest amount of excavation because of the extensive deep excavation required for the ramp tunnel. Alternative 1 would require excavation for the footings of the viaduct structure, and Alternative 2 would require excavation for footings of the flyover ramp. The project must be designed according to County design standards and Caltrans' Highway Design Manual and would be specific to the site geology.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact GS-4 (All Build Alternatives): Potential for destruction of a unique paleontological resource or site Excavation and earthmoving activities in areas shown to be sensitive for paleontological resources could damage or destroy a unique paleontological resource. The geologic units immediately underlying the project area include the Pleistocene Riverbank and Modesto Formations, known to have vertebrate fossil content and as a result have high potential or high sensitivity for paleontological resources, though past projects in the county have not unearthed important paleontological resources from these formations. Excavation for the project could range in depth from approximately 5 to 30 feet. Preparation of a plan to identify project locations that warrant monitoring during construction and specific measures to implement in the event of the discovery of a paleontological resource would reduce the impact to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM GS-1: Prepare and Implement a Paleontological Mitigation Plan A non-standard special provision for paleontology mitigation will be included in the construction contract special provisions section to advise the construction contractor of the requirement to cooperate with paleontological salvage. The following items will be part of the provisions. • A qualified principal paleontologist, as defined by the Caltrans Standard Environmental Reference, will be retained to prepare and implement a final Paleontological Mitigation Plan (PMP) prior to construction. If the qualified paleontologist is not a licensed professional geologist in the State of California, then a licensed professional geologist will need to be retained to review and approve the PMP prior to construction. The preliminary PMP prepared for the project (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) will be updated based on final engineering design and geotechnical information • The geotechnical investigation conducted to support final engineering design will identify the depth and location of sensitives areas and will be used by the qualified principal paleontologist to identify locations that warrant monitoring for paleontological resources during construction • The final PMP will list the proposed staff and professional qualifications. • The qualified principal paleontologist will attend a task order meeting and conduct a site visit to review task order requirements; review plans, maps, initial site reports, and mitigation requirements; review site geology and paleontological sensitivity; prepare a mitigation work plan; and prepare a Code of Safe Practices.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					• The qualified principal paleontologist will schedule coordination and supervision for paleontological monitors of any salvage. Monthly progress reports will be prepared for lead agency review and comment. • The qualified principal paleontologist may designate a paleontological monitor to be present during earthmoving activities. According to preliminary engineering, excavations could occur throughout the proposed project area; therefore, paleontological monitoring is recommended during any earthmoving activities/excavations. The qualified principal paleontologist will identify locations that warrant monitoring during construction • The paleontological monitor will have a college degree in paleontology or geology and at least 2 years of paleontological monitoring experience or other qualifications described by the Society of Vertebrate Paleontology (2010). • The qualified principal paleontologist and paleontological monitor will be notified by the resident engineer or lead agency in advance of starting construction activity and will attend any safety training programs for the proposed project. Paleontological monitoring may be full-time during excavation for undercrossings, in-ground structural elements such as bridge substructures and culverts, and any other project elements requiring deep excavation. If, after 50% of the grading/excavation is completed at a particular location for the proposed project, it can be demonstrated that the level of monitoring should be reduced for that site, the qualified principal paleontologist will amend the mitigation program (Society of Vertebrate Paleontology 2010). If pieces of heavy equipment are in use simultaneously at different locations, each location may be individually monitored. • The qualified principal paleontologist will meet with the resident engineer and construction contractor at a preconstruction conference to develop an agreed-upon communication plan and to discuss provisions				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					for worker safety. All project personnel will receive paleontological awareness training prior to commencement of work by the qualified principal paleontologist. • If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work within a 60-foot radius of the find and notify the resident engineer and the Sacramento County Office of Planning and Environmental Review. In the event paleontological resources are discovered, fossil specimens will be properly collected and sufficiently documented to be of scientific value. • The collection and treatment actions described in the PMP will occur during the grading and construction process and after recovery of specimens if fossils are found, including sampling for microfossils, conducting paleomagnetic analysis, identifying and preparing fossils, arranging for a repository, and preparing a final report.				
Biological Resources									
Impact BIO-1 (All Build Alternatives): Temporary disturbance of habitat for vernal pool fairy shrimp and midvalley fairy shrimp Construction of the project has the potential to temporarily disturb vernal pool fairy shrimp and midvalley fairy shrimp habitat through changes in hydrology and increased contaminants. Implementation of mitigation measures designed to avoid sensitive areas, educate construction personnel, conduct biological monitoring, and create appropriate water conveyance systems to maintain existing hydrology would reduce these impacts less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The County and/or their contractor will install orange construction fencing between the construction area and adjacent sensitive biological resource areas. Sensitive biological resources that occur adjacent to the construction area that could be directly affected by the project include natural communities of special concern; fairy shrimp, valley elderberry longhorn beetle and western pond turtle habitats; nest sites of Swainson's hawk, yellow-breasted chat, tricolored blackbird, song sparrow, and other migratory birds; roosting bats; and protected trees to be avoided. Barrier fencing around sensitive areas will be installed as one of the first orders of work and prior to equipment staging. Preliminary fencing locations are included in the draft project design drawings and labeled as	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					Environmentally Sensitive Areas. The preliminary fencing locations area also shown on EIR/EA Figure 3-1. The locations of the fencing will be updated or confirmed as part of final design, prior to construction. Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the orange construction fencing, and a resource specialist will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans and described in the specifications. Barrier fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The County or their contractor will retain a qualified biologist to conduct environmental awareness training for construction crews before project implementation. The awareness training will be provided to all construction personnel and will brief them on the need to avoid effects on sensitive biological resources (e.g., native trees, natural communities of special concern, and special-status species habitats in and adjacent to the construction area). The education program will include a brief review of the special-status species with the potential to occur in the BSA (including their life history, habitat requirements, and photographs of the species). The training will identify the portions of the BSA in which the species may occur, as well as their legal status and protection. The program also will cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. This will include the steps to be taken if a sensitive species is found within the construction area (i.e., notifying the crew foreman, who will call a designated biologist). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations. An environmental awareness handout that				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each crew member. The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The County or their contractor will retain a qualified biologist to monitor all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, road construction) within or adjacent to environmentally sensitive areas (e.g., wetlands, streams, riparian vegetation, special-status species habitat, active bird nests, and adjacent areas within 250-feet or where indirect effects are possible). The purpose of the monitoring is to ensure that avoidance and minimization measures are properly implemented to protect sensitive biological resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. The biologist will regularly inspect the fencing around environmentally sensitive areas (see EIR/EA Figure 3-1) and will communicate any issues to the resident engineer or construction foreman. The contractor will be responsible for maintaining the fence during construction and ensuring that no construction personnel, equipment, or runoff/sediment from the construction area enters environmentally sensitive areas. The monitor will complete daily logs, and a final monitoring report will be prepared at the end of each construction season that will be submitted to the County and other overseeing agencies (i.e., California Department of Fish and Wildlife [CDFW], U.S. Fish and Wildlife Service [USFWS], and USACE), as appropriate.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					MM BIO-4: Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat Concentrated flow conveyance systems identified for the proposed project may include roadside ditches, biofiltration swales, curb and gutters, dikes, overside drains, and culverts. Water conveyance systems surrounding suitable vernal pool branchiopod habitat in the project area will be evaluated, designed, and installed to maintain the existing hydrology of the four seasonal wetlands (see EIR/EA Figure 2.16-1, Sheet 2) that provide potential habitat for vernal pool branchiopods.				
Impact BIO-2 (All Build Alternatives): Direct loss of habitat for valley elderberry longhorn beetle Construction of any of the build alternatives has the potential to reduce the local population size of valley elderberry longhorn beetle through direct mortality or habitat loss by removal of three elderberry shrubs under Alternatives 1 and 1A and removal of four shrubs under Alternative 2. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, and provide for compensation (1:1 ratio) would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-5: Fence Elderberry Shrubs to be Protected Elderberry shrubs/clusters within 165 feet of the construction area that will not be removed will be protected during construction. A qualified biologist (i.e., with elderberry/valley elderberry longhorn beetle experience) will mark the elderberry shrubs and clusters that will be protected during construction. Orange construction barrier fencing will be placed at the edge of the buffer areas established for each shrub or cluster. The buffer area distances will be proposed by the biologist and approved by the U.S. Fish and Wildlife Service (USFWS). No construction activities will be permitted in the buffer zone other than those activities necessary to erect the fencing. Signs will be posted along fencing for the duration of construction and will contain the following information.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment. Temporary fences around the elderberry shrubs will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. Temporary fencing will be 4 feet high, commercial-quality woven polypropylene, and orange in color. Buffer area fences around elderberry shrubs will be inspected periodically by a qualified biologist until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The contractor will be responsible for maintaining the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to the County and USFWS. MM BIO-6: Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat Before construction begins, the County will compensate for direct effects on valley elderberry longhorn beetle by transplanting shrubs that cannot be avoided to a USFWS-approved conservation bank. The County will also purchase credits at a USWFS-approved conservation bank in accordance with ratios shown in Table 3.15-2 for the alternative that is selected. Compensation ratios shown are for shrub-level impact compensation (U.S. Fish and Wildlife Service 2017).				

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Table S-3. Continued

<table>
<tr><th rowspan="2">Impact</th><th colspan="4">Significance before Mitigation[a]</th><th rowspan="2">Mitigation Measures[b]</th><th colspan="4">Significance after Mitigation[c]</th></tr>
<tr><th>No Build</th><th>Alt. 1</th><th>Alt. 1A</th><th>Alt. 2</th><th>No Build</th><th>Alt. 1</th><th>Alt. 1A</th><th>Alt. 2</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Table 3.15-2. Compensation for Direct Effects on Elderberry Shrubs by Alternative
<table>
<tr><th>Alternative</th><th>Number of Elderberry Shrubs Affected</th><th>Compensation Ratio (non-riparian)</th><th>Number of Conservation Credits Required</th></tr>
<tr><td>1</td><td>3</td><td>1:1</td><td>3</td></tr>
<tr><td>1A</td><td>3</td><td>1:1</td><td>3</td></tr>
<tr><td>2</td><td>4</td><td>1:1</td><td>4</td></tr>
</table>
The relocation of the elderberry shrubs will be conducted according to USFWS-approved procedures outlined in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 2017). Elderberry shrubs within the project construction area that cannot be avoided will be transplanted during the plant's dormant phase (November through the first 2 weeks of February). A qualified biological monitor will remain on-site while the shrubs are being transplanted.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Impact BIO-3 (All Build Alternatives): Direct impacts on western pond turtle habitat
Construction of the project would result in direct permanent and temporary impacts on western pond turtle and its habitat by injury/mortality from being struck or crushed by construction equipment or becoming entrapped in open trenches. Release of contaminants into suitable aquatic habitat, also have the potential to result in sickness/ mortality of western pond turtle and degradation of habitat. The project would result 0.34 acres of permanent impacts to habitat and 0.48 acres of temporary impacts to habitat. However, implementation of mitigation measures designed to, avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, provide for compensation (1:1 ratio), and conduct preconstruction surveys would reduce impacts on western pond turtle habitat to less-than-significant levels.</td><td>NA</td><td>PS</td><td>PS</td><td>PS</td><td>MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources
The full text of this measure is included above in Impact BIO-1.
MM BIO-2: Conduct Environmental Awareness Training for Construction Employees
The full text of this measure is included above in Impact BIO-1.
MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats
The full text of this measure is included above in Impact BIO-1.
MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland
The County will compensate for the permanent and temporary loss of valley foothill riparian habitat (as show</td><td>NA</td><td>LTS</td><td>LTS</td><td>LTS</td></tr>
</table>

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					on EIR/EA Figures 2.16-2 and 2.16-3, Sheet 4) by planting a minimum of 0.06 acre of valley foothill riparian woodland species (a minimum ratio of 1:1 [1 acre planted for every 1 acre permanently and temporarily affected]) on-site or off-site and/or purchasing mitigation bank credits equivalent to a minimum of 0.06 acre of valley foothill riparian habitat. On-site compensation will be used to the maximum extent practicable, but off-site compensation and/or purchase of mitigation bank credits may be needed to achieve no net loss of existing in-kind riparian habitat. Each of these options is discussed below. • Riparian habitat restoration and/or enhancement on-site or off-site should occur in the same year construction is completed. For on-site or off-site plantings, the County will prepare a mitigation planting plan, including a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those in and adjacent to the project area and will include native species, such as white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), valley oak (*Quercus lobata*), black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), boxelder (*Acer negundo*), and black willow (*Salix gooddingii*). All plantings will be fitted with exclusion cages or other suitable protection from herbivory until plantings are established. Plantings will be irrigated for up to 3 years or until established. Plantings will be monitored annually for 3 years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected. • The County will provide written evidence to the resource agencies that compensation has been				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					established through the purchase of mitigation credits. The County will pay the cost of mitigation credits in effect at the time the credits are purchased. Replacement riparian habitat will include tree species that would support nesting Swainson's hawk (*Buteo swainsoni*) (i.e., oak, cottonwood) and will occur within the range of nesting Swainson's hawk within the Sacramento Valley. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The County will compensate for the permanent fill of waters of the United States/waters of the State (a direct impact associated with roadway and interchange construction) in two wetland habitat types—emergent wetland and seasonal wetland—and in two non-wetland waters type—perennial drainage and ephemeral drainage. The minimum wetland compensation ratio to ensure no net loss of wetland or drainage functions and values will be 1:1 (1 acre of habitat credit for every 1 acre of permanent impact). The final compensation ratio will be approved by USACE. The County will compensate for permanent loss of wetlands and non-wetland waters through one or more of the following mitigation options: • Purchase habitat credits from a USACE-approved mitigation bank with service areas for Sacramento County, such as the Cosumnes Floodplain Mitigation Bank or Elsie Gridley Mitigation Bank, and provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The County will pay the cost of mitigation credits in effect at the time the credits are purchased. The mitigation will be approved by USACE and may be modified during the permitting process. • Pay into the National Fish and Wildlife Foundation Sacramento District In-Lieu Fee Program. Temporarily disturbed wetlands and non-wetland waters will be returned to preconstruction condition following construction. The County also will implement the				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					conditions and requirements of State and Federal permits that will be obtained for the proposed project. MM BIO-9: Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work To avoid potential injury or mortality of western pond turtles, the County will retain a qualified wildlife biologist who is CDFW-approved to capture and relocate turtles. The biologist will conduct a preconstruction survey for western pond turtles within 24 hours of the start of construction and will survey Alder Creek and the adjacent riparian and ruderal habitat within the construction area. If in-water work does not start immediately, the biologist will return to the construction site immediately prior to the start of in-water work (i.e., dewatering, vegetation removal, or any other activities in the creek) to conduct another preconstruction survey. The biologist will remain on-site until initial in-water work is complete. If a turtle becomes trapped during initial in-water work, the biologist will relocate the individual to suitable aquatic habitat upstream of the construction area (the area downstream of the construction area is not accessible because of US 50). For the remainder of construction, the biologist will remain on-call in case a turtle is discovered. The construction crew will be instructed to notify the crew foreman, who will contact the biologist if a turtle is found trapped within the construction area. Work in the area where the turtle is trapped will stop until the biologist arrives and removes and relocates the turtle. The biologist will report their activities to the County and CDFW within 1 day of relocating any turtle. MM BIO-10 Restore Temporarily Disturbed Ruderal Habitat Upon project completion, the County will restore all temporarily disturbed ruderal habitat (1.92 acres under all alternatives) (as shown on EIR/EA Figures 2.16-2 and 2.16-3) to pre-project or better conditions. To the extent feasible, native grasses and forbs will be used to reseed disturbed areas.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-4 (All Build Alternatives): Direct impacts on Swainson's hawk and white-tailed kite nesting season and habitat Construction of any of the build alternatives would result in disturbance (noise and/or activity) during the Swainson's hawk and white-tailed kite nesting seasons and could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Also, the project would remove trees, thereby reducing the amount of available nesting habitat for these species. The project would permanently impact 3.00 acres of habitat and temporarily impact 0.22 acres of habitat. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction and focused surveys, provide for compensation (1:1 ratio), provide for compensation and avoid vegetation removal during breeding season would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-10: Restore Temporarily Disturbed Ruderal Habitat The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The County will compensate for the permanent loss of 2.97 acres and temporary loss of 0.19 acres of Fremont cottonwood-oak woodland at a minimum ratio of 1:1 (1 acre planted for every 1 acre permanently affected). The loss of most of the Fremont cottonwood-oak woodland habitat in the project area has been previously mitigated as part of Phase 2 of the Easton Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the area that has been previously mitigated for Phase 2 of the Easton Project. For the proposed project, compensation would only be required for 0.90 acre of the direct impacts (see Section 2.16, Natural Communities, for further details). As part of the woodland mitigation, compensation may include either compensation for the woodland habitat at a minimum ratio or 1:1 as indicated	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					above and/or compliance with Mitigation Measure BIO-20 and/or Mitigation Measure BIO-21. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds To the maximum extent feasible, vegetation removal (trees, shrubs, and ground vegetation) will occur during the non-breeding season for most migratory birds (generally between September 16 and January 31). This timing is highly preferable because if an active nest is found during preconstruction surveys in a tree (or other vegetation) that would be removed by project construction, the tree (or other vegetation) cannot be removed until the end of the nesting season, which could delay construction. If vegetation cannot be removed between October and January, or if ground cover re-establishes in areas where vegetation has been removed, the affected area must be surveyed for nesting birds, as discussed in Mitigation Measures BIO-13: Conduct Focused Survey for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction and BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds. To minimize potential impacts on roosting bats, tree trimming and removal should be conducted from September 1 through October 15 (see Mitigation Measure BIO-15: Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures). Tree trimming and removal during this timeframe would avoid or minimize impacts on nesting birds and roosting bats. MM BIO-13: Conduct Focused Surveys for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction If construction, grading, or project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk and white-tailed kite nests on the site and within 0.25 mile of the site will be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing). If active nests are found, CDFW will be contacted to determine appropriate protective measures,				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					and these measures will be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, no further mitigation will be required. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds If construction activities, including vegetation removal, would occur during the breeding season (generally February 1 through September 15), the County will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys 15 days or less before the start of construction. Surveys will include a search of all trees and shrubs, marsh, wetland, and ruderal vegetation that provide suitable nesting habitat in the project area. If no active nests are detected during these surveys, no additional measures are required. If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site until the end of the breeding season (September 15) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-5 (All Build Alternatives): Direct impacts on yellow-breasted chat nesting habitat Construction of any of the project build alternatives would result in impacts on suitable nesting habitat (valley foothill riparian woodland) for yellow-breasted chat. Additionally, construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. The project would permanently impact 0.03 acres of habitat and temporarily impact 0.03 acres of habitat. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction surveys, provide for compensation (1:1 ratio), and avoid vegetation removal during breeding season would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-6 (All Build Alternatives): Direct impacts on tricolored blackbird nesting habitat Construction of any of the project build alternatives would result in impacts on suitable nesting habitat (0.06 acres of emergent wetland) for tricolored blackbird. Additionally, construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction surveys, provide for compensation (1:1 ratio), restore disturbed areas, and avoid vegetation removal during breeding season would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3. MM BIO-10: Restore Temporarily Disturbed Ruderal Habitat The full text of this measure is included above in Impact BIO-3. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-7 (All Build Alternatives): Direct impacts on song sparrow (Modesto population) nesting habitat Construction of any of the project build alternatives would result in impacts on suitable nesting habitat (0.09 acres valley foothill riparian and emergent wetland) for song sparrow (Modesto population). Additionally, construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction surveys, provide for compensation (1:1 ratio), restore disturbed areas, and avoid vegetation removal during breeding season would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-8 (All Build Alternatives): Removal or disturbance of special-status and non-special-status bat roosting habitat or colonies Construction during the bat maternity season would result in the removal or disturbance of trees that may provide suitable roosting habitat for special-status bats. Removal or disturbance of suitable roosting habitat could result in the injury or mortality of roosting bats. Removal of occupied roost habitat would also displace bats, causing them to relocate to another roost site and potentially compete with other bats for the roost site. Additional disturbance (i.e., vibrations, noise) would occur during widening of the Hazel Avenue bridge under Alternatives 1 and 1A. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, provide for compensation, avoid and protect bats would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4. MM BIO-15: Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures To minimize potential impacts on tree-roosting bats, tree trimming and removal should be conducted between September 1 and October 15, which corresponds to a time period when bats have not yet entered torpor or be caring for nonvolant (non-flying) young. Trimming or removing trees during this timeframe would also avoid impacts on nesting birds. If tree removal or trimming cannot be conducted between September 1 and October 15, qualified biologists will examine trees for suitable bat roosting habitat before tree removal or trimming. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch) will be identified and the area around these features searched	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					for bats and bat signs (e.g., guano, culled insect parts, staining). Riparian woodland and stands of mature broadleaf trees are considered potential habitat for solitary foliage-roosting bat species. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, the protective measures listed below will be implemented for trees containing high-quality habitat features. • Removal or disturbance of trees providing bat roosting habitat will be avoided between April 1 and August 31 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary). • If a maternity roost is found, whether solitary or colonial, that roost will remain undisturbed until September 1 or until a qualified biologist has determined the roost is no longer active. • Qualified biologists will monitor tree trimming/removal of the habitat. Trees should be trimmed or removed over two consecutive days. The first day (in the afternoon), limbs and branches should be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices or deep bark fissures should be avoided, and only branches or limbs without those features should be removed. On the second day, the entire tree should be removed. Biologists should search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided to the County and CDFW.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-9 (All Build Alternatives): Disturbance of nesting migratory birds The project has the potential to disturb nesting migratory birds through tree removal and trimming, clearing of ruderal and other ground vegetation, and disturbance or removal of the Alder Creek box culvert or other structures that would occur with construction of any of the build alternatives. Construction activities during February 1 through September 15 could result in the injury or mortality of nesting birds. Nest destruction could lead to the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment and violate the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC) Sections 3503 and 3503.5. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction surveys, provide for compensation, and avoid vegetation removal during breeding season would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-10 (All Build Alternatives): Permanent loss of Fremont cottonwood-oak woodland All project build alternatives would result in 2.97 acres of permanent impacts and 0.19 acre of temporary impacts on Fremont cottonwood-oak woodland through tree removal. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, and provide for compensation would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS
Impact BIO-11 (All Build Alternatives): Temporary and permanent loss of valley foothill riparian woodland All project build alternatives would result in 0.03 acre of permanent impacts and 0.17 acre of temporary impacts on valley foothill riparian woodland through tree removal. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, provide for compensation (1:1 ratio), would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-12 (All Build Alternatives): Permanent loss of and temporary impacts on emergent wetland, seasonal wetland, perennial drainage, and ephemeral drainage The project would result in permanent impacts under all of the build alternatives including 0.06 acre of emergent wetland, 0.02 acre of seasonal wetland, 0.10 acre of perennial drainage in Alder Creek, and 0.001 acre of ephemeral drainage. Temporary impacts under all of the alternatives would include 0.06 acre of emergent wetland, 0.18 acre of perennial drainage, and 0.0003 acre of ephemeral drainage. However, implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, and provide for compensation (1:1 ratio) would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3.	NA	LTS	LTS	LTS
Impact BIO-13 (All Build Alternatives): Permanent impacts on roadside ditch The project would result in permanent impacts on 0.14 acres of roadside ditch and temporary impacts on 0.03 acre of ditch through modification of the ditch bank or channel, increased turbidity, and runoff of chemical substances. Construction of the new road would replace the ditch to maintain the drainage function, and the constructed roadside ditch provides minimal habitat for wildlife species; therefore, no additional compensatory mitigation would be necessary. Implementation of mitigation that educates construction personnel would further reduce this impact to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-14: (All Build Alternatives): Removal of ordinance-protected native trees The project would result in removal of up to 144 native oak trees that grow in landscaped areas, planted oak woodland, or as individual trees in ruderal habitat. Compensatory mitigation would be required for up to approximately 1.764 inches DBH of native oaks. However, implementation of mitigation measures designed to educate construction personnel, and compensate for tree loss would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-16: Compensate for the Loss of Protected Trees Outside of Oak Woodland and Riparian Habitats This measure applies to all native oaks, that have a DBH of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined DBH of at least 10 inches. With the exception of the removed trees that will be compensated for through measures below, all native trees in the project area, all portions of adjacent off-site native trees that have driplines that extend onto the project area, and all off-site native trees that may be affected by utility installation and/or improvements associated with this project, will be preserved and protected based on the County's tree mitigation measures as follows: 1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb will constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs that make up the dripline does not change the protected area. 2. Chain link fencing or a similar protective barrier will be installed 1 foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system. 3. No signs, ropes, cables (except cables that may be installed by a certified arborist to provide limb support) or any other items will be attached to the native trees. 4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities will be driven, parked, stockpiled or located within the driplines of the native trees.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an International Society of Arboriculture (ISA) Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines. 6. All underground utilities and drain or irrigation lines will be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist. 7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of 6 inches of mulch or gravel will be created to protect the root zone. The roadbed will be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material will be replenished as necessary to maintain a 6-inch depth. 8. Drainage patterns on the site will not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees. 9. No sprinkler or irrigation system will be installed in such a manner that it sprays water within the driplines of the oak trees. 10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute A300 pruning standards and the ISA “Tree Pruning Guidelines”. 11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials will be kept 2 feet away from the base of the trunk. The only plant species that will be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants. 12. Any fence/wall that will encroach into the dripline protection area of any protected tree will be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers will be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts on the trees. 13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least 1 foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1 inch or more. MM BIO-17: Compensate for the Loss of Protected Trees Native trees that would be removed in the project area include valley oak, interior live oak, California black walnut, California sycamore, buckeye, and western redbud. Based on preliminary arborist survey data, the removal of up to approximately 1,846 inches DBH of native oak trees (including oaks, sycamore, and walnut) will be compensated for by planting in-kind native trees equivalent to the DBH inches lost, based on the ratios listed below. Buckeye and western redbud will be compensated by planting one individual for each individual removed. Willows and cottonwoods will be replaced based on the loss of canopy and are included in Mitigation Measure BIO-18 along with non-native trees. Final compensation amounts will be determined based on final design, and mitigation requirements will be adjusted to compensate the actual amount removed or encroached upon by over 50 percent of the dripline radius.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					Equivalent compensation based on the following ratio is required: • one 15-gallon tree = 1 inch DBH • one 24-inch box tree = 2 inches DBH • one 36-inch box tree = 3 inches DBH A Replacement Tree Planting Plan will be prepared by a certified arborist or licensed landscape architect and will be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) will include the following minimum elements: • Species, size and locations of all replacement plantings and < 6-inch DBH trees to be preserved • Method of irrigation • If planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot-deep boring hole to provide for adequate drainage • Planting, irrigation, and maintenance schedules; • Identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees that do not survive during that period. No replacement tree will be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation or swimming pool excavation. The minimum spacing for replacement native trees will be 15 feet on-center. If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation will be through payment into the County Tree Preservation Fund. Payment will be made at a rate of $325.00 per DBH inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact BIO-15 (All Build Alternatives): The Removal of non-drought tolerant native trees and non-native trees that provide shad and/or are considered landmark trees The project would result in removal of approximately 74 trees for Alternative 1, and approximately 113 trees for Alternative 2. The loss of tree canopy is expected to be approximately 72,310 square feet for Alternative 2 and approximately 86,827 square feet for Alternative 2. Mitigation is recommended to replace the loss of tree canopy within a 15-year growth period. Compliance with Biological Mitigation Measure 18 will reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM BIO-18: Replace Loss of Tree Canopy Removal of non-native tree canopy for the selected alternative shall be mitigated by creation of new tree canopy equivalent to the acreage of non-native tree canopy removed. New tree canopy acreage shall be calculated using the Sacramento County Department of Transportation 15-year shade cover values for tree species. Preference is given to on-site mitigation, but if this is infeasible, then funding shall be contributed to the Sacramento Tree Foundation's Greenprint program in an amount proportional to the tree canopy lost (as determined by the 15-year shade cover calculations for the tree species to be planted through funding, with the cost to be determined by the Sacramento County Tree Foundation).	NA	LTS	LTS	LTS
Cultural Resources									
Impact CUL-1 (All Build Alternatives): Adverse effect on an archaeological resource Although no known prehistoric or historic archaeological resources were identified within the project area, the project has the potential to cause an adverse effect on a buried archaeological resource during ground-disturbing activities. Additionally, the UAIC considers the area culturally sensitive. Because these resources could be buried, mitigation to train construction personnel, avoid sensitive areas, monitor initial ground disturbance and implement avoidance and notification procedures in the event a cultural resource is discovered would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel Before any ground-disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel, including contractors and subcontractors, to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas, their responsibility to report potential resources if observed, and the penalties for not complying with applicable State and Federal laws and permit requirements. MM CUL-2: Monitor for Archaeological Resources during Initial Ground Disturbance A Native American monitor will be retained to monitor all initial ground disturbing activities (e.g., grading, excavation, tree removal). The purpose of the monitoring is to ensure that no unrecorded archaeological resources are affected by the project and to ensure that the project complies with all applicable permit requirements and agency conditions of approval.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					MM CUL-3: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction It is Caltrans' policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County coroner will be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendent (MLD). The County will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable. MM CUL-4: Install Orange Construction Fencing to Avoid Culturally Sensitive Areas Construction-related staging, equipment, and worker parking will be kept within the approved APE boundary. The APE boundaries in the vicinity of areas identified as culturally sensitive by the UAIC as a result of consultation with the lead agencies will be delineated with orange construction fencing or other visible means to ensure complete avoidance.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact CUL-2 (All Build Alternatives): Disturb any human remains Human remains are protected under Section 5097.94 of the PRC and Section 7050 of the California HSC to protect Native American burials. The project area is generally sensitive for archaeological deposits, including human remains, which could be impacted during ground-disturbing activities. Mitigation to train construction personnel, avoid sensitive areas, monitor initial ground disturbance and implement avoidance and notification procedures in the event human remains are discovered would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel The full text of this measure is included above in Impact CUL-1. MM CUL-2: Monitor for Archaeological Resources during Initial Ground Disturbance The full text of this measure is included above in Impact CUL-1. MM CUL-3: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction The full text of this measure is included above in Impact CUL-1. MM CUL-4: Install Orange Construction Fencing to Avoid Culturally Sensitive Areas The full text of this measure is included above in Impact CUL-1.	NA	LTS	LTS	LTS
Hazards and Hazardous Materials									
Impact HZ-1 (All Build Alternatives): Potential exposure risk during transport, use, or disposal of hazardous commonly used construction materials There is the potential for accidental release of hazardous materials such as fuels and oils during project construction. These materials could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, the project would implement and comply with federal, state, and local hazardous materials regulations and codes monitored by the state (e.g., California Occupational Safety and Health Administration, Department of Toxic Substances Control, California Highway Patrol, California Department of Transportation) and/or local jurisdictions (e.g., Sacramento Metropolitan Fire District and Sacramento County Environmental Management Department); therefore, impacts related to creation of significant hazards for construction workers, employees within the project area, and the general public	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
through routine transport, use, and disposal of hazardous materials is unlikely.									
Impact HZ-2 (All Build Alternatives): Release of, or exposure to hazardous materials during construction During ground-disturbing project activities, construction workers could be exposed to hazardous materials such as aerially deposited lead (ADL) along US 50; lead or chromium in yellow pavement striping; asbestos-containing material (ACM) in various bridge components; polychlorinated biphenyls in pole-mounted transformers; lead-based paint (LBP) in utility openings or on steel structures; and gasoline-contaminated soil. Implementation of mitigation measures to address worker health and safety, implement abatement plans, conduct sampling and testing, and dispose of contaminated soils would reduce impacts to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM HZ-1: Develop and Implement Plans to Address Worker Health and Safety As required by Federal, State, and local regulations, prior to construction, the County will employ a Certified Industrial Hygienist who will prepare a Health and Safety Plan, Lead Compliance Plan, BMP and/or injury and illness prevention plan to address worker safety when working with potentially hazardous materials (e.g., levels of protective personal equipment, emergency action plan, procedures for encountering hazardous materials) including potential ACMs, LBPs, lead or chromium in traffic stripes, aerially deposited lead, and other construction-related materials within the ROW during any soil-disturbing activity. MM HZ-2: Conduct Site-specific Assessments and Prepare and Implement a Work Plan Prior to construction, the County will conduct additional assessments of soil, groundwater, and building materials within the proposed acquisition area of the parcels described below. In addition, prior to soil and groundwater testing, the County will prepare a work plan that detail testing locations and analytical methods. Testing locations will be similar to proposed excavation locations in order to characterize potentially excavated soils. The plan will incorporate the soil and groundwater data to ensure that soil and groundwater are stored, managed, and disposed of appropriately and in accordance with applicable laws and regulations. Soil and Groundwater Assess the Chevron Service Station (APN: 069-0160-012), Nimbus Winery (APN: 069-0050-013), Aerojet Facility (APN: 072-0231-125), and UPRR ROW for possible soil and groundwater contamination. The sampling and testing of surface soils and groundwater at these sites will be analyzed for total petroleum hydrocarbons such as diesel, heavy metals, petroleum hydrocarbons, PAHs, and chlorinated solvents. Drilling	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					for soil and groundwater will be performed by OSHA-trained personnel with appropriate licenses (CFR 1910.120). If soil and/or groundwater contamination is identified, the County will comply with Federal and State regulations and the Sacramento County CUPA regulatory requirements regarding the handling and disposal of hazardous wastes. These requirements include consultation with the Department of Toxic Substances Control (DTSC) and State Water Resources Control Board and adherence to the SWPPP. The SWPPP requirement of BMPs designed to minimize the release of hazardous materials would help reduce potential impacts. Contaminated soils not reused on-site will be disposed of at a Class I landfill facility. If groundwater is extracted as part of dewatering, the extracted groundwater will be stored in tanks, and tested for chlorinated solvents, and either sent off-site for recycling or directed to the existing groundwater treatment system at the Aerojet facilities for disposal and treatment. This will be in addition to the pre-characterization of groundwater quality during preconstruction testing. Asbestos-Containing Materials and Lead-Based Paint The Cattlemen's Restaurant (APN: 069-0060-085) and Nimbus Winery (APN: 069-0050-013) buildings are likely to contain ACM and LBP in their construction materials. Various bridge components, such as the overpass, could also contain ACM. The County will conduct a hazardous materials survey prior to demolition or significant renovation of Cattlemen's Restaurant, Nimbus Winery, and bridge structures. If lead or asbestos is found in these buildings or structures, prior to removal or renovation the County will prepare an abatement plan as part of the Task-Specific Safety Plan required under Section 12-1.01.C of the County Standard Construction Specifications. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					hazardous materials specifications for abatement of the ACM and LBP. This specification will be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. The County will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and LBP deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures. MM HZ-3: Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Traffic Striping along Existing Roadways The County will sample and test yellow traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be conducted in strict accordance with appropriate regulations of the California Health and Safety Code Section 1532.1, and Section 13-2.09, Removal of Traffic Stripes and Pavement Markings of the County's Standard Construction Specifications (2017). Section 13-2.09 includes safety requirements such as shielding sandblasting equipment and using a vacuum to ensure grindings are contained. Traffic striping will be disposed of at a Class I disposal facility. The responsibility of implementing this measure will be outlined in the contract between the County and the construction contractor. MM HZ-4: Appropriately Dispose of Soils Contaminated with Aerially Deposited Lead Soils in the project limits along the US 50 corridor identified as having hazardous levels of ADL will be handled and disposed of in accordance with applicable Cal-OSHA requirements including a project-specific worker Health and Safety Plan and Lead Compliance Plan. Cal-OSHA standards regarding lead apply to all construction work where an employee may be exposed to lead and include notification of lead testing results;				

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Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					providing protective clothing and equipment; hazardous materials training; and control measures to contain lead.				
Impact HZ-3 (Alternative 1A): Exposure to potentially contaminated groundwater Construction of the tunnel ramp could expose construction workers to potentially contaminated groundwater at depths from approximately 17.7 to 25.3 feet below existing ground. Contamination of groundwater is known to occur from the Aerojet facility. The ramp would be designed to include waterproofing that would prevent potentially the possibility of groundwater from reaching the surface. Implementation of additional hazardous material assessments and a work plan to ensure contaminated groundwater is identified, handled and treated properly would reduce potential impacts to less-than-significant levels.	NA	NA	**PS**	NA	MM HZ-2: Conduct Additional Site Assessments and Prepare a Work Plan The full text of this measure is included above in Impact HZ-2.	NA	NA	LTS	NA
Impact HZ-4 (All Build Alternatives): Exposure to contaminated soil and groundwater during ground-disturbing activities at the Aerojet site The Aerojet facility is an 8,500-acre superfund site undergoing cleanup for soil and groundwater contamination. Construction workers could be exposured to contaminated soil and groundwater during ground-disturbing activities at the Aerojet site particularly during viaduct construction that may require drilled piles from 50–80 feet in depth and construction of the tunnel ramp under Alternative 1A. Implementation of mitigation measures to address worker health and safety and implement abatement plans would reduce impacts on construction workers' health to less-than-significant levels.	NA	**PS**	**PS**	**PS**	MM HZ-1: Develop and Implement Plans to Address Worker Health and Safety The full text of this measure is included above in Impact HZ-2. MM HZ-2: Conduct Additional Site Assessments and Prepare a Work Plan The full text of this measure is included above in Impact HZ-2.	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Impact HZ-5 (All Build Alternatives): Temporary and permanent changes in routing of emergency services The project could result in temporary changes in routing for emergency services and include travel lane and sidewalk closures and detours. Permanent project roadway changes could require updates to emergency response plans and circulation routes. Access to SacRT light rail and UPRR tracks would be maintained during construction. A project-specific TMP would be developed before and implemented during construction and would provide guidance for implementation of incident management, describe construction strategies for traffic handling and guiding traffic through work zones, address traffic demand management during construction, and describe and direct the implementation of alternate routes or detours.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Impact HZ-6 (All Build Alternatives): Create risk of loss, injury or death involving wildland fire The project is located in an urbanized area at low risk for wildland fires and planned development would further reduce fire risk by creating a greater separation between the project and undeveloped areas. During construction, the use and staging of equipment would follow standard construction safety protocols to prevent fire or sparks that could cause fire.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Greenhouse Gas Emissions									
Impact GHG-1 (All Build Alternatives): Generate greenhouse gas emissions, directly and indirectly, or conflict with applicable plans During construction activities, the project would generate short-term emissions of carbon dioxide, methane and nitrous oxide from the use of equipment (e.g., graders) and on-road vehicles (e.g., employee commuter cars).During project implementation, greenhouse gas (GHG) emissions would increase compared to the existing conditions and has the potential to conflict with applicable plans. Compared to the No Build Alternative, the project would slightly decrease GHG emissions under opening (2022) year conditions and slightly increase GHG emissions under design (2042) year conditions. This increase would not exceed SMAQMD's operational threshold of 1,100 metric tons CO2e. GHG emissions from the project would not exceed the County's thresholds for energy and mobile source GHG emissions.	NA	LTS	LTS	LTS	None necessary	NA	LTS	LTS	LTS
Cumulative Impacts									
Cumulative Contribution (All Build Alternatives): Temporary contribution to cumulative increases in nighttime light All three build alternatives would temporarily contribute to increases in nighttime light during project construction. Evening and nighttime construction activities would require the use of extremely bright lights during an approximate 6-month period. Implementation of mitigation measures designed to reduce fugitive light during construction, would reduce the project's temporary contribution to nighttime light to a less-than-cumulatively considerable level.	NA	PS	PS	**PS**	MM AE-1: Minimize Fugitive Light from Portable Sources Used for Construction The full text of this measure is included above in Impact AE-4.	NA	LTS	LTS	**LTS**

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Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Cumulative Contribution (Alternative 2): Contribution to permanent visual and aesthetic changes Because permanent visual changes of the project would include new transportation features with a modern aesthetic treatment at an existing transportation interchange, contributions of the proposed project are generally considered less than cumulatively considerable. However, Alternative 2 would have a more pronounced contribution to cumulative visual impacts because it includes a new flyover spanning US 50 and removal of the Nimbus Winery building. Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce this impact to a less-than-significant level. However, the impact is not avoided if Alternative 2 is selected.	NA	LTS	LTS	**PS**	Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce this impact to a less-than-significant level. However, the impact is not avoided if Alternative 2 is selected.	NA	NA	NA	**SU**
Cumulative Contribution (All Build Alternatives): Contribution to cumulative impacts on air quality during construction During project construction, a cumulatively considerable temporary net increase of criteria pollutants was modeled to occur, exceeding SMAQMD thresholds. Implementation of SMAQMD's BMPs, use of newer model engines and use of clean diesel-powered equipment would reduce the project's contribution to less than cumulatively considerable levels.	NA	**PS**	**PS**	**PS**	MM AQ-1: Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices) The full text of this measure is included above in Impact AQ-1. MM AQ-2: Utilize Model Year 2010 or Newer Engines to Reduce Construction-Related Exhaust Emissions from On-Road Vehicles The full text of this measure is included above in impact AQ-1. MM AQ-3: Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related NOX Emissions The full text of this measure is included above in Impact AQ-1.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Cumulative Contribution (Alternative 2): Contribution to cumulative increases in noise levels The operational noise impacts of Alternatives 1 and 1A, compared to local standards, would be less than cumulatively considerable. Under Alternative 2, noise levels would increase by more than 1 dB at receptor location R27 exceeding the County Noise Element standard for that location. Alternative 2 would also contribute up to 3 dB to local cumulative noise impacts. Implementation of noise reducing mitigation options would reduce the project's contribution to less than cumulatively considerable levels.	NA	LTS	LTS	**PS**	MM NO-1: Apply Quiet Pavement or Construct Noise Barrier along Aerojet Road The full text of this measure is included above in Impact NO-2.	NA	NA	NA	LTS
Cumulative Contribution (All Build Alternatives): Contribution to the loss of Fremont cottonwood-oak woodland and valley foothill riparian woodland Construction of the proposed project would add to the cumulative loss of Fremont cottonwood-oak woodland and valley foothill riparian woodland which are considered natural communities of special concern. All build alternatives would result in the same permanent and temporary impacts on these natural communities. Implementation of compensatory mitigation for the loss of these communities would reduce the project's contribution to less than cumulatively considerable levels.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Cumulative Contribution (All Build Alternatives): Contribution to the loss of wetlands and non-wetland waters The project would contribute to the loss of wetlands and non-wetland waters through direct impacts and permanent loss of up to 0.08 acre of wetland habitat and up to 0.24 acre of non-wetland waters habitat. Implementation of compensatory mitigation for the loss of wetlands and non-wetland waters would reduce the project's contribution to less than cumulatively considerable levels.	NA	**PS**	**PS**	**PS**	MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3.	NA	LTS	LTS	LTS
Cumulative Contribution (All Build Alternatives): Contribution to loss of habitat for Midvalley fairy shrimp, western pond turtle, white-tailed kite, yellow-breasted chat, tricolored blackbird, song sparrow, special-status bats, and migratory birds The project would contribute to the loss of habitat for special-status animal species through both temporary and permanent impacts on suitable habitat including temporary construction disturbances and permanent loss of aquatic and terrestrial habitats. Implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring and preconstruction surveys, maintain existing hydrology, provide for compensation (1:1 ratio), restore disturbed areas, avoid vegetation removal during breeding seasons, avoid and protect bats, and protect trees would reduce the project's contribution to cumulative impacts on special-status animal species to a less than cumulatively considerable level.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-4: Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat The full text of this measure is included above in Impact BIO-1. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					MM BIO-9: Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work The full text of this measure is included above in Impact BIO-3. MM BIO-10 Restore Temporarily Disturbed Ruderal Habitat The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-13: Conduct Focused Surveys for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-15: Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures The full text of this measure is included above in Impact BIO-8.				

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Table S-3. Continued

Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
Cumulative Contribution (All Build Alternatives): Contribution to loss of habitat for threatened and endangered Species (vernal pool fairy shrimp, valley elderberry longhorn beetle, and Swainson's hawk) The project would contribute to direct and indirect impacts on four Federal or State-listed species (vernal pool fairy shrimp, valley elderberry longhorn beetle, Swainson's hawk, and tricolored blackbird) and their habitat. Indirect effects on habitat for vernal pool fairy shrimp, direct loss of habitat for valley elderberry longhorn beetle, and direct loss of nesting habitat for Swainson's hawk and tricolored blackbird would occur. Implementation of mitigation measures designed to avoid sensitive areas (i.e., fencing), educate construction personnel, conduct biological monitoring, create appropriate water conveyance systems to maintain existing hydrology, conduct preconstruction surveys, restore disturbed areas, provide for compensation, and avoid vegetation removal during breeding season would reduce the project's contribution to impacts on threatened and endangered species to a less than cumulatively considerable level.	NA	**PS**	**PS**	**PS**	MM BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources The full text of this measure is included above in Impact BIO-1. MM BIO-2: Conduct Environmental Awareness Training for Construction Employees The full text of this measure is included above in Impact BIO-1. MM BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats The full text of this measure is included above in Impact BIO-1. MM BIO-4: Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat The full text of this measure is included above in Impact BIO-1. MM BIO-5: Fence Elderberry Shrubs to be Protected The full text of this measure is included above in Impact BIO-2. MM BIO-6: Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat The full text of this measure is included above in Impact BIO-2. MM BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland The full text of this measure is included above in Impact BIO-3. MM BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State The full text of this measure is included above in Impact BIO-3.	NA	LTS	LTS	LTS

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

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Impact	Significance before Mitigation[a]				Mitigation Measures[b]	Significance after Mitigation[c]			
	No Build	Alt. 1	Alt. 1A	Alt. 2		No Build	Alt. 1	Alt. 1A	Alt. 2
					MM BIO-10: Restore Temporarily Disturbed Ruderal Habitat The full text of this measure is included above in Impact BIO-3. MM BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland The full text of this measure is included above in Impact BIO-4. MM BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4. MM BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds The full text of this measure is included above in Impact BIO-4.				

[a] NA = not applicable or no impact; LTS = Less than Significant; **PS** = Potentially Significant [b] MM = Mitigation Measure [c] **SU** = Significant and Unavoidable; LS = Less Than Significant

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Traffic Operations Report
Visual Impact Assessment
Historic Property Survey Report including Archaeological Survey Report
Location Hydraulic Study Report
Water Quality Assessment Report
Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan
Hazardous Waste Initial Site Assessment
Air Quality Study Report
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List of Abbreviated Terms

AADT	average annual daily traffic
AAQS	Ambient Air Quality Standards
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
ACMs	asbestos-containing materials
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
ANSI	American National Standards Institute
APE	Area of Potential Effects
APN	Assessor's Parcel Number
Basin Plan	Water Quality Control Plan for the Sacramento River and San Joaquin River Basins
BAU	business-as-usual
BFE	Base Flood Elevation
bgs	below ground surface
BMPs	Best Management Practices
BRWL	blue-rich white light lamps
BSA	biological study area
CAAQS	California ambient air quality standards
Cal/OSHA	California Division of Occupational Safety and Health
Cal-IPC	California Invasive Plant Council
California State Parks	California Department of Parks and Recreation
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CB	Citizens Band
CBSC	California Building Standards Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEs	categorical exclusions
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CH_4	methane
CHP	California Highway Patrol
CIA	Community Impact Assessment
CMS	changeable message signs
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
County	County of Sacramento
CRHR	California Register of Historical Resources

CRPR	California Rare Plant Rank
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DBH	diameter at breast height
DPM	diesel particulate matter
DPS	distinct population segment
DSA	disturbed soil area
DTSC	Department of Toxic Substances Control
DUE	dwelling unit equivalent
EA	Environmental Assessment
EMD	Sacramento County Environmental Management Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMS	California Emergency Services
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	environmentally sensitive area
ESU	evolutionarily significant unit
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
Folsom South SP EIR/EIS	Folsom South of U.S. Highway 50 Specific Plan Project EIR/EIS
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FTA	Federal Transit Administration
FTIPs	Federal Transportation Improvement Programs
GenCorp	GenCorp Realty Investments
H_2S	hydrogen sulfide
HCM	Highway Capacity Manual
HDLEVIP	Heavy-Duty Low-Emission Vehicle Incentive Programs
HDM	Highway Design Manual
HOV	high-occupancy vehicle
I-5	Interstate 5
I-80	Interstate 80
IBC	International Building Code
IBMI	Ione Band of Miwok Indians
in/sec	inches per second
IPaC	Information for Planning and Consultation
ISA	Initial Site Assessment
ISA	International Society of Arboriculture
ITS	Intelligent Transportation System
KV	key view
Lake Natoma	Lake Natoma Sub-unit of the Folsom Lake State Recreation Area
LBP	lead-based paint
LED	light-emitting diode
LEDPA	least environmentally damaging practicable alternative
L_{eq}	equivalent sound level

$L_{eq}(h)$	hourly equivalent sound level
LOS	level of service
LSAA	Lake or Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
Metro Fire	Sacramento Metropolitan Fire District
mg/kg	milligrams per kilograms
mg/l	milligrams per liter
MLD	Most Likely Descendent
MOU	Memorandum of Understanding
mph	miles per hour
MS4	Municipal Separate Storm Sewer Systems
MSATs	Mobile Source Air Toxics
MSE	mechanically stabilized earth
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NADR	Noise Abatement Decision Report
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	Noise Study Report
O_3	ozone
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAH	polynuclear aromatic hydrocarbons
PA&ED	Project Approval and Environmental Document
Pb	lead
PCBs	polychlorinated biphenyls
PER	Planning and Environmental Review
PER/PMP	Paleontological Evaluation Report/Paleontological Mitigation Plan
PLACs	permits, licenses, agreements, and certifications
PLCG	Project Level Conformity Group
PM	particulate matter
PM10	particles of 10 micrometers or smaller
PM2.5	particles of 2.5 micrometers and smaller
PMP	Paleontological Mitigation Plan
POAQC	Project of Air Quality Concern
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PRC	Public Resources Code
RAP	Relocation Assistance Program

RCPD	Rancho Cordova Police Department
RCRA	Resource Conservation and Recovery Act
RD	Reclamation District
Regional San	Sacramento Regional County Sanitation District
ROG	reactive organic gases
ROW	right-of-way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SacRT	Sacramento Regional Transit
SAFCA	Sacramento Area Flood Control Agency
SASD	Sacramento Area Sewer District
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
SECAT	Sacramento Emergency Clean Air Transportation
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLF	Sacred Lands File
SLTC	soluble threshold limit concentration
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SPTC-JPA	Sacramento Placerville Transportation Corridor Joint Powers Authority
SQDM	Stormwater Quality Design Manual
SQIP	Stormwater Quality Improvement Plan
SR	State Route
SSQP	Sacramento Stormwater Quality Partnership
SVAB	Sacramento Valley Air Basin
SVRR	Sacramento Valley Railroad
SWMP	Statewide Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TASAS	Traffic Accident Surveillance Analysis System
TCE	tricholorethene
TIP	Transportation Improvement Program
TMDL	total maximum daily load
TMP	Transportation Management Plan
TNM 2.5	Traffic Noise Model Version 2.5
TPH-D	total petroleum hydrocarbons as diesel
TSM	Transportation System Management
TSSP	Task Specific Safety Plan
TTLC	total threshold limit concentration
UAIC	United Auburn Indian Community of the Auburn Rancheria
UCMP	University of California Museum of Paleontology
ULOP	urban levels of flood protection
UPRR	Union Pacific Railroad
US 50	U.S. Route 50
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank

VAU	visual assessment unit
VELB	valley elderberry longhorn beetle
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
WDR	waste discharge requirement
WET	waste extraction test

Chapter 1 Proposed Project

1.1 Introduction

The County of Sacramento (County), in cooperation with California Department of Transportation (Caltrans) and the City of Rancho Cordova, is proposing the Hazel Avenue/U.S. Route 50 (US 50) Interchange Project (proposed project) to modify the existing interchange, and extend and grade-separate Hazel Avenue over Folsom Boulevard and the Sacramento Placerville Transportation Corridor Joint Powers Authority (SPTC-JPA) rail corridor. Hazel Avenue would be extended further south to a proposed intersection with the future Atlanta Street (a new roadway to be constructed as part of the Easton Place development). Accordingly, project documentation is being prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The County is the lead agency under CEQA and the City of Rancho Cordova is a responsible agency. Caltrans is the lead agency under NEPA.

The proposed project is consistent with and included in the Sacramento Area Council of Governments' (SACOG) 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) update that was adopted on February 18, 2016. The project is also included in SACOG's 2019/2022 Metropolitan Transportation Improvement Program (MTIP) that was adopted by SACOG on December 7, 2018.

1.1.1 Project Location

The project is located at the existing Hazel Avenue/US 50 interchange within Sacramento County and the City of Rancho Cordova (Figure 1-1). The project area is bounded along Hazel Avenue by the Tributary Point/westbound off-ramp intersection to the north, and extends approximately 1,000 feet south of Folsom Boulevard to a future intersection within the Easton Place development (Figure 1-2). The project limits along US 50 begin approximately 3,200 feet west of the existing Hazel Avenue Overcrossing, and extend 2,500 feet east of the Natoma Overhead (post miles 15.1 to 15.4). Improvements along Folsom Boulevard would extend from approximately 1,200 feet west of the Hazel Avenue intersection to 900 feet east of the intersection.

1.1.2 Project Background

The Hazel Avenue extension to Easton Valley Parkway and ultimately White Rock Road is a priority improvement within the sub-region surrounding US 50 in eastern Sacramento County.

On January 28, 2009, the Sacramento County Board of Supervisors approved the General Plan Amendment, Zoning Ordinance, Tentative Subdivision Map and Affordable Housing Plan for the Easton Project: Easton Place and Glenborough at Easton development project (Easton Project). The Easton Project is located on approximately 6,699 acres of land owned by GenCorp

Realty Investments (GenCorp) in eastern Sacramento County, and are identified by the adopted SACOG Blueprint and Regional Transportation Plan (RTP).

Through the efforts of the 50 Corridor Mobility Partnership, preliminary studies were initiated to identify potential improvements to the interchange and the extension of Hazel Avenue south beyond Folsom Boulevard to accommodate the planned and approved growth.

1.1.2.1 Related Projects

Easton Project: Easton Place and Glenborough at Easton

The two mixed-use developments that make up the Easton Project, Easton Place and Glenborough at Easton, will be constructed on approximately 1,391 acres of the former Aerojet General Corporation property located along the south side of US 50 between Hazel Avenue and Prairie City Road. The developments would include construction of new roadways, some of which would connect to existing roadways in the vicinity of the proposed Hazel Avenue/US 50 interchange project. The Final EIR for the Easton Project also identified specific roadway improvements as mitigation measures to reduce the traffic impacts that would result from the development project.

Assumptions about the schedule and phasing of the Easton Project are integrated into the traffic and land use assumptions for the proposed Hazel Avenue/US 50 interchange project. The following roadway improvements described in the Easton Project Final Environmental Impact Report (Final EIR) (County of Sacramento 2008) are assumed to be in place at full buildout of the Easton Project.

- At the intersection of Folsom Boulevard and Aerojet Road, a widened northbound approach to provide dual left and dual right turn lanes and implement a northbound right turn overlap (protected) phase (County of Sacramento 2008: Mitigation Measure TC-3g, *Construct improvements at the Folsom Boulevard/Aerojet Road intersection*).
- Connection of Glenborough Drive to the Folsom Boulevard/US 50 Eastbound Ramps intersection (County of Sacramento 2008: Plate PD-4).

The proposed project is also consistent with the roadway improvements called for in Easton Project Final EIR Mitigation Measure TC-2c, *Construct improvements at the U.S. 50/Hazel Avenue interchange to improve traffic conditions along Hazel Avenue, on the U.S. 50 freeway ramps, and at the interchange*. Easton Project Mitigation Measure TC-2c is discussed further below in Section 1.2, *Purpose and Need.*

Natoma Overhead Widening/Folsom Boulevard Ramp Metering

Caltrans and the County entered into a Cooperative Agreement (03-0545) on November 7, 2013, that specified the terms and conditions for improvements to the US 50/Folsom Boulevard interchange. The Folsom Boulevard Overcrossing, also known as the Natoma Overhead, was widened (varied width) in the eastbound direction, the eastbound on-ramps were reconstructed with ramp metering and high-occupancy vehicle (HOV) bypass, the entrance lane was extended

on the new widened portion and 1,000 feet beyond the structure, and the eastbound off-ramp was minimally reconstructed to accommodate the improvements. The project was completed in 2016.

1.1.2.2 Regional and System Planning

US 50 Corridor

The Caltrans 20-year "Concept Facility" for the segment of US 50 that includes the proposed project is identified as a six-lane freeway with HOV and two auxiliary lanes to Hazel Avenue, and a four-lane freeway with two HOV and two auxiliary lanes to Folsom Boulevard.

The Caltrans "Ultimate Facility" (identifying improvements needed beyond a 20-year window) for the same segment of US 50 is an eight-lane freeway with two HOV and two auxiliary lanes to Folsom Boulevard. A separate project to widen US 50 will be required to accommodate the future Ultimate Facility. The configuration of the ramps, structures, and walls in the proposed project accommodate and do not preclude future construction of the Ultimate Facility.

The proposed project is consistent with Caltrans' future planning concept facility and the Corridor System Management Plan identifies the US 50/Hazel Avenue Interchange project as one of the "Near Term Priority Improvement Projects."

Caltrans 3-Year Project Initiation Document Program

The proposed project is included in Caltrans' 3-Year Project Initiation Document Program.

SACOG

The proposed project is consistent with and included in SACOG's MTP/SCS for 2036 that was adopted on February 18, 2016 (referred to as 2016 MTP/SCS in this document). The project is also included in SACOG's 2017/2020 MTIP that was adopted on September 15, 2016 (referred to as 2017/20 MTIP in this document). The proposed project is consistent with and included in SACOG's adopted transportation plans. The proposed project augments other projects that have been constructed or are planned to be constructed in the vicinity, such as the widening of Hazel Avenue to six lanes from US 50 to Curragh Downs Drive (Phase 1 completed in 2011) and from Curragh Downs to Madison Avenue (Phases 2 and 3 to be completed by 2020).

50 Corridor Mobility Partnership

The 50 Corridor Mobility Partnership is a cooperative public-private effort by the County of Sacramento, City of Rancho Cordova, City of Folsom, County of El Dorado, and several major private landowners (GenCorp, Elliott Homes, AKT Properties, and Carpenter Ranch). The purpose of the 50 Corridor Mobility Partnership is to develop a coordinated transportation plan for the study area that reduces congestion and improves mobility. Many transportation projects are being planned along the corridor by several jurisdictions and agencies. This project is included as one of the Partnership's "Near Term Priority Improvement Projects." Caltrans, SACOG, and SacRT support the partnership in an advisory capacity.

1.1.2.3 Existing Roadway Facilities

Between the US 50/Sunrise Boulevard and US 50/Folsom Boulevard interchanges, US 50 is an eight-lane freeway, including two HOV lanes. The *Transportation Concept Report and Corridor System Management Plan* for US 50 (California Department of Transportation 2014a) has identified this section as having an ultimate build-out of 10 lanes, eight freeway lanes plus two HOV lanes, and two auxiliary lanes to Folsom Boulevard.

US 50/Hazel Avenue Interchange

The existing interchange at Hazel Avenue is a Type L-9 (partial cloverleaf), with two-lane off- and on-ramps in both directions, except for the slip on-ramp from southbound Hazel Avenue to westbound US 50, which is three lanes.

Hazel Avenue

Hazel Avenue is a six-lane arterial trending north-south and terminating at the Folsom Boulevard intersection south of US 50. The existing overcrossing was constructed in 1994 and is a two-span cast-in-place pre-stressed concrete box girder. The existing profile of Hazel Avenue over US 50 contains a non-standard vertical curve providing sight distance that corresponds with a design speed of 33 miles per hour (mph) (using calculations per the State of California Department of Transportation Highway Design Manual [HDM]).

A private driveway extends south of the intersection of Hazel Avenue and Folsom Boulevard into the Aerojet facility. The driveway contains an at-grade crossing of the SPTC-JPA rail corridor.

There is an existing 5-foot wide sidewalk on the east side of Hazel Avenue over US 50. Immediately north of US 50, the existing sidewalk to remain exceeds 5% longitudinal slope. Hazel Avenue has standard outside shoulders that accommodate bicycle traffic.

Folsom Boulevard

Folsom Boulevard is a four-lane arterial trending east-west, generally running parallel to US 50. The existing Folsom Boulevard/Hazel Avenue intersection is approximately 640 feet from the Hazel Avenue overcrossing and 200 feet from the eastbound ramp intersections.

Sacramento Placerville Transportation Corridor Joint Powers Authority Rail Corridor

The SPTC-JTA rail corridor parallels Folsom Boulevard to the south. Within the corridor, Sacramento Regional Transit District (SacRT) operates single-tracked light rail, and Union Pacific Railroad (UPRR) operates a single-tracked heavy rail.

Aerojet Road

Approximately 350 feet east of the Hazel Avenue eastbound on-ramp is the Aerojet Road off-ramp. The isolated off-ramp exits to Folsom Boulevard. Aerojet Road continues south of Folsom Boulevard as a private road, but is proposed to become a main street access point to the Easton Place development.

Folsom Boulevard Bikeway and Pedestrian Overcrossing

East of the Aerojet Road off-ramp is the Folsom Boulevard Bikeway and Pedestrian Overcrossing. The overcrossing was constructed in 1998 and crosses over US 50 to connect to Nimbus Road and Lake Natoma near Hazel Avenue.

1.2 Purpose and Need

1.2.1 Purpose

The primary purpose of the proposed project is to modify the existing interchange to reduce congestion, improve traffic operations, accommodate travel demand due to planned and approved developments, and improve safety of all modes of travel, including bicycles and pedestrians.

The proposed build alternatives will meet the following objectives.

- Improve operations by removing the close intersection spacing between the eastbound ramps and Folsom Boulevard, and minimizing conflict with heavy and light rail.
  - Proposed alternatives accomplish this by grade-separating Hazel Avenue over Folsom Boulevard.
- Provide sufficient capacity in the ramps and roadways for future traffic volumes.
  - Proposed alternatives accomplish this by widening and/or lengthening the on- and off-ramps and Hazel Avenue as required by their respective traffic analyses.
- Maintain the Aerojet Road off-ramp connection to the approved development while improving the mainline operations.
  - Proposed alternatives accomplish this by removing the Aerojet Road exit from US 50 but still providing direct access to Aerojet Road through the eastbound Hazel Avenue off-ramp.

1.2.2 Need

The proposed project is needed for the following reasons.

- Existing and forecasted traffic operations and congestion are below acceptable operating standards at the Hazel Avenue/US 50 interchange.
- Planned and approved developments identified by the adopted Sacramento County General Plan and SACOG's RTP, including the increased traffic volumes associated with the proposed Easton Project, will increase the traffic volumes at the Hazel Avenue/US 50 interchange beyond acceptable operating standards.
- Implementation of mitigation identified in the Easton Project Final EIR (County of Sacramento 2008) is required in order to accommodate the increased traffic volumes associated with that development. The Easton Project mitigation includes reconstruction of the Hazel Avenue/US 50 interchange as well as grade separation of Hazel Avenue over Folsom Boulevard and the light rail tracks. The Easton Project will contribute its fair share of funding to the improvements.

1.2.2.1 Independent Utility and Logical Termini

FHWA regulations (23 Code of Federal Regulations [CFR] 771.111 [f]) require that the action evaluated:

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

As stated above, the need of this project is specific regarding the amount of existing and forecasted traffic operations and congestion at the Hazel Avenue/US 50 interchange, the purpose of the project includes providing sufficient capacity at the interchange and will not require additional future improvements. Therefore, the project has independent utility. The project also connects logical termini in that the area studied encompasses a broad enough area to fully address environmental issues. The Office of Traffic Safety has established the project limits based on existing and forecasted traffic operations that are below acceptable operating standards.

The proposed project would implement mitigation identified in the Easton Project Final EIR, which includes reconstruction of the Hazel Avenue/US 50 interchange as well as grade separation of Hazel Avenue over Folsom Boulevard and the light rail tracks. The proposed project does not conflict with other reasonably foreseeable transportation projects in this segment of US 50 or Hazel Avenue.

1.2.2.2 Traffic Operations

Current and Forecasted Traffic

This section describes the existing and forecasted traffic operation conditions without the project and identifies existing and forecasted unacceptable operating conditions in the project vicinity. Local roadway intersection levels of service are followed by operating conditions on US 50. Caltrans guidelines call for designing a project based on a horizon year 20 years after opening year of the project. The County determined 2022 as the likely opening year for the proposed project. By that time, the Easton/Glenborough project is expected to reach approximately 3,000 dwelling unit equivalents (DUEs) and trigger the need for the project. The project's horizon year, 20 years from the opening of the project, is 2042.

Intersection Operations

Tables 1-1, 1-2, and 1-3 summarize existing (2015), opening year (2022), and design year (2042) no-build conditions of key local intersection operations in the a.m. and p.m. peak hours. The majority of local intersections will operate at an equal or higher (worse) level of service (LOS) by the design year. The unacceptable conditions highlighted in the table are based on LOS policies in local General Plans: LOS E in the County (County of Sacramento 2011), LOS D in the City of Rancho Cordova (City of Rancho Cordova 2006), and LOS D in the City of Folsom (City of Folsom 2018). For intersections shared between Sacramento County and the City of Folsom, Folsom's more restrictive policy was used to identify an unacceptable condition.

Table 1-1. Existing (2015) Intersection Operations

Segment	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
Hazel Avenue & Gold Country Boulevard	C	23.2	D	39.7
Hazel Avenue & US 50 WB Ramps/Tributary Point Drive	C	32.4	E	62.8
Hazel Avenue & US 50 EB Ramps	D	50.1	D	47.4
Hazel Avenue & Folsom Boulevard	C	34.7	D	39.8
Folsom Boulevard & Aerojet Road	C	20.7	C	33.3
Folsom Boulevard & Auto Mall Circle (West)	E	35.6	D	26.4
Folsom Boulevard & Birkmont Drive/Auto Mall Circle (East)	B	11.8	B	17.36
Folsom Boulevard & US 50 EB Ramps	C	26.6	B	16.9
Folsom Boulevard & US 50 WB Ramps	C	21.9	D	50.5

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
(s) = seconds
EB = eastbound
WB = westbound

Table 1-2. Opening Year (2022) Forecasted Intersection Operations

Segment	Opening Year (2022) No Build			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
Hazel Avenue & Gold Country Boulevard	C	23.7	E	66.1
Hazel Avenue & US 50 WB Ramps/Tributary Point Drive	D	40.3	D	42.6
Hazel Avenue & US 50 EB Ramps	D	43.1	F	82.7
Hazel Avenue & Folsom Boulevard	D	50.9	F	120.8
Folsom Boulevard & Aerojet Road	D	37.5	E	61.0
Folsom Boulevard & Auto Mall Circle (West)	F	50.7	E	46.9
Folsom Boulevard & Birkmont Drive/Auto Mall Circle (East)	C	25.7	F	80.6
Folsom Boulevard & US 50 EB Ramps	C	24.1	B	18.0
Folsom Boulevard & US 50 WB Ramps	D	42.4	E	62.0

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
(s) = seconds

Table 1-3. Horizon Year (2042) Forecasted Intersection Operations

Segment	Horizon Year (2042) No Build			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
Hazel Avenue & Gold Country Boulevard	C	30.8	D	54.5
Hazel Avenue & US 50 WB Ramps/Tributary Point Drive	D	42.2	F	86.6
Hazel Avenue & US 50 EB Ramps	E	78.2	F	90.9
Hazel Avenue & Folsom Boulevard	F	84.3	F	316.8
Folsom Boulevard & Aerojet Road	B	10.5	B	15.8
Folsom Boulevard & Auto Mall Circle (West)	D	33.4	F	280.8
Folsom Boulevard & Birkmont Drive/Auto Mall Circle (East)	B	14.1	B	17.4
Folsom Boulevard & US 50 EB Ramps	D	43.1	D	40.2
Folsom Boulevard & US 50 WB Ramps	B	15.9	B	12.3

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
(s) = seconds

Freeway Operations

Table 1-4 shows average annual daily traffic (AADT) volumes on US 50 for existing (2015), opening year (2022) and design year (2042) conditions without the proposed project.

Table 1-4. Annual Average Daily Traffic on US 50

	Year	Trucks (%)	AADT	AM Peak Hour	PM Peak Hour
				Peak Hour Volume	Peak Hour Volume
Existing Year	2015	6%	137,660	11,130	9,522
Opening Year	2022	6%	166,910	12,880	11,540
Design Year	2042	6%	208,250	16,560	17,970

Source: California Department of Transportation 2019.

Table 1-5 through Table 1-7 summarize US 50 freeway operations for existing (2015), opening year (2022), and horizon year (2042) conditions without the proposed project. Caltrans' target LOS for US 50 is between C and D. By 2042, many freeway segments deteriorate to LOS F.

Table 1-5. Existing (2015) Freeway Operations

US 50 Direction	Segment	Type	Existing (2015) No Build			
			AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Sunrise Boulevard to Hazel Avenue	Basic	B	14.9	B	16.3
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.0	B	13.3
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	B	19.7	B	17.5
	NB Hazel Avenue Slip On-Ramp	Weave	B	17.6	B	13.9
	Aerojet Road Off-Ramp					
	Aerojet Road to Folsom Boulevard	Basic	C	19.7	B	16.9
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	C	26.2	C	21.3
	Folsom Boulevard On-Ramp	One-Lane Merge	C	24.5	C	22.3
	Folsom Boulevard to Prairie City Road	Basic	C	19.5	B	17.4
WB	Prairie City Road to Folsom Boulevard	Basic	C	24.1	B	17.3
	Folsom Boulevard Off-Ramp	One-Lane Diverge	D	32.3	C	25.0
	Folsom Boulevard On-Ramp	One-Lane Merge	D	29.8	C	24.6
	Folsom Boulevard to Hazel Avenue	Basic	D	26.4	C	21.7
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.8	A	8.5
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	25.2	C	20.3
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	D	32.5	C	21.3
	Hazel Avenue to Sunrise Boulevard (mixed)	Basic	D	30.6	C	19.4

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
EB = eastbound
WB = westbound

Table 1-6. Opening Year (2022) Forecasted Freeway Operations

US 50 Direction	Segment	Type	Opening Year (2022) No Build			
			AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Sunrise Boulevard to Hazel Avenue	Basic	C	21.9	C	23.7
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	17.7	C	23.4
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	23.1	B	19.9
	NB Hazel Avenue Slip On-Ramp	Weave	C	21.2	B	15.3
	Aerojet Road Off-Ramp					
	Aerojet Road to Folsom Blvd	Basic	C	24.0	C	18.1
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	F	32.8	C	23.4
	Folsom Boulevard On-Ramp	One-Lane Merge	D	30.4	C	24.2
	Folsom Boulevard to Prairie City Road	Basic	D	26.0	C	19.2
WB	Prairie City Road to Folsom Boulevard	Basic	D	26.7	C	19.4
	Folsom Boulevard Off-Ramp	One-Lane Diverge	D	34.7	C	27.5
	Folsom Boulevard On-Ramp	One-Lane Merge	F	32.8	C	26.9
	Folsom Boulevard to Hazel Avenue	Basic	D	30.2	C	23.3
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	11.5	A	9.2
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	27.7	C	21.7
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	D	34.7	C	25.9
	Hazel Avenue to Sunrise Boulevard (mixed)	Basic	D	34.4	C	23.7

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
EB = eastbound
WB = westbound

Table 1-7. Horizon Year (2042) Forecasted Freeway Operations

US 50 Direction	Segment	Type	Horizon Year (2042) No Build			
			AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Rancho Cordova Parkway to Hazel Avenue	Basic	F	54.2	F	60.8
	Hazel Avenue Off-Ramp	Two-Lane Diverge	F	35.0	F	38.1
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	D	34.1	D	33.0
	NB Hazel Avenue Slip On-Ramp	Weave	D	28.7	C	27.9
	Aerojet Road Off-Ramp					
	Aerojet Road to Folsom Boulevard	Basic	E	35.7	E	35.5
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	F	45.8	F	45.7
	Folsom Boulevard On-Ramp	One-Lane Merge	F	41.4	F	44.4
	Folsom Boulevard to Prairie City Road	Basic	F	56.2	F	67.7
WB	Prairie City Road to Folsom Boulevard	Basic	E	41.4	F	51.8
	Folsom Boulevard Off-Ramp	One-Lane Diverge	E	44.0	F	48.0
	Folsom Boulevard On-Ramp	One-Lane Merge	F	42.7	F	46.0
	Folsom Boulevard to Hazel Avenue	Basic	D	30.1	D	33.8
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	11.5	B	13.0
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	D	29.4	D	32.6
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	F	35.7	F	39.8
	Hazel Avenue to Rancho Cordova Parkway	Basic	E	41.8	F	52.3

Source: DKS 2016; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
pc/ln/mi = passenger cars per mile per lane
EB = eastbound
WB = westbound

Collision History

This section provides collision and collision rate data on the US 50 mainline between Sunrise Boulevard and Folsom Boulevard, and the ramps at the Hazel Avenue and Folsom Boulevard interchanges. The data listed in Table 1-8 is based on a three-year period from January 1, 2015 to December 31, 2017. For each location, these collision rates are compared to average State rates from similar Caltrans facilities (rate groups).

Table 1-8. Existing Collision Rates

Location	Number of Collisions	Location Collision Rate (per million vehicle miles)	Average Collision Rate (per million vehicle miles)
Eastbound US 50 from Sunrise Boulevard to Hazel Avenue	48	0.89	0.61
Eastbound US 50 from Hazel Avenue to Folsom Boulevard	75	0.79	0.65
Westbound US 50 from Folsom Boulevard to Hazel Avenue	41	0.43	0.65
Westbound US 50 from Hazel Avenue to Sunrise Boulevard	20	0.37	0.61
Eastbound Off-Ramp to Hazel Avenue	18	1.71	0.92
Eastbound Loop On-Ramp from Southbound Hazel Avenue	4	0.38	0.71
Eastbound Slip On-Ramp from Northbound Hazel Avenue	2	1.04	0.56
Eastbound Off-Ramp to Aerojet Road	2	1.29	0.78
Eastbound Off-Ramp to Folsom Boulevard	7	0.42	0.92
Eastbound On-Ramp from Folsom Boulevard	6	1.88	0.67
Westbound Off-Ramp to Folsom Boulevard	18	2.38	0.92
Westbound On-Ramp from Folsom Boulevard	16	0.92	0.60
Westbound Off-Ramp to Hazel Avenue	18	1.51	0.92
Westbound Loop On-Ramp from Northbound Hazel Avenue	2	0.84	0.71
Westbound Slip On-Ramp from Southbound Hazel Avenue	13	0.93	0.56
Eastbound On-Ramp from Hazel (Loop and Slip Merged)	0	0.00	0.20

Source: California Department of Transportation 2018a.
Shaded cells contain values indicating locations with crash rates higher than average.

1.2.2.3 Planned Development

A number of planned new roadways, interchanges and improvements to existing roadways will affect future traffic volumes on US 50 and the Hazel Avenue interchange. These improvements are identified in SACOG's MTP, and have been included in the traffic study assumptions. In particular, the following planned improvements will have an effect on the traffic volumes at the Hazel Avenue/US 50 interchange:

- The addition of HOV lanes on US 50 west of Sunrise Boulevard.
- The implementation of auxiliary lanes along US 50 between Sunrise Boulevard and East Bidwell Street.
- Construction of the Rancho Cordova Parkway interchange and the extension of the Rancho Cordova Parkway from US 50 to White Rock Road.
- The construction of Easton Valley Parkway through the Easton/Glenborough, Westborough, and Folsom Sphere of Influence developments.

The approved development projects within and near the project area will increase traffic demand beyond what the existing interchange can accommodate. The close intersection spacing between the Folsom Boulevard and eastbound ramp intersections does not provide sufficient queuing distance for increased traffic volumes. Additionally, the County is currently widening Hazel Avenue from four to six traffic lanes between the Hazel Avenue/US 50 interchange and Madison

Avenue. This increase in roadway capacity is expected to deliver more traffic to the interchange during peak traffic periods.

1.2.2.4 Easton Project Mitigation

The Final EIR for the Easton Project identified traffic related impacts that would occur as a result of the development. The Final EIR also identified specific mitigation measures to reduce the traffic impacts. However, many of the roadway and other traffic operation improvements identified as mitigation for the Easton Project are regional in scope and benefit, with costs above the fair share cost of traffic use anticipated by the full build-out of the development. Therefore, both the Final EIR and the Public Facilities Financing Plan for the Easton Project assume that the project will pay its fair share of the construction costs of the mitigation measures by paying into existing and proposed fee programs.

The Easton Project Final EIR includes Mitigation Measure TC-2c which states the following.

> *Mitigation Measure TC-2c: Construct improvements at the U.S. 50/Hazel Avenue interchange to improve traffic conditions along Hazel Avenue, on the U.S. 50 freeway ramps, and at the interchange.* The applicant shall provide adequate funding consistent with the Financing Plan for the reconstruction of the Hazel Avenue/U.S. 50 interchange with appropriate turn pockets, through lanes, ramp modifications, high-occupancy vehicle bypass lanes, and auxiliary lanes as well as grade separation of Hazel Avenue over Folsom Boulevard and the light rail tracks (This measure fulfills TIS Mitigations 13, 24, 25, 69, 70, and 71). Details on the funding requirements will be provided in the Financing Plan (Draft EIR Appendix D, Final EIR Appendix 2), including the costs of the improvements, timing of payment of funds, the applicant's fair share, and, if the applicant must initially pay for more than its fair share, procedures for reimbursing the applicant from future development projects. The improvements would be subject to Caltrans approval; therefore, the timing and implementation of the improvements are not guaranteed.
>
> The improvements would reduce the project's traffic impacts and allow Hazel Avenue, the U.S. 50 freeway ramps, and the interchange to operate at an acceptable LOS. Because of the uncertainty in timing of the improvement, short-term impacts along the roadway and at the interchange would remain unacceptable until the improvement is implemented.
> (County of Sacramento 2008:11-32)

The Easton/Glenborough Public Facilities Financing Plan (County of Sacramento 2008, Appendix 2) assumes that the Easton Project would contribute to the Hazel Avenue/US 50 Interchange Project and describes the project as follows.

> Hazel Avenue/U.S. Hwy 50 Interchange, including constructing appropriate turn pockets, through lanes, ramp modifications, high-occupancy vehicle bypass lanes, auxiliary lanes, as well as grade separation of Hazel Avenue over Folsom Boulevard and light rail tracks (E+P Impact No. 13/24/25, EIR TC No. 2b/2c/3b/4b).
> (County of Sacramento 2008, Appendix 2:44)

The County's proposed improvements at the Hazel Avenue/US 50 interchange are consistent with Mitigation Measure TC-2c in the Easton Project Final EIR.

1.2.2.5 Independent Utility and Logical Termini

Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] 771.111 [f]) require that the action evaluated:

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 be 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.

The project's overcrossing and roadway improvements would tie in to the existing Hazel Avenue and the project's auxiliary lanes would tie into existing lanes on US 50. The environmental study boundaries encompass these project endpoints and, therefore, the project has logical termini. The project would not require other improvements to function and, therefore, it has independent utility.

1.3 Project Description

The County of Sacramento, in cooperation with Caltrans and the City of Rancho Cordova, proposes to modify the existing Hazel Avenue/US 50 interchange, and extend and grade-separate Hazel Avenue over Folsom Boulevard and the SPTC-JPA rail corridor. Hazel Avenue will be extended south to a proposed intersection with the future Atlanta Street (a new roadway that will be constructed as part of the Easton Place development). The project also includes:

- Construction of a portion of an eastbound auxiliary lane on US 50 from Hazel Avenue to the Folsom Boulevard Overcrossing, also known as the Natoma Overhead.
- The modification of the existing Aerojet Road off-ramp from US 50.
- Reconstruction of the US 50 westbound loop on-ramp.
- Reconstruction of the US 50 eastbound diagonal off-ramp, and both eastbound on-ramps.
- Eastbound US 50 on- and off-ramp auxiliary lanes, from west of the Hazel Avenue eastbound off-ramp, and from the loop on-ramp extending to the Folsom Boulevard interchange.
- Roadway and pedestrian improvements constructed along approximately 2,300 feet of Folsom Boulevard. Improvements include sidewalks, street lighting, and landscaping along the north side of Folsom Boulevard, and landscaping and lighting along the south.

The primary purpose of the proposed project is to modify the existing interchange to reduce congestion, improve traffic operations, accommodate travel demand due to planned and approved developments, and improve safety of all modes of travel, including bicycles and pedestrians. The proposed project is needed to relieve existing and forecasted traffic operations

and congestion, accommodate planned and approved developments, and implement mitigation identified in the Easton Project Final EIR (County of Sacramento 2008).

1.3.1 Build Alternatives

The proposed project would construct modifications to the existing interchange, grade-separate Hazel Avenue, and extend it to the south to a future intersection with Atlanta Street, which will be built with the approved Easton Place development. Two build alternatives, with one sub-alternative, have been developed for the project.

1.3.1.1 Common Design Features of the Build Alternatives

The following is a description of elements and design components that are common to all build alternatives:

Roadway Modifications

- Grade-separation of Hazel Avenue over Folsom Boulevard.
- Construction of a portion of an eastbound transition auxiliary lane on US 50 from Hazel Avenue to the eastbound Folsom Boulevard loop-on ramp.
- Modification of the existing Aerojet Road off-ramp from US 50.
- Widening of eastbound US 50 to the Folsom Boulevard eastbound off-ramp.
- Realignment of the westbound loop on-ramp, with the ramp intersection shifted north towards the westbound off-ramp terminus, increasing storage lengths. The ramp would be metered with two lanes (one mixed flow and one HOV bypass).
- Realignment of the eastbound diagonal off-ramp to conform with the new Hazel Avenue profile.
- Realignment of the eastbound diagonal on-ramp to conform with the new Hazel Avenue profile. The ramp would be metered with two lanes: one mixed-flow lane and one HOV bypass.
- Reconstruction of the eastbound loop on-ramp to conform with the new Hazel Avenue profile. The ramp would be metered with two lanes: one mixed-flow lane and one HOV bypass. A tie-back wall at the abutment of the overcrossing is proposed to maximize the opening through the structure. The loop ramp would develop an additional lane on US 50 that would continue on to the Folsom Boulevard interchange.
- Construction of eastbound on- and off-ramp auxiliary lanes on US 50, from west of the Hazel Avenue to eastbound off-ramp, and from the loop on-ramp extending to the Folsom Boulevard interchange.
- Construction of Atlanta Street, which would connect Folsom Boulevard and the southern extension of Hazel Avenue. This section of Atlanta Street is referred to as the “jughandle” due to its shape from an aerial perspective.

- Modification of traffic signals at the ramp terminal intersections and at Tributary Point. Installation of safety lighting at the ramp intersections will also be included.
- Installation of an overhead sign truss to help drivers identify the correct lanes to use to access the US 50 westbound on-ramp, the eastbound loop on-ramp, and Tributary Point Drive.
- Construction of a new signalized intersection and at-grade railroad crossing at Folsom Boulevard and the jughandle; this would include dual left turns and a right turn from Folsom Boulevard onto the jughandle and dual right and left turns from the jughandle onto Folsom Boulevard.
- Creation of a new bicycle/pedestrian route along Hazel Avenue that is separated from vehicular traffic between Folsom Boulevard and the American River Bicycle Trail. The new 12-foot-wide facility would run along the east side of Hazel Avenue beginning at the intersection with the jughandle. It would extend to the north and cross the proposed US 50 eastbound on-ramp at grade. It would then continue along the east side of the Hazel Avenue overcrossing to cross US 50. The trail would then extend adjacent to the loop on-ramp and be grade separated at the US 50 westbound ramp terminal. The bike path would cross underneath the US 50 ramps with concrete slab bridge structures.
- Construction of roadway improvements along approximately 2,300 feet of Folsom Boulevard. Improvements include the removal of the existing signalized intersection with Hazel Avenue, re-striping lanes, and addition of sidewalk on the south side of Folsom Boulevard.
- Use of pile driving for construction of the proposed new or modified structures including the Hazel Avenue overcrossing of US 50, ramp bridges, the overhead structure above Folsom Boulevard and the railroad tracks, the US 50 bridge at Alder Pond, and ramp viaduct or flyover structures. Pile driving would be limited to daytime hours.

Transition Lane to Folsom Boulevard/US 50 Interchange

In Caltrans' 2009 *Corridor System Management Plan*, eastbound US 50 is shown to have one HOV lane and three mixed flow lanes to Hazel Avenue as the Concept Facility. Additionally, eastbound US 50 is shown to have one HOV lane and three mixed-flow lanes across Folsom Boulevard as the Ultimate Facility. The proposed project would accommodate these future facility improvements; would conform to the approved Caltrans project at the Folsom Boulevard/US 50 interchange, including some improvements which occurred in 2017; and the proposed project would then restripe the third mixed -flow lane through the Folsom Boulevard/US 50 interchange.

The mixed-flow lane is a necessary part of the proposed project because as determined in the traffic analysis for this project, and in traffic analyses for adjacent projects, the additional eastbound lane on US 50 extending through the Folsom Boulevard interchange is needed for operations.

Under all proposed build alternatives, accommodating this mixed-flow lane includes extending the eastbound loop on-ramp auxiliary lane to the Folsom Boulevard/US 50 eastbound off-ramp. To accomplish this, all alternatives include the widening of US 50 and construction of a new

structure over Alder Creek. Alder Creek currently flows under US 50 through a box culvert (Br. No. 24-0033). A mechanically stabilized earth (MSE) wall (Br. No. 24-0372) is above the culvert. A new bridge would be required to widen US 50 over Alder Creek. The new bridge is necessary because there is insufficient lateral space to construct an adjacent MSE wall on top of the culvert, and because the creek maintains a high operating water level.

Railroad Overhead

Hazel Avenue would extend and be grade-separated over Folsom Boulevard and the SPTC-JPA rail corridor. Currently there is one light rail track on the north side of the UPRR tracks. SacRT plans to add another track at this location in the future; when the addition occurs, the existing UPRR track would be relocated south to accommodate the second light rail track. The proposed design meets the requirements for all three tracks.

Temporary vertical clearances of 21 feet, 6 inches and permanent vertical clearances of 24 feet have been accounted for in the layout of all three alternatives for the Hazel Avenue Overhead. The vertical clearance provided will accommodate the overhead catenary system for the light rail.

Aesthetics and Site Restoration

Aesthetic features would be included in the design of the interchange. The project would have an aesthetic design with a consistent motif for the new and reconfigured structures such as the retaining walls, tunnels, and viaduct structures. Modified and new structures would include architectural elements such as inset panels or other design themes compatible with the nature of the surrounding area. A local example of an aesthetic treatment is the retaining wall along the US 50 eastbound on-ramp at Mather Field Road in Rancho Cordova.

Upon project completion, all temporarily disturbed areas would be restored to pre-project or better conditions. Exposed soil areas would be revegetated. The species list would include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types including native species. To the extent feasible, native grasses and forbs would be used to reseed disturbed grassland areas. Species planted near residences would be an appropriate height and primarily evergreen species that provide year-round light screening once established.

Right-of-Way and Utilities

Right-of-way (ROW) acquisition is anticipated from parcels the south of the interchange. It is anticipated that up 17 parcels would be affected by the improvements, depending on the selected build alternative, including full acquisition and demolition of structures at the Chevron gas station (Assessor's Parcel Number [APN] 069-0160-012). Acquisitions and building impacts are anticipated at Cattlemen's restaurant (APN 069-0060-085) and Sentry Storage (APN 069-0160-015).

The acquisition needs described above are preliminary and would be finalized during the ROW process and final design phase of the project. For all alternatives, the proposed project would

require the relocation of utilities, and it is anticipated that this would include gas lines, overhead electric lines, underground electric lines, fiber optic cables, water lines, sewer lines, and storm drain lines. The potential for project effects on other unknown utilities also exists.

Standardized Measures

The proposed project includes standardized measures that are generally applied to most or all County and Caltrans projects. Standardized or pre-existing measures allow little discretion regarding their implementation and are not specific to the circumstances of a particular project.

Transportation Management

A Transportation Management Plan (TMP) would be developed for use during project construction. The TMP would utilize strategies described in the *California Manual of Traffic Control Devices* (California Department of Transportation 2014b) and Caltrans' *Transportation Management Plan Guidelines* (TMP Guidelines) (California Department of Transportation 2015), selected in accordance with the scale and scope of the project and the variety of transportation facility types and jurisdictions in the project area. The TMP would direct the process and procedures for dissemination of information to the public and motorists, provide guidance for implementation of incident management, describe construction strategies for traffic handling and guiding traffic through work zones, address traffic demand management during construction, and describe and direct the implementation of alternate routes or detours.

Environmental Stewardship

The project would comply with the policies identified in the elements of the Sacramento County General Plan as well as those in Caltrans Standard Specification Section 14, Environmental Stewardship (California Department of Transportation 2018b), as they apply to the construction and implementation of the proposed project. In addition to environmental protections established by State and Federal law, County and Caltrans policies and standards address responsibilities for many environmental areas such as air pollution; noise limits; protection of lakes, streams, and other water bodies; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of construction.

1.3.1.2 Unique Features of the Build Alternatives

Alternative 1: L-9 Interchange with Viaduct Connector

Alternative 1 consists of a modified type L-9 interchange configuration (Figure 1-3). A Caltrans Type L-9 interchange involves a ramp configuration that includes a diagonal off-ramp, a diagonal on-ramp, and a loop on-ramp. This alternative would provide a viaduct connection to Aerojet Road. Alternative 1 includes the following improvements in addition to the common design features.

- Widen Hazel Avenue overcrossing on the west side over US 50.
- Reconstruction of eastbound off-ramp, eastbound loop on-ramp and eastbound diagonal on-ramp, generally in the same location as existing, to conform to proposed Hazel Avenue

profile and to accommodate ultimate fifth lane on mainline, per the U.S. Highway 50 Transportation Corridor Concept Report.

- Construction of viaduct connection to Aerojet Road, crossing over Hazel Avenue.

As with all build alternatives, Hazel Avenue would grade-separate over Folsom Boulevard and the SPTC-JPA rail corridor, and would extend south to a proposed intersection with the future Atlanta Street. The existing at-grade intersection of Hazel Avenue and Folsom Boulevard would be removed, sidewalks would be extended across the former intersection, and the lanes would be re-striped to remove left turn lanes.

The departure point of the existing Aerojet Road off-ramp from US 50 would be moved to join with the eastbound Hazel Avenue off-ramp. The eastbound Hazel Avenue off-ramp would split and introduce a direct viaduct ramp over Hazel Avenue to carry eastbound off-ramp traffic to Aerojet Road and Folsom Boulevard. The off-ramp divergence from US 50 would be shifted approximately 830 feet to the east to provide decision sight distance before the Aerojet Road split. The eastbound two-lane off-ramp would widen to five lanes at the ramp terminal intersection, with three left-turn lanes and two right-turn lanes. Retaining walls and barriers placed at the proposed ROW would minimize ROW acquisition. The eastbound off-ramp would also have an auxiliary lane prior to the exit.

The Aerojet Road viaduct would land adjacent to the eastbound diagonal on-ramp and then turn southerly to conform to Folsom Boulevard along its existing alignment. Retaining walls are proposed between the viaduct and the diagonal on-ramp to accommodate the grade difference, and proposed at the outside of the ramp after the viaduct lands, to minimize ROW acquisitions. Retaining walls are also proposed along Aerojet Road as it approaches the horizontal curve towards Folsom Boulevard, to accommodate the grade difference between the ramp and mainline and to minimize ROW acquisition.

The existing Hazel Avenue Overcrossing of US 50 would be widened on the west side to eight lanes (three through lanes and one freeway-only lane in both directions). The existing raised concrete median across the structure would be removed, and the roadway would be re-striped with a 6-foot striped median. The existing sidewalk and barrier on the east side of the structure would be modified to accommodate a 12-foot-wide bicycle/pedestrian route.

Right-of-Way Acquisition

With Alternative 1, ROW acquisition is anticipated from parcels largely south of the interchange. There would be 17 parcels affected by the improvements, including full acquisition and demolition of structures at the Chevron gas station (APN 069-0160-012). Acquisitions and building impacts are anticipated at Cattleman's restaurant (APN 069-0060-085) and Sentry Storage (APN 069-0160-015). The viaduct structure in Alternative 1 is proposed to cross over the northern portion of the Nimbus Winery parking lot (APN 069-0050-013) on an aerial easement, to allow parking below the structure and minimize impacts to the business.

Alternative 1A: L-9 Interchange with Undercrossing Connector

Alternative 1A is the same as Alternative 1, except that the eastbound off-ramp would split and introduce a direct tunnel ramp under Hazel Avenue to carry eastbound off-ramp traffic to Aerojet Road and Folsom Boulevard (Figure 1-4). In addition to the common design features and the unique features of Alternative 1, Alternative 1A includes the following.

- Construction of undercrossing connection to Aerojet Road, crossing under Hazel Avenue and the ramps.

Because the tunnel would be below existing ground level and groundwater could be encountered, the tunnel may require the inclusion of waterproofing within the solder pile wall and a thicker than standard concrete roadway. The waterproofing would prevent the possibility of groundwater, including potentially contaminated groundwater from the Aerojet facility, reaching the surface. The Preliminary Geotechnical Report (Parikh 2013) prepared for the project indicates that measured groundwater was found approximately 17.7 to 25.3 feet below existing ground.

Right-of-Way Acquisition

With Alternative 1A, ROW acquisitions would be similar to Alternative 1. However, the ROW needed at the Nimbus Winery property (APN 069-0050-013) would be larger than for Alternative 1 because acquisition would be required for the undercrossing, as opposed to an aerial easement.

Alternative 2: Direct Flyover to Hazel Avenue with Connector

Alternative 2 consists of a modified type L-9 interchange configuration, with a flyover ramp carrying vehicles travelling from eastbound US 50 to northbound Hazel Avenue over the freeway to join with the westbound off-ramp (Figure 1-5). Alternative 2 includes the following improvements in addition to the common design features.

- Construction of eastbound off-ramp to northbound Hazel Avenue/Aerojet Road to cross underneath Hazel Avenue and the eastbound diagonal on-ramp. The off-ramp would cross under Hazel Avenue and over US 50.
- Provide a free-right connection for traffic onto southbound Hazel Avenue.
- Realignment of westbound off-ramp to merge with the eastbound off-ramp.
- Removal of concrete median on existing US 50 overcrossing. Re-striping of the overcrossing to accommodate three (3) northbound lanes and three (3) southbound lanes. No widening is proposed of the existing overcrossing structure.

The existing Aerojet Road off-ramp from US 50 would be removed. The eastbound off-ramp diverge from US 50 would be shifted approximately 680 feet to the east to provide decision sight distance. An auxiliary lane would precede the off-ramp. A retaining wall is proposed adjacent to the off-ramp to minimize ROW acquisition.

The eastbound off-ramp would split and introduce northbound and southbound Hazel Avenue ramps. The northbound ramp would also carry traffic headed for Aerojet Road/Folsom Boulevard. An overhead sign would direct vehicles heading to southbound Hazel Avenue into the right lane and direct vehicles destined for northbound Hazel Avenue, Aerojet Road or Folsom Boulevard to use either lane. Retaining walls are proposed for the ramp as it approaches the horizontal curve towards Folsom Boulevard, to accommodate the grade difference between the ramp and mainline and to minimize ROW acquisition at an apartment complex.

The northbound Hazel Avenue movement would cross under Hazel Avenue at the interchange, cross over US 50 on a two-lane flyover structure, and then merge with the westbound off-ramp and terminate at the Hazel Avenue/Tributary Point intersection. The westbound off-ramp would split so that the southbound and through movements would align to the left of the ramp, and the northbound movements would be to the right.

The southbound ramp would connect directly to Hazel Avenue; however, for Alternative 2 an intersection is not required at Hazel Avenue and the eastbound ramp. By eliminating an intersection at the eastbound ramp, and by removing the heavy eastbound-to-northbound movements from the Hazel Avenue overcrossing, the existing structure could remain without widening.

The two-lane westbound off-ramp would be reconstructed to provide decision sight distance between the divergence point from US 50 and a new ramp split that accommodates the flyover. The westbound off-ramp would split on either side of the flyover ramp, with one lane to the right carrying northbound Hazel Avenue traffic and the other crossing underneath the flyover ramp to join up on the left side of the flyover for the southbound Hazel Avenue movements. Alternative 2 would shorten the tangent length between the two ramp curves to increase the radius of the final curve nearest the Hazel Avenue intersection, reducing likelihood that a driver would depart from the roadway and hit objects. The radius is proposed to be increased from 185 feet to 290 feet. Warning signs and delineators would be used to communicate the curves ahead.

The profiles of the three ramps have been coordinated to match grade quickly to minimize retaining wall limits and enhance driver visibility. Overhead signage would direct drivers into the appropriate lanes for northbound and southbound Hazel Avenue traffic.

Right-of-Way Acquisitions

Under Alternative 2, ROW acquisition is also anticipated from parcels in the southwest quadrant of the interchange. It is anticipated that 16 parcels would be affected by the improvements, including full acquisition and demolition of structures at the Chevron gas station (APN 069-0160-012) and Cattleman's restaurant (APN 069-0060-085) and the Nimbus Winery property (APN 069-0050-013).

1.3.1.3 Construction Schedule

Construction of the project is anticipated to begin in 2021 and last two years for Alternatives 1 and 1A (ending in 2023), and three years for Alternative 2 (ending in 2024). Alternatives 1 and 1A would be constructed in two major phases that would have three sub-phases each. Each phase

and sub-phase would occur consecutively. Alternative 2 would also have a smaller third phase with no sub-phases.

Construction could occur on both weekdays and weekends. Work at night would be necessary and would include paving, bridge falsework erection and removal, work requiring lane closures along US 50, and work at and in front of commercial businesses. It is anticipated that the night work would take place during a span of 6 months and would be intermittent and short-term.

1.3.1.4 Transportation System Management and Transportation Demand Management Alternatives

Transportation System Management (TSM) strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility 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. TSM also promotes automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and mass transit.

Although TSM measures alone could not satisfy the purpose and need of the project, the following TSM measures have been incorporated into the build alternatives for this project:

- Auxiliary lanes along US 50 (as a segment of planned auxiliary lanes between Sunrise Boulevard and East Bidwell)
- Bicycle and pedestrian path improvements, including a Class 1 path at the northeast quadrant

1.3.2 No Build Alternative (No Action)

The No Build Alternative, would not modify the Hazel Avenue/US 50 interchange, and would retain the existing configuration, ramps, and lanes. Traffic congestion would continue to increase as planned build-out is completed, operations would continue to deteriorate, and safety would not be improved. This alternative does not meet the purpose and need of the proposed project.

1.3.3 Comparison of Alternatives

The key differences between the alternatives are summarized below:

- Alternative 1 would include a viaduct connector to carry traffic from westbound US 50 to Aerojet Road. The viaduct connector would be constructed above Hazel Avenue. The total estimated cost of Alternative 1 is $67.7 million.
- Alternative 1A would include a undercrossing connector to carry traffic from westbound US 50 to Aerojet Road. The undercrossing would run underneath Hazel Avenue. The total estimated cost of Alternative 1A is $66.9 million.

- Alternative 2 would include a direct flyover to carry traffic from westbound US 50 to Hazel Avenue. The flyover would be constructed above Hazel Avenue. The total estimated cost of Alternative 2 is $80.3 million.
- The No-Build Alternative would result in no modifications to the existing interchange.

1.3.3.1 Locally Preferred Alternative

The County has identified either Alternative 1 or Alternative 1A as the locally preferred over Alternative 2 and the No-Build because they would achieve the project's purpose and need and have less effects on adjacent properties and commercial buildings. Final identification of a preferred alternative will occur after the public review and comment period.

1.3.3.2 Alternative Selection Process

After the public circulation period, all comments will be considered, and Caltrans and the County will select a preferred alternative and make the final determination of the project's effect on the environment. Under CEQA, the County will certify that the project complies with CEQA, prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations for impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. The County will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, if mitigation measures were included as conditions of project approval, that findings were made, and that a Statement of Overriding Considerations was adopted. Similarly, if Caltrans, as assigned by the FHWA, determines the NEPA action does not significantly impact the environment, Caltrans will issue a Finding of No Significant Impact (FONSI). If it is determined that the project is likely to have a significant effect on the environment, an Environmental Impact Statement (EIS) will be prepared.

1.3.4 Alternatives Considered but Eliminated from Further Discussion

1.3.4.1 Alternatives Development Process

In March 2011, as part of the initial efforts to develop the project, a Peer Review session was held to convene members from involved agencies and firms with strong interchange and geometric knowledge to brainstorm alternatives to be considered.

The purpose of the session was to identify a range of alternatives (a total of 18 alternatives were identified) for improvements to Hazel Avenue near the US 50 interchange, discuss their pros and cons and narrow them to six alternatives for evaluation in a preliminary traffic operations analysis phase. The six alternatives were:

- L-7 with Collector
- L-7 without Collector
- Flyover-West

- Split Structure
- Braided Partial Cloverleaf "C"
- Diverging Diamond

The alternatives are described in more detail along with documentation of the process and ranking in a Memorandum by Mark Thomas and Company, dated March 30, 2011.

The six alternatives were then analyzed through a Preliminary Traffic Operations Analysis to determine which alternatives were feasible. The results are documented in a Memorandum by DKS Associates (DKS), dated April 28, 2011 (DKS 2011).

Based on the traffic analysis, three alternatives were identified that provide acceptable traffic operations through the interchange and meet the need and purpose of the project. However, Caltrans subsequently rejected all 3 alternatives due to a high number of non-standard design features in each.

The project development team then created two alternatives (and one subalternative) that provide acceptable traffic operations through the interchange and also meet the need and purpose of the project. Caltrans agreed to study these alternatives further in the Project Approval and Environmental Document (PA&ED) phase; these alternatives were described in a Project Study Report (California Department of Transportation 2014c) and are included in this document.

1.3.4.2 Alternatives Considered but Eliminated

A standard type L-9 interchange was evaluated as a baseline concept with which to compare the proposed alternatives. However, it was determined through assessment of traffic operations, cost, and access/mobility needs that the standard type L-9 interchange does not satisfy the project's need and purpose and therefore was not proposed as a viable alternative.

As part of the Peer Review process, this project complied with Caltrans Policy Directive 13-02, "Intersection Control Evaluation." A variety of intersection control types were considered for all of the viable interchange types. A diverging diamond configuration was evaluated, but the traffic patterns for this interchange suited to this configuration. Roundabouts were not considered feasible due to traffic volumes, ROW constraints, and proximity to rail locations.

1.4 Permits and Approvals Needed

In addition to the completion of CEQA and NEPA documentation and project approvals by the lead agencies, the following permits, licenses, agreements, and certifications (PLACs) are required for project construction.

Table 1-9. Permits, Licenses, Agreements, and Certifications Needed

Agency	PLAC	Status
United States Fish and Wildlife Service	Coordination and consultation regarding Federal threatened and endangered species	Not yet initiated
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States	Not yet initiated
State Water Resources Control Board	Construction General Permit Stormwater Pollution Prevention Plan and Municipal Separate Storm Sewer System Permit requirements	Not yet initiated
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification and coverage under the existing Waste Discharge Requirements Cities Of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, And County Of Sacramento Storm Water Discharges From Municipal Separate Storm Sewer System Sacramento County (Order NO. R5-2015-0023; NPDES NO. CAS082597)	Not yet initiated
California Department of Fish and Wildlife	1602 Agreement for Streambed Alteration and Coordination Regarding State Species	Not yet initiated
Sacramento Metropolitan Air Quality Management District	Formal Notification Prior to Construction	Not yet initiated
City of Rancho Cordova	City Council approval of the project and/or issuance of encroachment permit	Not yet initiated
Caltrans Encroachment Permit	For construction of improvements on U.S. 50 and local roadways within State right of way.	Not yet initiated

1.5 References Cited

California Department of Transportation. 2014a. *Transportation Concept Report and Corridor System Management Plan, United States Route 50, District 3*. June.

California Department of Transportation. 2014b. *California Manual on Uniform Traffic Control Devices*. 2014 Edition. Revision 3 (March 9, 2018).

California Department of Transportation. 2014c. *Project Study Report, U.S. 50 / Hazel Avenue Interchange, to Request Approval for a Locally Funded Project to Proceed to PA&ED Phase*. Project ID: 0300020439. EA: 03-3E380. June. Approved July 15, 2014.

California Department of Transportation. 2015. *Transportation Management Plan Guidelines.* Division of Traffic Operations, Office of Traffic Management. November.

California Department of Transportation. 2018a. *Traffic Accident Surveillance and Analysis System-Transportation Systems Network Reports*. OTM22130, Table B – Selective Accident Rate Calculation. April.

California Department of Transportation. 2018b. Standard Specifications. Available: https://dot.ca.gov/-/media/dot-media/programs/design/documents/2018_stdspecs.pdf. Accessed August 7, 2019.

California Department of Transportation. 2019. *Administrative Draft Project Report to Authorize Public Release of the Draft Environmental Document*. July.

City of Folsom. 2018. *Folsom General Plan 2035*. Final Draft. May. Adopted by City Council August 28, 2018.

City of Rancho Cordova. 2006. *City of Rancho Cordova General Plan Draft Environmental Impact Report*. March.

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128.

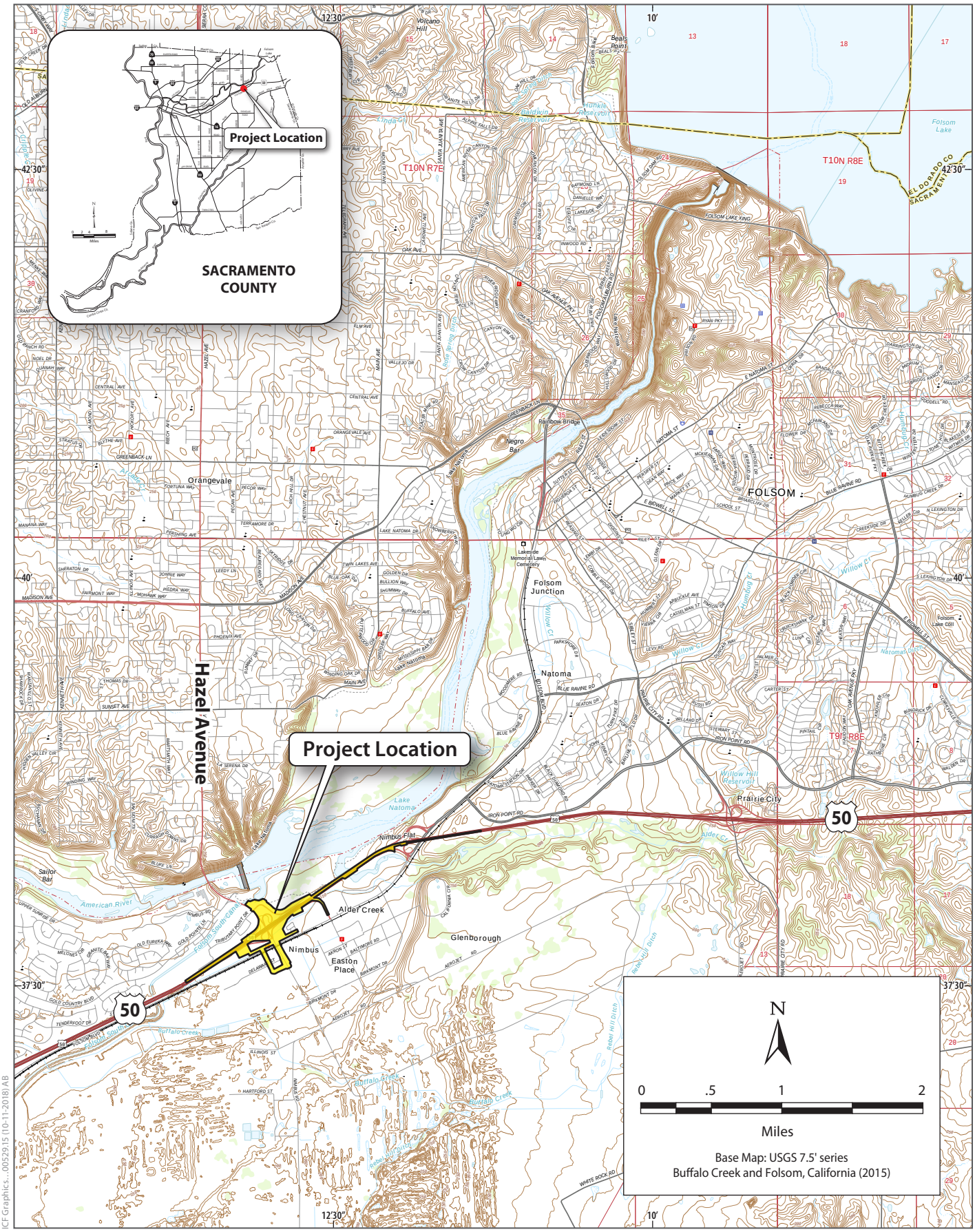
County of Sacramento. 2011. *General Plan of 2005-2030*. Community Planning & Development Department. Amended November 9.

DKS. 2011. Preliminary Traffic Operations Analysis. PSR on Improvements to Hazel Ave near US 50 Interchange. Memorandum. April 28.

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Sacramento, CA. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company.

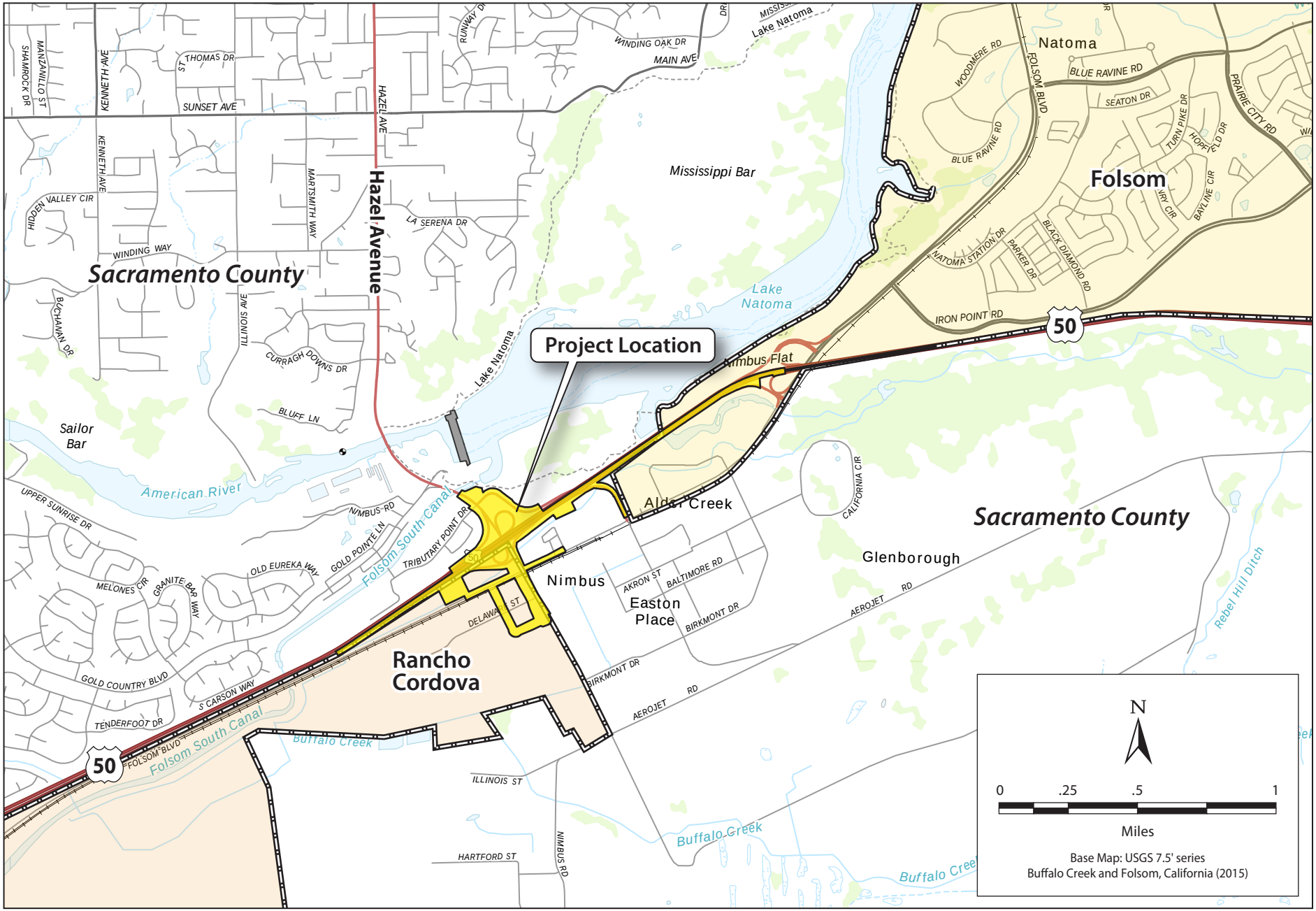
Mark Thomas & Company. 2011. Memorandum to John Jaeger, Sacramento County. *Hazel Ave/Rte 50 Interchange Improvements PSR– Peer Review Results.* March 30.

Parikh Consultants. 2013. Preliminary Geotechnical Report Hazel Avenue/US-50 Interchange Sacramento County, California 03-SAC-050 PM 15.4/16.9. January. Job No. 2011-135-PGR. Sacramento, CA. Prepared for Mark Thomas & Company, Folsom, CA.



ICF Graphics...0052915 (10-11-2018) AB

Figure 1-1
Project Vicinity



Graphics...00529115 (2/7/19) AB

Figure 1-2
Project Location



Figure 1-3
Alternative 1: L-9 Interchange with Viaduct Connector
U.S. 50/Hazel Avenue Interchange Project



Figure 1-4
Alternative 1a: L-9 Interchange with Undercrossing Connector
U.S. 50/Hazel Avenue Interchange Project



Figure 1-5
Alternative 2: Direct Flyover to Hazel Avenue with Connector
U.S. 50/Hazel Avenue Interchange Project

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the project-related impacts on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project; potential impacts from each of the alternatives; and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow.

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.

- **Coastal Zone.** There will be no effects to coastal resources because the project is not located within the coastal zone.
- **Wild and Scenic Rivers.** The American River (Lower), from the confluence with the Sacramento River to the Nimbus Dam, is a designated Wild and Scenic River. This segment of the American River is approximately 500 feet north of the project limits. Although it is close to the project site, the river itself, as well as views of the river and from the river would not be affected. Due to the local topography and distance, the project site and interchange are not visible from the American River.
- **Farmlands/Timberlands.** There is no farmland or timberland located within the study area; therefore, no farmland or timberland would be affected by the proposed project.
- **Environmental Justice.** Census tract level race/ethnicity and poverty data indicate that there do not appear to be environmental justice populations residing in the project area. Implementation of the build alternatives would improve the roadway for all users of the transportation system regardless of race ethnicity or income. Minor impacts associated with construction-period delays, noise and air quality would not be borne disproportionately by low-income and/or minority populations. Based on the above discussion and analysis, the build alternative will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898, *Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations*. No further environmental justice analysis is required.
- **National Marine Fisheries Service (NMFS) Jurisdiction.** This project is located outside of NMFS jurisdiction, therefore no effects on listed species regulated by NMFS are anticipated.

Human Environment

2.1 Land Use

This section is a summary of the analysis documented in the *Community Impact Assessment* (CIA) prepared for this project (California Department of Transportation 2017; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and describes major existing land uses, land use designations, parks and recreational facilities, development trends, and relevant land use plans and policies applicable to the project area. The study area for the CIA consisted of census tracts 87.03 and 87.05, which intersect with the proposed project.

2.1.1 Existing Land Uses and Development Trends

2.1.1.1 Existing Land Uses

According to the Sacramento County General Plan Land Use Designation map, the area surrounding the proposed project is designated as transit-oriented development, core area (the Folsom Auto Mall Area and Natoma Station), recreation, commercial and offices, natural preserve, and extensive and intensive industrial (Figure 2.1-1) (County of Sacramento 2013). The northern portion of the project area is within the Parkway Corridor Combining Zone (PC). The area north of US 50 and west of Hazel Avenue contains parcels zoned for Industrial-Office Park (MP), Light Commercial (LC), Multiple Family Residential 25 (RD-25), and Residential 10 (RD-10). The area south of US 50 and east of Hazel Avenue contains parcels zoned for General Commercial (GC), Light Industrial (M-1), Mobile Home Subdivision (RM-1), and Light Commercial (LC) (Figure 2.1-2) (County of Sacramento 2015). The area south of US 50 and east of Folsom Boulevard is within the Aerojet Special Planning Area. The land uses in the portion of the project in the city of Rancho Cordova are parks and open space, estate residential, commercial mixed-use, and office mixed-use (Figure 2.1-3) (City of Rancho Cordova 2006). The zoning consists of general commercial, light industrial, and heavy industrial areas (Figure 2.1-4) (City of Rancho Cordova 2014).

Northeast

The northeast portion of the study area (i.e., north of US 50 and east of Hazel Avenue) is land primarily designated for recreation and natural preserve uses, including the Natoma Sub-unit of the Folsom Lake Recreation Area (Lake Natoma), the American River, and the American River Parkway and Bike Trail. The American River flows west through this portion of the study area and contains bike trails on both river banks.

Northwest

The northwest quadrant of the study area contains commercial and office development, medium- and low-density residential development, and intensive industrial uses. Commercial uses along

US 50 and Hazel Avenue include gas stations, furniture stores, hotels, and fast food restaurants. This portion of the study area also contains recreation and natural preserve uses, including the Folsom South Canal and the continuation of the American River and the American River Parkway and Bike Trail.

Southeast

The southeast quadrant of the study area contains transit-oriented development with mixed use corridors, commercial and office development, medium- and low-density residential development, and both intensive and extensive industrial uses. The mixed use corridors along US 50 are composed of a recreational vehicle and mobile home park, apartment complexes, and restaurants. The southernmost portion of this quadrant is predominantly intensive industrial use and contains a hazardous waste transfer station.

Southwest

The southwest quadrant supports primarily intensive industrial. A small portion of the southwest quadrant in proximity to the Hazel Avenue/US 50 interchange contains commercial and office development (e.g., storage facility, hotel, and fire station) intermixed with restaurants (City of Rancho Cordova 2015). The approved Boroughs of Easton development is planned for the area south of US 50 between Hazel Avenue and Prairie City Road.

2.1.1.2 Development Trends

Both Sacramento County and the city of Rancho Cordova have experienced substantial amounts of growth in the past decade and are projected to have continued growth. Table 2.1-1 below shows the population projections for the region in the next 10 years.

Table 2.1-1. Regional Population Growth

Area	2015	2025	% Change
Sacramento County	1,481,803	1,639,613	10.7%
City of Rancho Cordova	70,968	169,081	138.3%

Source: California Department of Finance 2016, City of Rancho Cordova 2015.

The existing Hazel Avenue/US 50 interchange is in a largely built-out portion of Sacramento County. As stated in Section 2.1.1.1, *Existing Land Uses*, there are several planned developments within the study area, including the approved Boroughs of Easton development, which is planned for the area south of US 50 between Hazel Avenue and Prairie City Road. Other areas of planned development are identified in the Sacramento County General Plan and the SACOG MTP/SCS. The proposed project would accommodate this planned growth.

2.1.2 Consistency with State, Regional, and Local Plans and Programs

This section discusses the affected environment, environmental consequences, and avoidance, minimization, and mitigation measures for consistency with State, regional, and local plans that are applicable to the proposed project.

2.1.2.1 Affected Environment

Land use planning in the study area is governed by the Sacramento County General Plan of 2005–2030 (County of Sacramento 2013:20–23, 26), the City of Rancho Cordova General Plan (City of Rancho Cordova 2015:11, 21) and the SACOG 2016 MTP/SCS (Sacramento Area Council of Governments 2016:138, 140).

Sacramento County General Plan

The goals and policies in the 2030 General Plan will guide growth and development in the unincorporated portions of the county over the next 20 years. The General Plan Update of November 2011 focuses on economic growth, environmental sustainability, addressing needs of existing communities and accommodating future smart growth. Goals and policies that are directly relevant to the proposed project are discussed below in Section 2.1.2.2, *Environmental Consequences*.

Rancho Cordova General Plan

The City of Rancho Cordova adopted its General Plan in 2006. The Rancho Cordova General Plan covers land use and planning in the city, as well as the developed areas of Rosemont, Larchmont, and Gold River, and the undeveloped areas south of Jackson Highway and east of Grant Line Road. The vision of the General Plan is "Building a City" which includes becoming a vibrant destination in the region and making the city a desirable place to live, work, and play. The goals, policies, and actions from the Rancho Cordova General Plan that are directly relevant to the proposed project are discussed below in Section 2.1.2.2.

Sacramento Area Council of Governments Metropolitan Transportation Plan/Sustainable Communities Strategy

The SACOG 2016 MTP/SCS is a comprehensive vision that links air quality, transportation, and land use in the Sacramento region over the next 20 years. It covers Sacramento, Yolo, Yuba, Sutter, El Dorado and Placer Counties and the 22 cities within those counties (excluding the Tahoe Basin).

2.1.2.2 Environmental Consequences

This section discusses the project's consistency with State, regional, and local plans and programs. Land use planning in the study area is governed by the Sacramento County General Plan 2005–2030 (County of Sacramento 2013:20–23, 26), the Rancho Cordova General Plan (City of Rancho Cordova 2015:11, 21) and the SACOG MTP/SCS (Sacramento Area Council of Governments 2016:138, 140).

Sacramento County General Plan

The goals and policies in the Sacramento County General Plan that are directly relevant to the proposed project and the project's consistency with those goals and policies are discussed below.

> **Mobility 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.
>
> > **Policy 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.

All build alternatives entail major improvements to the existing Hazel Avenue/US 50 interchange. The purpose and need of the project is to reduce congestion, improve traffic operations, accommodate travel demand due to planned and approved developments, and improve safety of all modes of travel including bicycles and pedestrians. The project is consistent with this goal and associated policy.

The No Build Alternative would not improve the interchange, congestion would continue to increase and traffic operations would not be improved. Therefore, the No Build Alternative would not be consistent with this goal and associated policy.

> **Roadway Goal:** Provide a balanced and integrated roadway system that maximizes the mobility of people and goods in a safe and efficient manner.
>
> > **Policy CI-8.** Maintain and rehabilitate the roadway system to maximize safety, mobility, and cost efficiency.
> >
> > **Policy CI-9.** Plan and design the roadway system in a manner that meets the Level of Service (LOS) D on rural roadways and LOS E on urban roadways, unless it is infeasible to implement project alternatives or mitigation measures that would achieve LOS D on rural roadways or LOS E on urban roadways. The urban areas are those within the Urban Service Boundary as shown in the Land Use Element of the Sacramento County General Plan. The areas outside the Urban Service Boundary are considered rural.
> >
> > **Policy CI-17**. Ensure that transportation infrastructure improvement projects initiated by the County include a comprehensive public outreach process and involves affected local stakeholders and communities in the beginning and throughout the planning and development process for the project.
> >
> > **Policy CI-18**. The County shall plan and prioritize the implementation of intersection improvements, where feasible, in corridors identified as congested.

As stated above, all build alternatives would reduce congestion and improve traffic operations. Safety in the study area would be improved for motorists, bicyclists, and pedestrians, which would contribute to the Roadways Goal and associated policies regarding maximizing mobility and improving congestion. Regarding public outreach, the Notice of Preparation (NOP) comment period began on February 1, 2016. A public scoping meeting was held on March 3, 2016. The meeting was attended by a total of 26 people, including members of the project development team, local agencies, and other interested parties. A public meeting will also be

held during the public circulation portion of the environmental document. Therefore, the project is consistent with this goal and associated policies.

The No Build Alternative would not maintain or rehabilitate the roadway system or maximize mobility. Congestion would continue to increase and traffic operations would not be improved. Therefore, the No Build Alternative would not be consistent with this goal and associated policies.

> **Bike and Pedestrian Facilities Goal:** Provide safe, continuous, efficient, integrated, and accessible bicycle and pedestrian systems that encourages the use of the bicycle and walking as a viable transportation mode and as a form of recreation and exercise.
>
> > **Policy CI-38.** Design and construct pedestrian facilities to ensure that such facilities are accessible to all users.

All build alternatives are designed to improve bicycle and pedestrian facilities, including the installation of sidewalks, street lighting, and landscaping. In addition, all build alternatives would include the creation of a new Class 1 bicycle/pedestrian route between Folsom Boulevard and the Jedediah Smith Memorial Trail. The project is consistent with the Bike and Pedestrian Facilities goal and Policy CI-38, because it contributes to the overall goal of improving safety and accessibility for all users.

The No Build Alternative would not affect existing bike and pedestrian facilities, and would be consistent with this goal and associated policy.

Rancho Cordova General Plan

The goals, policies, and actions from the Rancho Cordova General Plan that are directly relevant to the proposed project are listed below.

> **Goal C.1:** Develop a roadway system that accommodates future land uses at the City's desired level of service, provides multiple options for travel routes, protects residential areas from excessive traffic, coexists with other travel modes, and contributes to the quality of the City's residential, commercial, office, and industrial areas.
>
> > **Policy C.1.2.** Seek to maintain operations on all roadways and intersections at Level of Service D or better at all times, including peak travel times, unless maintaining this Level of Service would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. Congestion in excess of LOS D may be accepted in these cases, provided that provisions are made to improve traffic flow and/or promote non-vehicular transportation as part of a development project or a City-initiated project.
> >
> > **Policy C.1.11.** As part of major individual roadway enhancement projects (e.g., intersection redesign, signalization of a previously un-signalized intersection), enhance and upgrade pedestrian and bicycle facilities within one-quarter mile of the project.

Goal ISF.2: Ensure the development of quality infrastructure to meet community needs at the time they are needed.

Policy ISF.2.1. Ensure the development of public infrastructure that meets the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.

Action ISF.2.1.1. Except when prohibited by state law, require sufficient capacity in all public facilities to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.

As stated in the project description, the approved developments in and near the project area are projected to increase traffic demand beyond what the existing Hazel Avenue/US 50 interchange can accommodate, and would degrade the interchange to unacceptable LOS. The purpose and need for the proposed project is to reduce forecasted congestion by increasing capacity at the interchange. All build alternatives would include improvement of bicycle and pedestrian facilities, including the installation of sidewalks, street lighting, and landscaping, in the study area. Therefore, the project is consistent with the Rancho Cordova General Plan goals, policies, and actions listed above.

The No Build Alternative would not improve the interchange, congestion would continue to increase and traffic operations would not be improved. Therefore, the No Build Alternative would not be consistent with the goals, policies, and actions listed above.

Sacramento Area Council of Governments Metropolitan Transportation Plan/Sustainable Communities Strategy

The policies and strategies from SACOG 2016 MTP/SCS that are directly relevant to the proposed project are listed below.

Policy 27: Support road, transit, and bridge expansion investments that are supportive of MTP/SCS land use patterns.

Strategy 27.1. Focus on ensuring transit and the arterial system perform well for the increased number of local trips, to support infill and compact development from smarter land uses without pushing growth outward because of overly congested conditions, and on providing a strong grid network (which offers alternative routes) wherever land uses allow.

Policy 30: SACOG also gives primary priority to selective road expansion, to support infill development and forestall midday congestion, when adequate funding for lifecycle maintenance costs are available.

Strategy 30.1. Pursue strategic road expansion that reduces congestion and supports effective transit services, walking and bicycling.

The proposed project is listed in SACOG's 2017/2020 MTIP as SAC24255 (Sacramento Area Council of Governments 2016:45 in Appendix 4). The MTIP is a Federally required listing of regionally significant transportation projects and is updated by SACOG every 2 years. All projects in the MTIP must be consistent with the long range regional transportation plan, which for SACOG is the MTP/SCS. As stated above, the proposed project would reduce congestion, improve overall traffic operations, and improve safety and increase accessibly for all modes of transportation. Therefore, the project is consistent with SACOG MTP/SCS policies and strategies listed above.

The No Build Alternative would not improve the interchange, as described in the adopted transportation plans, and would therefore be inconsistent with those plans.

2.1.2.3 Avoidance, Minimization, and Mitigation Measures

No avoidance, minimization, and mitigation measures are necessary.

2.1.3 Parks and Recreational Facilities

2.1.3.1 Affected Environment

The northeast quadrant of the study area includes Lake Natoma, which is managed by the California Department of Parks and Recreation (California State Parks) under an agreement with the U.S. Bureau of Reclamation. This area contains open space, jogging and bicycle trails, and lake access.

The Jedediah Smith Memorial Trail, also known as the American River Bike Trail, is located in the American River Parkway. The trail starts in Discovery Park near the confluence of the Sacramento and American Rivers in downtown Sacramento and continues upstream for 23 miles to Beals Point on Folsom Lake. In 1974, the Jedediah Smith Memorial Trail was designated as a National Recreational Trail by the U.S. Department of the Interior (National Recreation Trails 2011). In the study area, the bike trail passes through the Lake Natoma recreational area, parallel to US 50. The bike trail crosses under the Hazel Avenue bridge on the left bank of the American River.

The Sacramento State Aquatic Center is in the Lake Natoma recreation area, just east of Hazel Avenue. Recreational activities such as swimming and boating, as well as paddleboard and canoe rentals, are provided year-round. The Nimbus Fish Hatchery is just west of Hazel Avenue, where year-round educational opportunities are provided.

Parks and recreational areas are shown in Figure 2.1-5. The fish hatchery is under the jurisdiction of the U.S. Bureau of Reclamation. Both Lake Natoma and the American River Parkway, and the recreational features they contain, are protected by the provisions of the Public Park Preservation Act of 1971 and Section 4(f) of the Department of Transportation Act of 1966.

2.1.3.2 Environmental Consequences

Build Alternatives

Alternatives 1 and 1A would entail construction within 50 feet of the Jedediah Smith Memorial Trail. Alternative 2 would entail construction slightly further from the trail, approximately 150 feet. None of the project build alternatives would require temporary detours or other changes to the trail; access to the trail would be maintained during the construction period. The portion of the trail in the study area is alongside US 50 and Hazel Avenue, which are both busy transportation corridors.

A small Caltrans park-and-ride lot near Lake Natoma just north of the US 50/Hazel Avenue westbound off-ramp would be reconfigured under all of the project build alternatives. The lot is intended for commuter parking only, however, California State Parks has observed recreational users parking in the lot particularly during the weekends. It is anticipated that during the construction period adequate parking would remain at the Sacramento State Aquatic Center and along the segment of the bike trail that is just east of the aquatic center. Temporary construction activities would not affect recreational opportunities at the American River Parkway, Lake Natoma, or the Jedediah Smith Memorial Trail. Access to the recreation facilities within Lake Natoma would not change.

California State Parks expressed a need to prevent unauthorized placement of construction equipment or staging outside of predetermined areas of the project. Unauthorized placement of equipment or staging within park facilities could result in an adverse effect.

During the construction period, recreationists traveling to the Lake Natoma on US 50 or Hazel Avenue could experience short-term, intermittent delays or traffic detours over a period of 24 months, depending on the sequence of construction activities. Lane closures would be required and are proposed during non-peak traffic hours. Weekend and night work would be required for the widening of the Hazel Avenue overcrossing of US 50 (for Alternatives 1 and 1A), during conditions where traffic is detoured, when lanes on US 50 need to be closed, during ramp realignment construction, and when work needs to take place in front of commercial businesses. Folsom Boulevard and the US 50/Folsom Boulevard interchange would provide opportunities for detours when ramp closures are required. Temporary construction-related traffic delays could affect access to recreational areas. A project-specific TMP, as described in more detail in Chapter 1, *Proposed Project,* would be developed and implemented before and during construction to ensure that access is maintained and the project does not cause adverse effects related to access to the recreational facilities in the area. The TMP would include public information in multiple media; motorist information using radio announcements, traveler information systems, and signage; construction scheduling coordination; and other strategies as appropriate to the scale and scope of the project.

No property acquisition from recreational facilities would occur. The project would also not result in a use of recreational resources protected by the provisions of Section 4(f). Appendix A contains an evaluation of recreational resources relative to the requirements of Section 4(f).

No Build Alternative

The No Build Alternative would result in no modifications to the existing interchange and no impacts on land use would occur.

2.1.3.3 Avoidance, Minimization, and Mitigation Measures

No mitigation measures are necessary. Access to the surrounding parks and recreational areas would be maintained during construction. The following avoidance measure would also be implemented.

Prevent Unauthorized Use of State Parks Land

Construction-related staging, equipment, and worker parking will be kept within the approved project limits. The project boundary adjacent to State Parks Land will be delineated with Environmentally Sensitive Area fencing or other visible means. No unauthorized use of State Parks land will be allowed.

2.1.4 References Cited

California Department of Finance. 2016. Report E-1 Population estimates for Cities, Counties, and the State. January 2016. Available: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/. Accessed: September 2, 2016.

California Department of Transportation. 2017. *Hazel Avenue/U.S. Route 50 Interchange Project Community Impact Assessment*. *City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

City of Rancho Cordova. 2006. Rancho Cordova General Plan Land Use Policy Map. Adopted June 2006. Available: http://www.cityofranchocordova.org/home/showdocument?id=715. Accessed: June 1, 2016.

City of Rancho Cordova. 2014. Rancho Cordova Zoning and Future Land Map. December 2014. Available: http://www.cityofranchocordova.org/home/showdocument?id=10453. Accessed: June 1, 2016.

City of Rancho Cordova. 2015. Rancho Cordova General Plan. Available: http://www.cityofranchocordova.org/i-want-to-/learn-about/generalplan. Accessed: March 30, 2015.

County of Sacramento. 2013. General Plan Land Use Diagram. November 2011. Updated November 2013. Available: http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx. Accessed: June 1, 2016.

County of Sacramento. 2015. Online Map. Available: http://generalmap.gis.saccounty.net/JSViewer/county_portal.html. Accessed: June 1, 2016.

National Recreation Trails. 2011. Jedediah Smith. National Recreation Trails Database. Last updated: June 8, 2011. Available: http://www.americantrails.org/NRTDatabase/index/html. Accessed: December 18, 2014.

National Wild and Scenic Rivers System. n.d. *American River (Lower), California*. Last Revised: N.d. Available: https://www.rivers.gov/rivers/american-lower.php Accessed: March 6, 2017.

Sacramento Area Council of Governments. 2016. 2017/20 Metropolitan Transportation Improvement Program. Adopted September 15, 2016. Available: https://www.sacog.org/current-2017-20-mtip. Accessed: October 14, 2018.

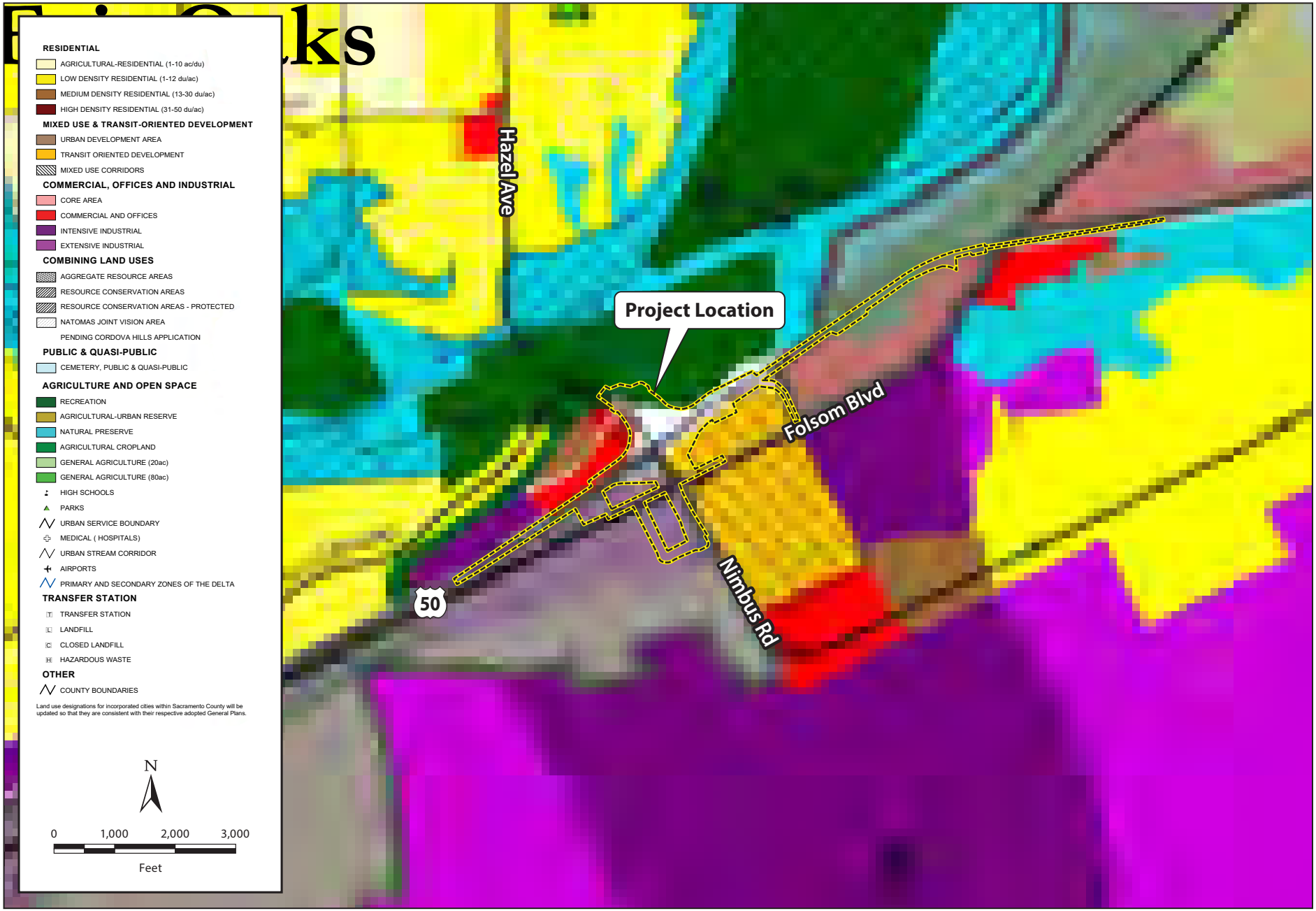
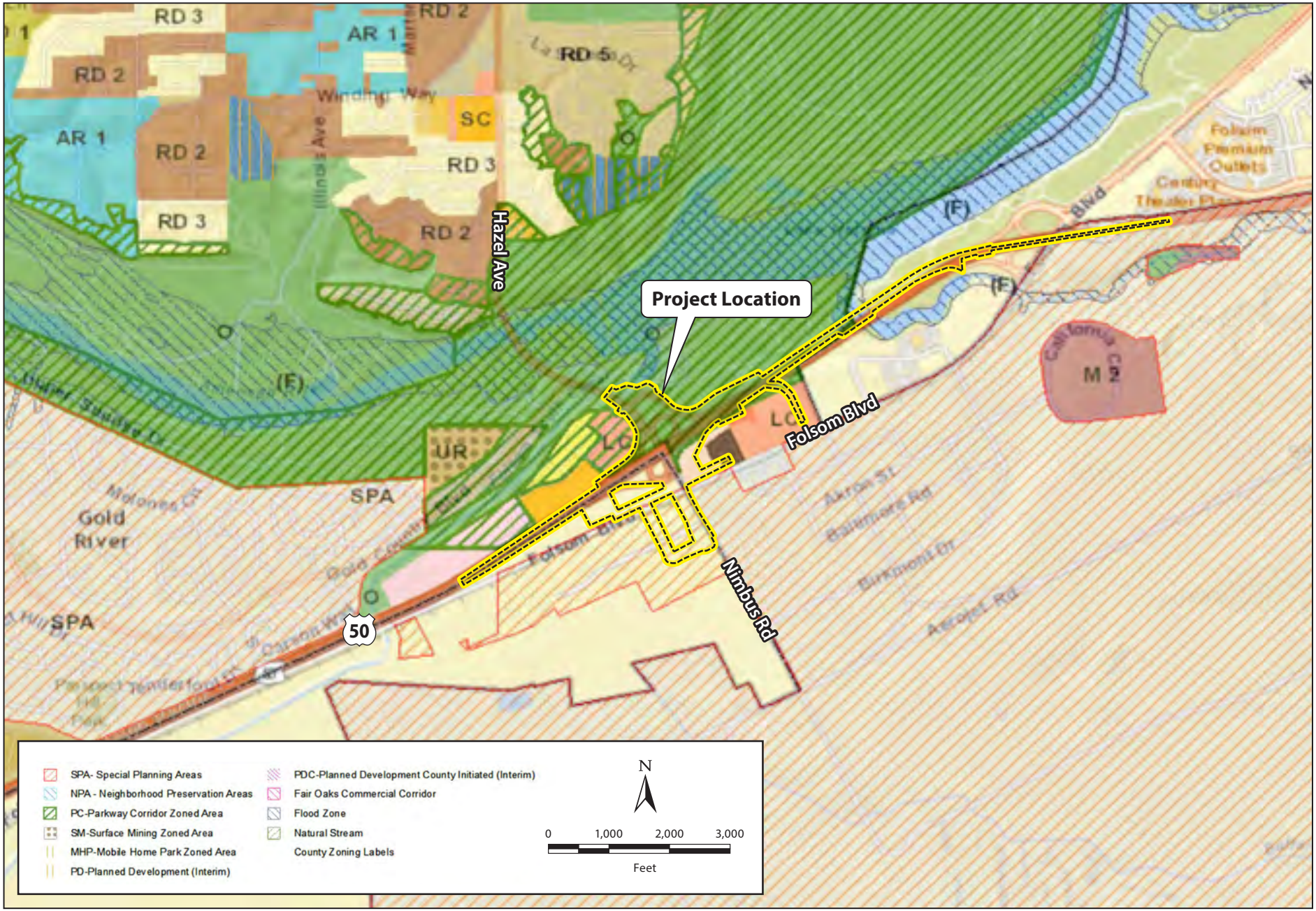


Figure 2.1-1
County of Sacramento General Plan Land Use



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Figure 2.1-2
County of Sacramento Zoning

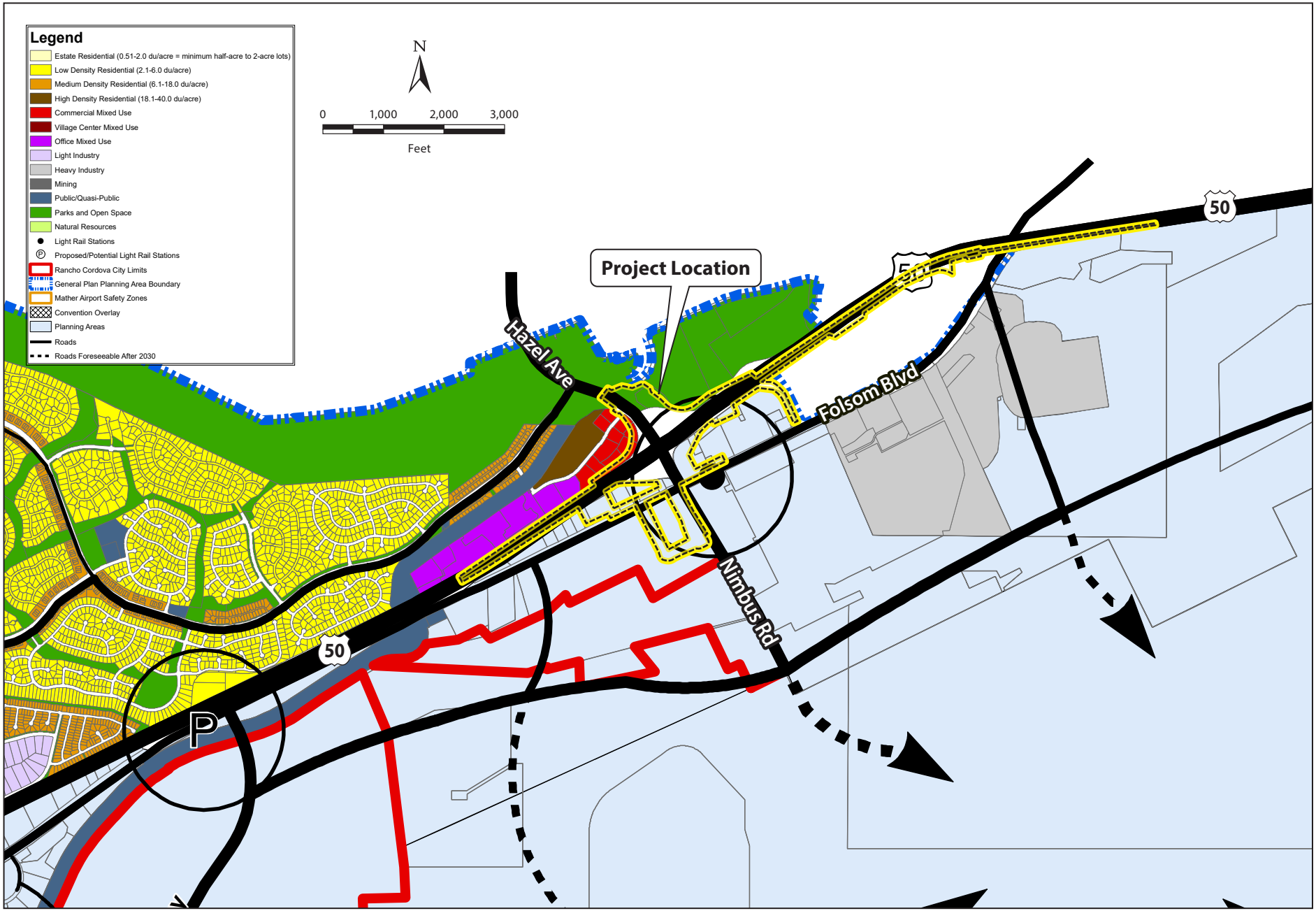


Figure 2.1-3
City of Rancho Cordova General Plan Land Use

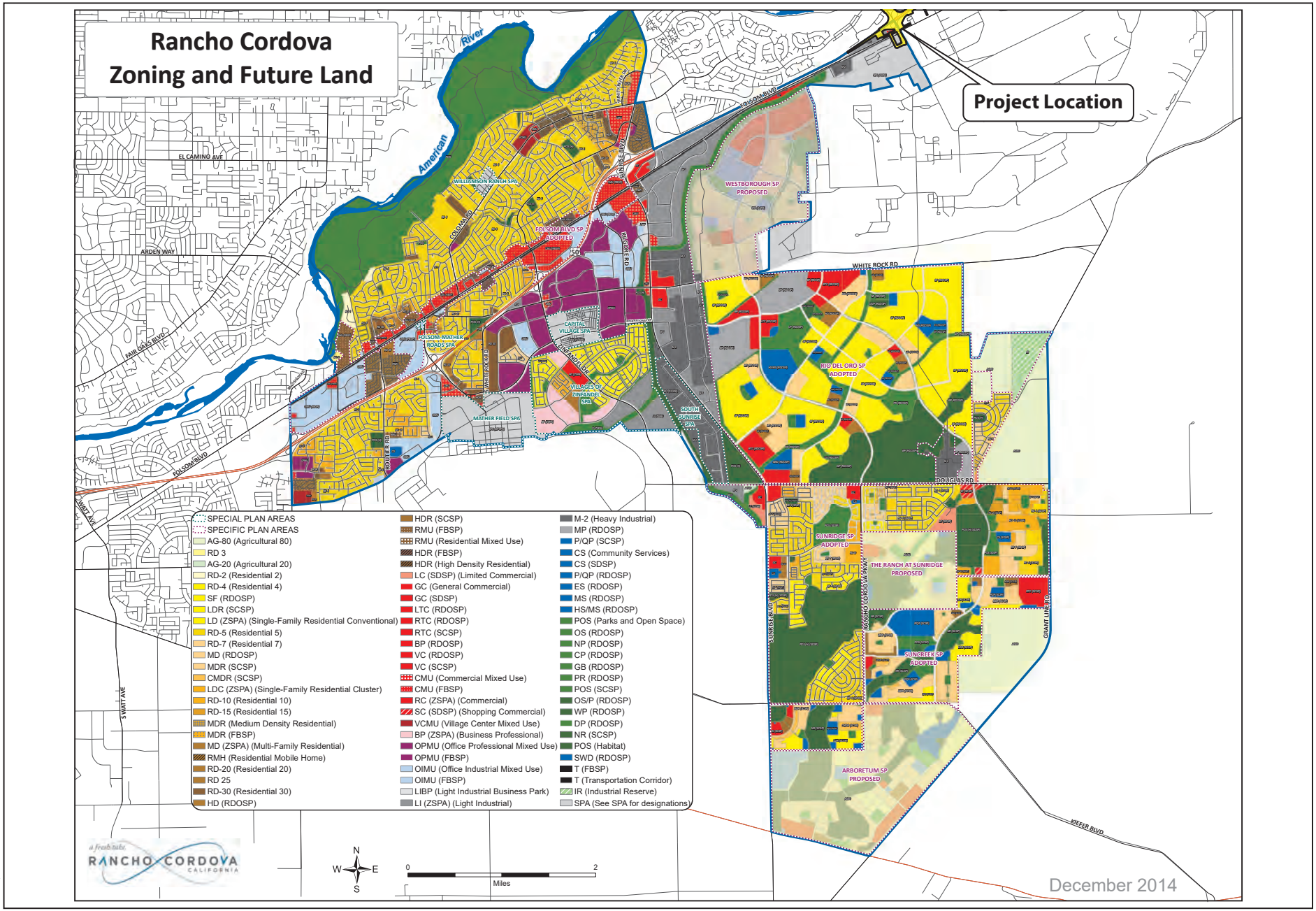
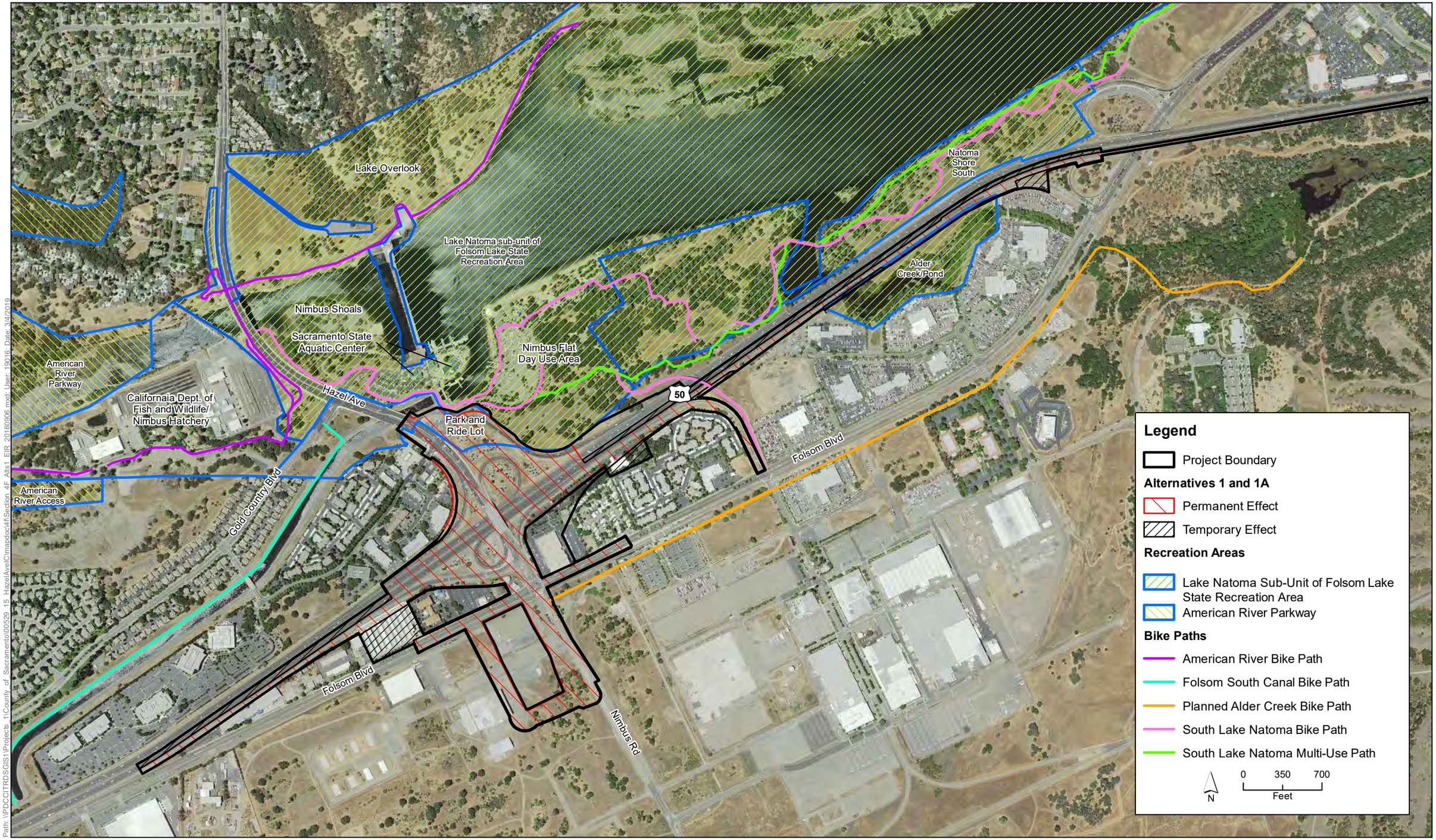
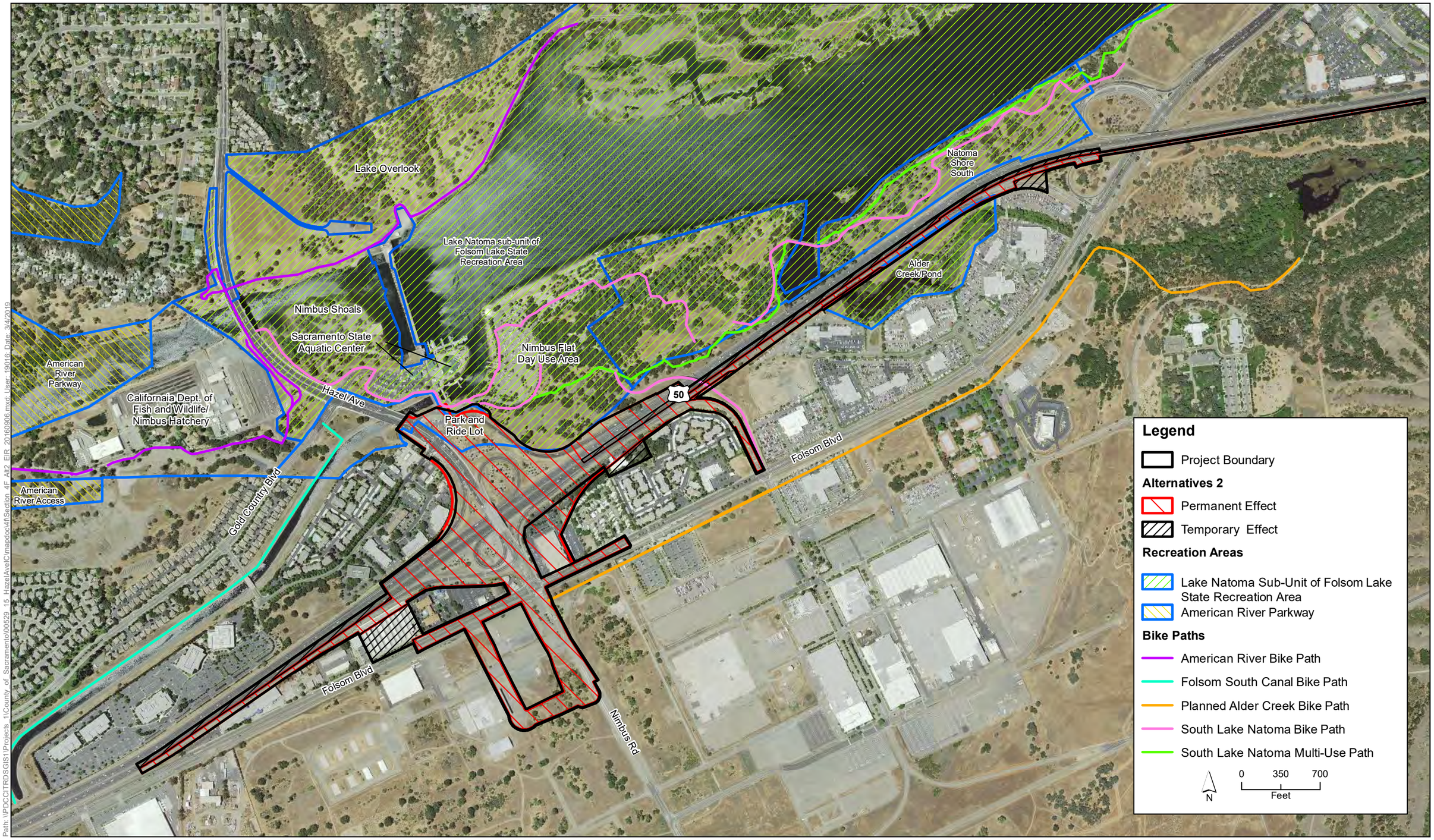


Figure 2.1-4
City of Rancho Cordova Zoning



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Figure 2.1-5a
Parks and Recreation Facilities
Hazel Avenue/U.S. 50 Interchange Project



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Figure 2.1-5b
Parks and Recreation Facilities
Hazel Avenue/U.S. 50 Interchange Project

2.2 Growth

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with NEPA of 1969, require evaluation of the potential environmental effects of all proposed Federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the near future. The CEQ regulations (40 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 analysis of a project's potential to induce growth. The State 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…"

2.2.2 Affected Environment

Both Sacramento County and the city of Rancho Cordova have experienced substantial amounts of growth in the past decade and are projected to have continued growth. Table 2.1-1, in Section 2.1.1.2, *Development Trends*, shows the population projections for the region in the next 10 years.

2.2.3 Environmental Consequences

2.2.3.1 Build Alternatives

The analysis of growth-related indirect impacts follows the first-cut screening guidelines provided in Caltrans' *Guidelines for Preparers of Growth-Related Indirect Impact Analysis* (California Department of Transportation 2006:5-1–5-10). The first-cut screening analysis focused on addressing the following questions:

- How, if at all, does the project potentially change accessibility?

Implementing the proposed project entails modifying the existing Hazel Avenue/US 50 interchange. Currently, the interchange experiences high levels of congestion. In addition, future approved projects such as the Easton Place development will continue to increase traffic projections beyond capacity. The close spacing between the Folsom Boulevard and eastbound ramp intersections do not provide sufficient queuing for increased traffic volumes.

All build alternatives would result in minor changes to accessibility, including changes in employment. All build alternatives include demolition of the Chevron gas station and Cattlemens

restaurant, and therefore would change travel behavior related to those business. Construction of Alternative 2 would also result in the demolition of the remaining structures on the Nimbus Winery property, which contains several retail businesses. This would reduce travel trips to the project area and would potentially result in trips elsewhere if local residents drive to a different restaurant or utilize other businesses in lieu of the businesses located on the Nimbus Winery property. However, these changes in travel behavior would be minor and changes to travel times and cost are not anticipated There are various restaurants, stores, and entertainment venues located in Folsom, Orangevale and Rancho Cordova and it is anticipated that travel trips would be dispersed to other locations and would not create any noticeable patterns or changes.

The project would improve existing and future traffic operations overall. During the construction period, motorists may experience delays during periods of active construction that would require temporary lane closures. However, lane closures would be temporary, and implementation of the project's TMP would ensure that access to adjacent properties would be provided during construction and that delays would be minimized as much as possible. Once construction is complete, improved access throughout the project area would benefit the existing and future residents of the surrounding areas, including Folsom, Orangevale, and Rancho Cordova.

- How, if at all, do the project type, project location, and growth-pressure potentially influence growth?

The proposed type of project, intersection improvements, would provide portions of the transportation infrastructure needs for already planned and approved developments identified by the adopted Sacramento County General Plan and SACOG's MTP/SCS. The existing Hazel Avenue/US 50 interchange is in a largely built-out portion of Sacramento County. Other areas of planned development are identified in the Sacramento County General Plan and the SACOG MTP/SCS. As described in Section 2.1 *Land Use*, the current land use designations and zoning in the project area are varied and include commercial, industrial, residential, and open space (Figures 2.1.-2 and 2.1-3). While commercial land uses in the immediate vicinity of the interchange would become transportation uses, overall land use and development patterns in the project area would not change as a result of construction of any of the build alternatives.

The extent to which the proposed intersection improvement project would induce growth in the project area or modify growth pressures depends largely on the strength of local planning and growth management mechanisms, including adhering to adopted growth boundaries, maintaining existing zoning restrictions and land use designations, and implementing farmland and floodplain protection policies. In this case, there appears to be a strong, integrated structure that discourages premature and unplanned growth in the project area. The County of Sacramento and the Cities of Rancho Cordova and Folsom have provided land use designations to guide future growth in the project area; new development must adhere to these land use designations, per the rules and regulations of the relevant entities. Adherence to these restrictions reduces pressure for unplanned development by making adequate quantities of land available for development in locations that best serve the policy goals of the relevant cities. Further, the proposed project is consistent with required mitigation for the Easton Project. The Easton Project mitigation includes reconstruction of the Hazel Avenue/US 50 interchange as well as grade separation of Hazel Avenue over Folsom Boulevard and the light rail tracks. Implementation of the mitigation identified in the Easton Project Final EIR (County of Sacramento 2008) is required in order to

accommodate the increases in traffic volumes that will be associated with the Easton Project development.

Given the coordinated growth control mechanisms in place, the project is unlikely to encourage unplanned development in the project area, or to shift or hasten planned growth along the US 50 corridor.

- To what extent is project-related growth "reasonably foreseeable" and would resources of concern be affected by this growth or land use change?

As described above, project-related growth is not reasonably foreseeable and resources of concern would not be affected by the proposed land use changes. Although the proposed project would increase the efficiency of the Hazel Avenue/US 50 interchange, it would serve existing and planned future growth, including the Easton Project. The project is located in a suburban area of Sacramento County. As detailed in Caltrans' *Guidelines for Preparers of Growth-Related Indirect Impact Analysis*, transportation projects in suburban areas could cause growth-related impacts because of a greater presence of open space/vacant land (California Department of Transportation 2006:5, 6). Presently, the land in the project area consists of a mix of uses, including residential, commercial, industrial, and open space. The project area is largely built out. As stated previously, growth is expected and planned for in the surrounding region, independent of the proposed project. The population of Sacramento County is growing and is expected to continue to grow rapidly. This growth would not be attributable to, or otherwise influenced by, the proposed project.

Based on the above first-cut screening analysis, no additional analysis related to growth is required.

2.2.3.2 No Build Alternative

The No Build Alternative would result in no modifications to the existing interchange. Planned future growth in the region is anticipated with or without the project.

2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.2.5 References Cited

California Department of Finance. 2016. Report E-1 Population Estimates for Cities, Counties, and the State. January 2016. Available: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/ Accessed: September 2, 2016.

California Department of Transportation. 2006. *Guidance for Preparers of Growth-Related Indirect Impact Analysis.* May. Sacramento, CA. Available: http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm

City of Rancho Cordova. 2015. Rancho Cordova General Plan. Available: http://www.cityofranchocordova.org/i-want-to-/learn-about/general-plan Accessed: March 30, 2015.

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128.

2.3 Community Impacts

2.3.1 Community Character and Cohesion

2.3.1.1 Regulatory Setting

NEPA of 1969, 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 United States Code [USC] 4331[b][2]). The FHWA in its implementation of NEPA (23 CFR 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. Because this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.3.1.2 Affected Environment

This section is based on the *Community Impact Assessment* (California Department of Transportation 2017; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the proposed project.

Regional Population Characteristics

The proposed project is in Sacramento County and the city of Rancho Cordova. Table 2.3-1 shows the population of the county, the census tracts (Figure 2.3-1) that intersect the project footprint, and the populated block groups that intersect with the project footprint. According to the 2010–2014 American Community survey, non-Hispanic White is the largest racial/ethnic group in the study area, and represents about 72% of the population. The Asian population makes up the next largest group, accounting for 12.7% of the population, and Hispanic/Latinos of any race make up the third largest group, accounting for approximately 11.7% of the population.

Table 2.3-1. Race and Ethnicity Data (2010–2014)

Area	Total	Hispanic or Latino (of any race)	%	Not Hispanic or Latino													
				White	%	Black or African American	%	Native American	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Other Race	%	Two or More Races	%
Sacramento County	1,450,277	319,934	22.06	865,905	59.71	46,236	3.19	12,376	0.85	21,4861	14.82	14,533	1.00	101,936	7.03	94,430	6.51
Census Tract 87.03	4,947	278	5.62	3,266	66.02	191	3.86	0	0.00	1,270	25.67	0	0.00	0	0.00	220	4.45
Census Tract 87.05	5,826	998	17.13	3,055	52.44	299	5.13	0	0.00	1,508	25.88	150	2.57	243	4.17	571	9.80
*Study Area**	426	50	11.7	307	72.07	23	5.40	6	1.41	54	12.68	3	0.70	12	2.82	21	4.93
Block 3019	359	42	11.7	254	70.75	22	6.13	4	1.11	53	14.76	3	0.84	7	1.95	16	4.46
Block 3030	24	2	8.3	20	83.33	1	4.17	0	0.00	0	0.00	0	0.00	0	0.00	3	12.50
Block 3033	15	6	40.0	10	66.67	0	0.00	0	0.00	0	0.00	0	0.00	5	33.33	0	0.00
Block 3034	12	0	0	8	66.67	0	0.00	2	16.67	0	0.00	0	0.00	0	0.00	2	16.67
Block 3035	15	0	0	15	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Block 3044	1	0	0	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00

Source: U.S. Census Bureau, 2010–2014 American Community Survey, 5-Year Estimates Table DP5.

Neighborhoods/Communities

Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood; a level of commitment of the residents to the community; or a strong attachment to neighbors, groups, or institutions – usually because of continued association over time (California Department of Transportation 2011). Communities often are delineated by physical barriers such as major roadways or large open space areas.

Cohesive communities are indicated by specific social characteristics such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when the projects act as physical barriers or are perceived by residents as psychological barriers. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood.

US 50 and Hazel Avenue divide the project area into four quadrants (Northeast, Northwest, Southeast, and Southwest as described in Section 2.1, *Land Use*), and traveling across US 50 and Hazel Avenue between these areas is not easily achieved. There is also a division of open space, commercial development, industrial areas, and residential development in each of the four quadrants in the study area. The open space areas of the Nimbus Flat Recreation Area and American River Parkway are regional recreational destinations. The commercial developments serve primarily a regional (i.e., not local) clientele, and each sub area within the study area is divided into retail outlets populated with mostly non-local shoppers and local residents within their neighborhoods.

The affected roadways in the study area, including Hazel Avenue, serve as a primary transportation route for commuters and patrons of the local businesses and shopping areas.

2.3.1.3 Environmental Consequences

Build Alternatives

Regional Population Characteristics

All build alternatives would involve the improvement of the Hazel Avenue/US 50 interchange. As discussed in Section 2.2, *Growth*, Alternatives 1, 1A, and 2 would not induce unplanned growth. In addition, no build alternatives would remove housing, so no displacement would occur. Therefore, the build alternatives would not contribute to changes in the demographic characteristics of the region and study area.

Neighborhoods/Communities/Community Character

All build alternatives entail modifying an existing interchange and would not change the community character of the area or further divide an existing community. Although transportation improvements are generally capable of having urbanizing effects in an area, the extent of the project improvements would serve to improve the existing interchange and serve

planned future growth. Land use and zoning designations in the immediate and surrounding areas would not change as a result of the project.

In addition to providing sufficient traffic capacity, all build alternatives are intended to enhance the safety of all modes of travel. The project would include safety lighting and a new signalized intersection. Existing bike and pedestrian access would be maintained, and an additional new dedicated bike path would be constructed off Hazel Avenue. This new path would loop off Hazel Avenue and travel under Tributary Point Drive. Motorists currently make right turns from the US 50 southbound off-ramp onto Hazel Avenue. A dedicated bike path that avoids the freeway off-ramp would greatly enhance bicyclist safety.

All build alternatives would improve an existing interchange and provide benefits to the community such as improved traffic operations, enhanced safety, and new bicycle and pedestrian facilities, which would be experienced by both local and regional residents. Although the project would include access and travel benefits to the community, it would also involve demolition of several structures that could change community character for some users. All of the proposed build alternatives would include demolition of the Chevron gas station and Cattlemens restaurant. Construction of Alternative 2 would also result in the demolition of the remaining structures on the Nimbus Winery property, including businesses that have served the community for many years. Demolishing these structures, particularly the Nimbus Winery, would change the visible setting. While some of these businesses have been in the community for many years, the project would not divide the existing, established community, and overall land use patterns would not change.

During the construction period, roadways would remain open with unrestricted travel during hours of non-construction activities. Travelers may experience delays during periods of active construction that would require temporary lane closures. These delays could discourage some travelers from using these access routes, but lane closures would be temporary, and implementation of the project's TMP would ensure that access to adjacent properties would be provided during construction and that delays would be minimized as much as possible.

Overall, the project would improve existing roadways under all alternatives. None of the alternatives would significantly alter the divisions already existing in the community or that could further divide existing communities. No adverse effects to neighborhoods or community character would occur.

No Build Alternative

The No Build Alternative would result in no modifications to the existing interchange and no impacts to community character and cohesion would occur.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are required. A project-specific TMP, as described in more detail in Chapter 1, *Proposed Project,* would be developed and implemented before and during construction. The TMP would follow Caltrans' *Transportation Management Plan Guidelines* (California Department of Transportation 2015) and would include public information in

multiple media; motorist information using radio announcements, traveler information systems, and signage; construction scheduling coordination; and other strategies as appropriate to the scale and scope of the project. In addition, Caltrans Standard Specifications Section 12, a part of all construction contracts, provides instructions on traffic control systems and devices to maintain traffic during construction.

2.3.2 Relocations and Real Property Acquisition

2.3.2.1 Regulatory Setting

Caltrans' Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 CFR Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix C, *Summary of Relocation Benefits*, for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d et seq.). Please see Appendix B, *Title VI Policy Statement*, for a copy of Caltrans' Title VI Policy Statement.

2.3.2.2 Affected Environment

ROW acquisitions would occur under all of the project build alternatives. Under Alternatives 1 and 1A, ROW acquisition is anticipated from parcels in the southwest quadrant of the interchange. It is anticipated that 16 parcels would be permanently affected by the improvements and would require permanent utility or maintenance easements and ROW acquisition, including full acquisition and demolition of structures at the Chevron gas station. Acquisitions and building impacts would occur at Cattlemens restaurant and Sentry Storage. A temporary construction easement (TCE) would be required on two parcels. For Alternative 1, the viaduct structure for the connection to Aerojet Road is proposed to cross over the northern portion of the Nimbus Winery parking lot on an aerial easement in two parcels. The aerial easement would allow parking below the structure and would minimize impacts on the adjacent businesses.

Under Alternative 2, ROW would also be acquired from parcels in the southwest quadrant of the interchange. An estimated 15 parcels would be permanently affected by the improvements and would require ROW acquisition including full acquisition and demolition of structures at the Chevron gas station, Cattlemens restaurant and the Nimbus Winery property. TCEs would be needed on the same two parcels as for Alternatives 1 and 1A. Excess land on three parcels would also be acquired. Tables 2.3-2 through 2.3-4 compare the ROW acquisitions by alternative.

Table 2.3-2. Right-of-Way Acquisitions (square feet) for Alternative 1

Parcel	Size[a]	ROW	Easement	Aerial Easement	Temporary Construction Easement
069-0160-005	43,560		1,806		
069-0160-006	43,560	666	1,678		
069-0160-007	43,560	2,599	1,510		
069-0160-008	46,530	3,875	1,389		
069-0160-015	17,240	12,404	5,148		
069-0160-019	89,298	1,990	2,438		
069-0160-020	41,135		236		
069-0160-014	95,832	4,854	3,186		
069-0160-011	27,015	5,973	1,407		
069-0160-012	22,514	22,514 (full)			
069-0050-013	241,322	5,407	5,260	15,466	
069-0050-014	104,108	17,363	4,150	8,550	
069-0060-085	69,696	69,696 (full)			
069-0060-107	640,332	572	1,405		
072-0231-125	3,382,434	272,741	75,128		409
072-0231-079	1,327,273	21,733	13,352		
069-0047-087	2,705,512				4,763

ROW = permanent right-of-way acquisition
Easement =permanent utility and/or maintenance area
TCE = temporary construction easement
Aerial Easement = required for viaduct structure

Table 2.3-3. Right-of-Way Acquisitions (square feet) for Alternative 1A

Parcel	Size	ROW	Easement	Temporary Construction Easement
069-0160-005	43,560		1,806	
069-0160-006	43,560	666	1,678	
069-0160-007	43,560	2,599	1,510	
069-0160-008	46,530	3,875	1,389	
069-0160-015	17,240	12,404	5,148	
069-0160-019	89,298	1,990	2,438	
069-0160-020	41,135		236	
069-0160-014	95,832	4,854	3,186	
069-0160-011	27,015	5,973	1,407	
069-0160-012	22,514	22,514 (full)		
069-0050-013	241,322	32,669	7,569	
069-0050-014	104,108	34,282	6,053	
069-0060-085	69,696	69,696 (full)		
069-0060-107	640,332	572	1,405	
072-0231-125	3,382,434	272,741	75,128	409
072-0231-079	1,327,273	21,733	13,352	
069-0047-087	2,705,512			4,763

ROW = permanent right-of-way acquisition
Easement = permanent utility and/or maintenance area
TCE = temporary construction easement

Table 2.3-4. Right-of-Way Acquisitions (square feet) for Alternative 2

Parcel	Size	ROW	Easement	Excess Land	Temporary Construction Easement
069-0160-005	43,560				
069-0160-006	43,560		1,688		
069-0160-007	43,560	703	1,512		
069-0160-008	46,530	2,349	1,385		
069-0160-015	17,240	5,718	4,778		
069-0160-019	89,298	348	1,886		
069-0160-020	41,135	41,135 (full)			
069-0160-014	95,832	12,929	3,774		
069-0160-011	27,015	8,624	1,409		
069-0160-012	22,514	22,514 (full)			
069-0050-013	241,322	123,119	5,183	121,618	
069-0050-014	104,108	66,142	6,433	37,606	
069-0060-085	69,696	18,037	4,211	52,288	
069-0060-107	640,332	2,227	2,312		
072-0231-125	3,382,434	270,395	75,079		409
072-0231-079	1,327,273	23,041	13,337		
069-0047-087	2,705,512				4,763

ROW = permanent right-of-way acquisition
Easement = permanent utility and/or maintenance area
TCE = temporary construction easement
Excess Land = land acquired but not needed to support the project

2.3.2.3 Environmental Consequences

Under all alternatives, the Chevron gas station and Cattlemens restaurant parcels would be fully acquired. The ROW take at the Nimbus Winery property (APN 069-0050-013) would be larger under Alternative 1A than under Alternative 1 because acquisition would be required as opposed to an aerial easement. The ROW take at Nimbus Winery would be greatest under Alternative 2. All acquisitions would be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. Acquisitions and compensation to property owners would occur consistent with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as amended (see Appendix C).

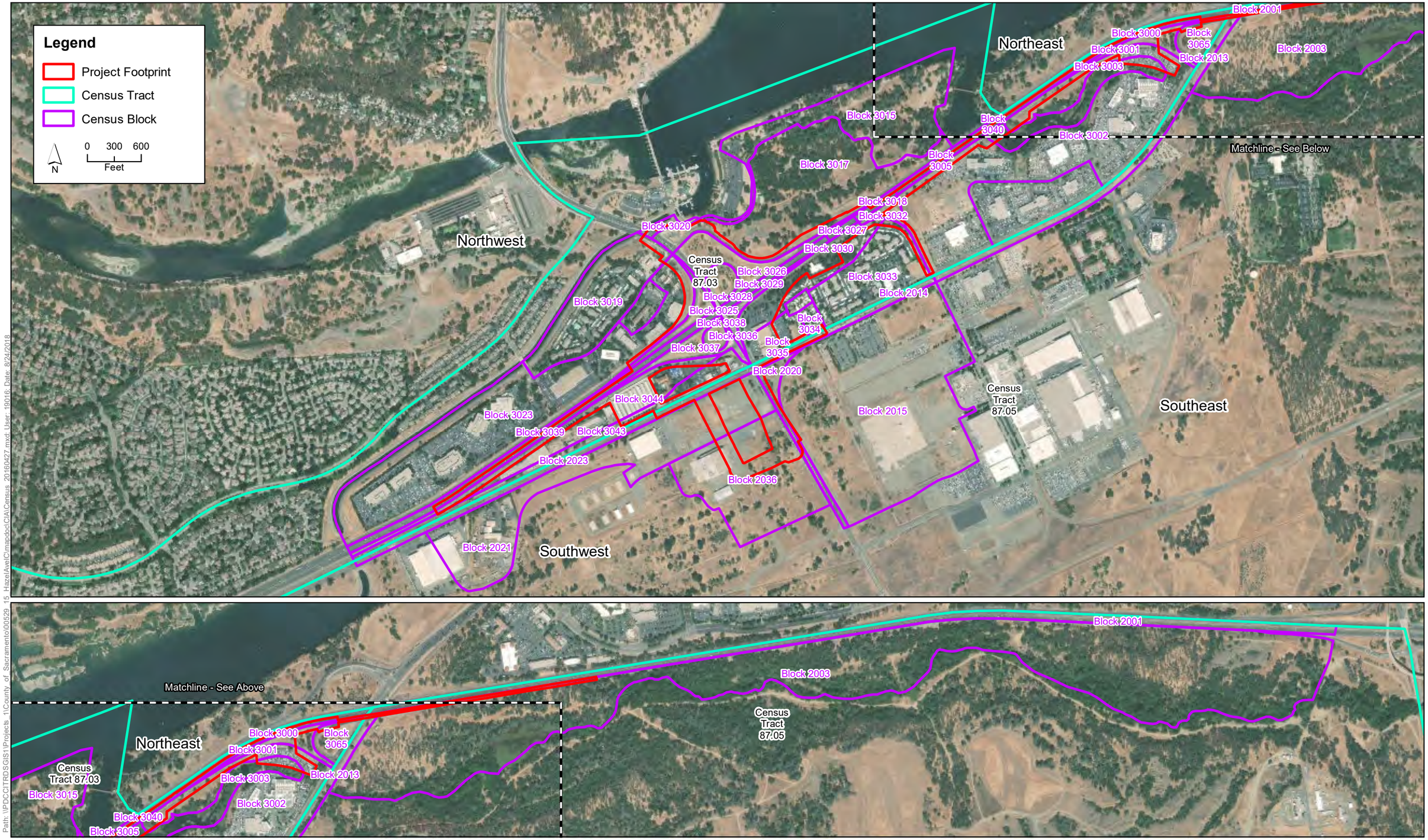
2.3.3 References Cited

California Department of Transportation. 2011. Standard Environmental Reference, Environmental Handbook Volume 4 – Community Impact Assessment. Division of Environmental Analysis, Environmental Management Office. October.

California Department of Transportation. 2015. *Transportation Management Plan Guidelines.* Division of Traffic Operations, Office of Traffic Management. November.

California Department of Transportation. 2017. *Hazel Avenue/U.S. Route 50 Interchange Project Community Impact Assessment*. *City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

United States Census Bureau. 2010–2014 American Community Survey 5-Year Estimates. Selected Economic Characteristics. 2010-2014 American Community Survey 5-year estimates. Available: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_DP03&prodType=table. Accessed May 26, 2016.



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Figure 2.3-1
Census Tracts in Project Area
Hazel Avenue/U.S. 50 Interchange Project

2.4 Utilities/Emergency Services

2.4.1 Affected Environment

This section is partially based on the *Community Impact Assessment* prepared for the proposed project (California Department of Transportation 2017; provided in Volume 3, *Technical Studies* or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

2.4.1.1 Utilities

Utilities in the project area include gas lines, overhead and underground electric lines (including lines operating at 50 kilovolts or higher), fiber optic cables, water lines, sewer lines, and storm drain lines.

Local sewer service in the project area is provided by the Sacramento Area Sewer District (SASD). The Sacramento Regional County Sanitation District (Regional San) is responsible for the conveyance of wastewater from local SASD sewers to the Sacramento Regional Wastewater Treatment Plant, through large pipelines called interceptors.

Regional facilities within the project area include Regional San's Folsom East Interceptor, which is located in Folsom Boulevard. In addition, SASD's smaller gravity trunk lines are located along Folsom Boulevard.

2.4.1.2 Emergency Services

Police Protection

The Rancho Cordova Police Department (RCPD) and Sacramento County Sheriff's Department are headquartered at 2897 Kilgore Road, Rancho Cordova 95742 (west of the project area). RCPD is responsible for responding to the scene of both emergency and non-emergency crimes; traffic collisions, enforcement and safety; and other requests for police service. Patrol is comprised of three separate shifts covering 24 hours (City of Rancho Cordova 2016). There are no Rancho Cordova police stations within the project area.

The California Highway Patrol (CHP) has their Sacramento Communications Center at 3165 Gold Valley Drive and their East Sacramento Division offices at 11336 Trade Center Drive, Rancho Cordova 95742. CHP is responsible for enforcing the California Vehicle Code, particularly in areas of speed, safety belt/child restraints, driving under the influence, and distracted driving. In addition to enforcement, officers provide security for State properties, focus on congestion relief, assist allied agencies, and educate the motoring public on traffic safety. The East Sacramento division patrols the unincorporated areas of Sacramento County that are east of Watt Avenue, west of the El Dorado County Line, south of the American River, and north of Jackson Road (i.e., State Route [SR] 16). Additionally, CHP patrols Sunrise Boulevard

and all unincorporated county areas east of Sunrise Boulevard and north of the American River. CHP also patrols approximately 22 miles of US 50 (California Highway Patrol 2016).

Fire Protection

The Sacramento Metropolitan Fire District (Metro Fire) is responsible for fire protection services in the project area. Metro Fire is a combination of 16 smaller fire departments that serve a population of over 727,000 in a 417-square-mile services area. On any given day, there are 155 on-duty personnel to serve the Metro Fire communities. The nearest Metro Fire station, Station 63, is in the immediate vicinity of the project area at 12395 Folsom Boulevard, Rancho Cordova 95742. The station is equipped with an engine company, paramedic ambulance (12 hours per day) and a Type III engine, or "grass rig" (Sacramento Metropolitan Fire District 2016).

Emergency Medical Services

There are no emergency medical service stations or centers within the project area. The nearest emergency medical services are the Mercy Hospital of Folsom at 1650 Creekside Drive in Folsom, approximately 5 miles to the northeast, and Mercy San Juan Medical Center at 6501 Coyle Avenue in Carmichael, approximately 6 miles to the northwest.

2.4.2 Environmental Consequences

2.4.2.1 Utilities

Build Alternatives

No adverse effects on the operation of, or facilities for, utilities are anticipated as a result of the project's build alternatives. As part of the project, overhead lines along Folsom Boulevard would be relocated underground within the project footprint. Other existing utilities, such as gas lines, electric lines, fiber optic cables, water lines, sewer lines, and storm drain lines located may be temporarily or permanently relocated within the project footprint to avoid conflicts with the proposed changes in transportation infrastructure. In addition to the coordination that would be necessary with the owners/operators of utilities, the relocation of electrical power lines requires compliance with Public Utilities Commission General Order No. 131-D. Electrical relocations could include the relocation of power lines operating at 50 kilovolts or higher. If it is determined that greater than 2000 feet of 50 kilovolt or higher power lines need to be relocated, a permit to construct would be obtained from the Public Utilities Commission. Coordination with utility service providers would occur prior to, during, and immediately after construction to manage any necessary temporary service disruptions so the effects can be minimized. As part of utility agency coordination, information would be provided in sufficient detail and with sufficient notice to allow temporary delays or disruptions in service to be communicated with customers in advance and for alternative service arrangements to be put in effect.

No Build Alternative

The No Build Alternative would result in no modifications to the existing interchange and no impacts on utilities would occur.

2.4.2.2 Emergency Services

Build Alternatives

Traffic at the interchange would be temporarily affected during construction when there are lane closures at non-peak traffic hours, weekend/night work required for the bridge widening (for Alternatives 1 and 1A), ramp realignment construction, and during conditions where traffic is detoured. Alternative 2 would may require weekend and night work for falsework over US 50. Folsom Boulevard, which runs parallel to US 50, and the nearby Folsom Boulevard/US 50 interchange would provide opportunities for detours when ramp closures are required. These temporary effects could alter response times and access for emergency services. Any required closures would be coordinated with emergency service providers so as not to hinder or increase response times for police services, fire protection, and emergency medical services.

No Build Alternative

The No Build Alternative would result in no modifications to the existing interchange and no impacts on emergency services would occur.

2.4.3 Avoidance, Minimization, and Mitigation Measures

No mitigation measures are necessary. As part of construction, the project proponents will prepare and implement a TMP to avoid and minimize potential impacts on utilities and emergency services. The project-specific TMP is described in more detail in Chapter 1, *Proposed Project*. The TMP would ensure emergency vehicles and school bus routes are not impeded. The TMP would reduce the impacts of the proposed project on temporary access and circulation caused by potential traffic delays during construction. The TMP would follow Caltrans' *Transportation Management Plan Guidelines* (California Department of Transportation 2015) and would include public information in multiple media; motorist information using radio announcements, traveler information systems, and signage; construction scheduling coordination; and other strategies as appropriate to the scale and scope of the project. In addition, Caltrans Standard Specifications Section 12, a part of all construction contracts, provides instructions on traffic control systems and devices to maintain traffic during construction. With these standardized measures incorporated in the project, the temporary effects of construction would not be adverse.

2.4.4 References Cited

California Department of Transportation. 2015. *Transportation Management Plan Guidelines.* Division of Traffic Operations, Office of Traffic Management. November.

California Department of Transportation. 2017. *Hazel Avenue/U.S. Route 50 Interchange Project Community Impact Assessment*. *City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

California Highway Patrol. 2016. Find an Office: (260) East Sacramento. Last Revised: 2016 Available: https://www.chp.ca.gov/Find-an-Office/Valley-Division/Offices/(260)-East-Sacramento. Accessed: April 28, 2016.

City of Rancho Cordova. 2016. Police Department. Patrol Operations Bureau. Last Revised: 2016. Available: http://www.ranchocordovapd.com/patrol.php. Accessed: May 1, 2017.

Sacramento Metropolitan Fire District. 2016. About us. Available: http://www.metrofire.ca.gov/index.php/about-us. Accessed: April 28, 2016.

2.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.5.1 Regulatory Setting

Caltrans, as assigned by the 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). It further directs 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 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.

2.5.2 Affected Environment

The affected environment describes the general physical and operational conditions of the roadway, transit, and bicycle and pedestrian components of the transportation system within the project study area. This section is based on the Traffic Operations Report prepared for the project (DKS 2016; provided in Volume 3, *Technical Studies*, and on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

2.5.2.1 Study Area

The project study area is shown in Figure 2.5-1. The figure depicts both existing and future intersections. The study area consists of the area that would be directly affected by the project and covers the following.

- US 50 between the planned Rancho Cordova Parkway interchange and the Prairie City interchange
- Folsom Boulevard from its interchange with US 50 to west of the proposed "jughandle" connection to Hazel Avenue
- Hazel Avenue from Gold Country Boulevard to the planned Easton Valley Parkway

2.5.2.2 Existing Roadway Network

Key roadways and interchanges in the study area are described below.

- US 50 – an east-west divided freeway connecting Sacramento to Placerville, with eight lanes of travel through the project area.
- Hazel Avenue – a north-south arterial running north from Folsom Boulevard across US 50 and into unincorporated eastern Sacramento County, including the community of Orangevale. Hazel Avenue varies from five to seven lanes wide in the project area, with additional turning and merger lanes associated with the US 50 interchange. South of Folsom Boulevard, Hazel Avenue becomes the four-lane restricted access Nimbus Road.
- Folsom Boulevard – an east-west arterial running parallel to US 50 between the cities of Sacramento and Folsom. Folsom Boulevard is four lanes wide in the project area, with eastbound and westbound traffic alternately divided by landscaped medians and center turn lanes.
- US 50 and Hazel Avenue interchange – a partial cloverleaf interchange providing direct access between Hazel Avenue and US 50; it is the easternmost interchange on US 50 that provides access to the developed area of unincorporated Sacramento County west of Folsom Lake.
- US 50 and Folsom Boulevard interchange – a partial cloverleaf/folded diamond interchange providing direct access to the western side of the city of Folsom from US 50.
- Hazel Avenue and Folsom Boulevard intersection – a signalized intersection roughly 0.1 mile south of the US 50 and Hazel Avenue interchange. The Hazel Avenue and Folsom Boulevard interchange would be grade separated as part of the project.

2.5.2.3 Data Collection Methodology

The following methodology is adapted and summarized from the Traffic Operations Report prepared for the project (DKS 2016; provided in Volume 3).

Field reconnaissance was undertaken to ascertain the traffic control and capacity characteristics of each of the study area intersections, roadway segments, and freeway elements. Combined with known or projected traffic volumes (discussed in Section 2.5.3, *Environmental Consequences*), these characteristics enable the calculation of performance measures. LOSs are a quantitative stratification of performance measures that represent quality of service. There are six levels of service, ranging from A to F. LOS A represents the best operating conditions from the traveler's perspective and LOS F the worst. The specific performance measures that define LOS vary by type of transportation facility, and are discussed in the following subsections.

Intersection Operations Analysis

For signalized and unsignalized intersections, operational analyses were conducted using a methodology outlined in the Transportation Research Board's 2000 Highway Capacity Manual (HCM 2000) and 2010 Highway Capacity Manual (HCM 2010) (Transportation Research Board 2010). The HCM 2010 methodology was used in all locations except where signalized

intersection characteristics deemed the methodology inappropriate. These locations include intersections with unconventional signal phasing, and locations adjacent to light rail tracks where additional delay occurs due to light rail operations. In the selected locations, the HCM 2000 methodology was employed. The HCM procedure calculates an average control delay per vehicle for each movement at an intersection, and assigns a LOS designation based upon the average delay per vehicle. Table 2.5-1 lists the HCM LOS criteria for signalized and unsignalized intersections.

Table 2.5-1. Level of Service Definitions for Study Intersections

Level of Service	Control Delay (seconds/vehicle)	
	Signalized	Unsignalized
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board 2010.

The HCM methodology also estimates queuing at intersection approaches. Queues at the ramp terminals are checked to ensure that the 95th percentile queues do not back up onto the freeway mainline.

Freeway Operations Analysis

For freeway segments, operational analyses were conducted using a methodology outlined in the HCM 2010 (Transportation Research Board 2010). The HCM 2010 methodology divides freeway segments into three categories: basic segments, merge and diverge segments, and weaving segments. Merge segments are defined as the ramp influence area extending from the merge point to 1,500 feet downstream of the merge point. Diverge segments are defined as the ramp influence area extending from the diverge point to 1,500 feet upstream of the diverge point. Weaving segments occur between a merge point and a nearby downstream diverge point. The maximum distance that would be considered a "weave" (as opposed to isolated merge and diverge segments) is determined by freeway volume, ramp volumes, and the number of weaving lanes. Basic segments encompass all other freeway segments that are not within the ramp influence area (e.g. classified as a merge, diverge, or weave).

The HCM procedure estimates an average density on the freeway segment (in units of passenger cars per mile per lane). Table 2.5-2 presents the HCM LOS criteria for mainline and ramp junctions.

Table 2.5-2. Level of Service Definitions for Freeway Segments

Level of Service	Mainline (density)[a]	Ramp Junctions (density)[a]
A	< 11	< 10
B	> 11 to 18	> 10 to 20
C	> 18 to 26	> 20 to 28
D	> 26 to 35	> 28 to 35
E	> 35 to 45	> 35
F	> 45 or demand exceeds capacity[b]	Demand exceeds capacity[b]

Source: Transportation Research Board 2010.

[a] Density is expressed in passenger car equivalents per hour per mile per lane.

[b] Level of service F occurs when freeway demand exceeds upstream (diverge) or downstream (merge) freeway segment capacity, or when off-ramp demand exceeds off-ramp capacity.

2.5.2.4 Acceptable Traffic Operating Conditions

To measure the operational status of the local roadway network, transportation engineers and planners use the LOS grading system. The project has the potential to affect traffic operations across multiple jurisdictions. In this document, LOS is used to assess effects because each affected agency has established policies and thresholds related to LOS expectations.

An effect is considered adverse if traffic that would be generated by a project degrades the LOS on a roadway segment or intersection from an acceptable to an unacceptable level. If the LOS is already unacceptable, an effect is considered adverse if the traffic that would be generated by a project would result in an increase of the average vehicle delay by 5 seconds or more. Where two jurisdictions operate different portions of the same intersection, the more restrictive LOS is used as the standard for measurement. The minimum acceptable traffic operating conditions and thresholds for determining the significance of traffic impacts for each jurisdiction in the study area are described below.

State of California

Caltrans is the State agency that sets LOS standards. In the *Guide for the Preparation of Traffic Impact Studies* (California Department of Transportation 2002), statewide LOS policy is described as follows:

> Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

State highways in the project area have a target between LOS C and LOS D. A project impact on the State highway was considered adverse if it resulted in deterioration of an acceptable LOS to an unacceptable LOS.

County of Sacramento

The County of Sacramento sets its LOS standard in Policy CI-9 in the Circulation Element of its General Plan (County of Sacramento 2017).

Policy CI-9:

> Plan and design the roadway system in a manner that meets Level of Service (LOS D) on rural roadways and LOS E on urban roadways, unless it is infeasible to implement project alternatives or mitigation measures that would achieve LOS D on rural roadways or LOS E on urban roadways. The urban areas are those areas within the Urban Service Boundary as shown in the Land Use Element of the Sacramento County General Plan. The areas outside the Urban Service Boundary are considered rural.

Roadways in the project area are within the Urban Service Boundary and therefore have a minimum acceptable LOS of E. A project impact in the county was considered adverse if it resulted in either of the following conditions.

- Deterioration of an acceptable LOS to an unacceptable LOS.
- Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

For intersections shared between Sacramento County and the City of Folsom, the City of Folsom's policy was used, as described below.

City of Folsom

The City of Folsom sets its LOS standard in Policy M 4.1.3 in the Mobility Element of its 2035 General Plan (City of Folsom 2018:M-15).

Policy M 4.1.3 Level of Service

> Strive to achieve at least traffic Level of Service "D" throughout the city. Level of Service "E" conditions can be acceptable due to cost of mitigation or when there would be other unacceptable impacts, such as right-of-way acquisition or degradation of the pedestrian environment due to increased crossing distances or unacceptable crossing delays. Level of Service "E" may also be accepted during peak commute periods at major intersections within one-quarter mile of a freeway interchange or river crossing.

While existing conditions are defined in this document as year 2015, the current adopted policy is used as the indicator of unacceptable LOS within Folsom.

City of Folsom roadways and intersections in the project area have a minimum acceptable LOS of either D or E, depending on the type and location of the intersection. A project impact in the city of Folsom was considered adverse if it resulted in either of the following conditions.

- Deterioration of an acceptable LOS to an unacceptable LOS.

- Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

For intersections shared between Sacramento County and the City of Folsom, Folsom's more restrictive policy was used to determine whether a LOS was acceptable.

City of Rancho Cordova

The City of Rancho Cordova sets its LOS standard in Policy C.1.2 in the Circulation Element of its General Plan (City of Rancho Cordova 2006).

Policy C.1.2

> Seek to maintain operations on all roadways and intersections at LOS D or better at all times, including peak travel times, unless maintaining this LOS would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. Congestion in excess of LOS D may be accepted in these cases, provided that provisions are made to improve traffic flow and/or promote non-vehicular transportation as part of a development project or a City-initiated project.

Roadways in the project area have a minimum acceptable LOS of D. A project impact in the city of Rancho Cordova was considered adverse if it resulted in either of the following conditions.

- Deterioration of an acceptable LOS to an unacceptable LOS.
- Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

Transit System

Impacts on the transit system were considered adverse if the proposed project would generate ridership that exceeds the available or planned system capacity or disrupts an existing facility or service.

Bicycle Facilities

Impacts on bicycle facilities were considered adverse if the proposed project would disrupt an existing facility or interfere with a planned facility.

Pedestrian Facilities

Impacts on pedestrian circulation were considered adverse if the proposed project would disrupt an existing facility or interfere with a planned facility.

2.5.2.5 Existing Conditions

Intersection Operations

Unacceptable LOS currently exists at two intersections in the study area. The western intersection of Folsom Boulevard and Auto Mall Circle (West) operates at LOS E during the AM peak hour and LOS D during the PM peak hour. In addition, Folsom Boulevard and the US 50 westbound ramps operate at LOS D during the PM peak hour. Traffic on US 50 operates at an acceptable LOS during the AM and PM peak hours in both directions. Table 2.5-3 summarizes the traffic delays at the studied intersections.

Table 2.5-3. Existing Intersection Operation Analysis

Analysis Segment	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
Hazel Avenue & Gold Country Boulevard	C	23.2	D	39.7
Hazel Avenue & US 50 WB Ramps/Tributary Point Drive	C	32.4	E	62.8
Hazel Avenue & US 50 EB Ramps	D	50.1	D	47.4
Hazel Avenue & Folsom Boulevard	C	34.7	D	39.8
Folsom Boulevard & Aerojet Road	C	20.7	C	33.3
Folsom Boulevard & Auto Mall Circle (West)	E	35.6	D	26.4
Folsom Boulevard & Birkmont Drive/Auto Mall Circle (East)	B	11.8	B	17.36
Folsom Boulevard & US 50 EB Ramps	C	26.6	B	16.9
Folsom Boulevard & US 50 WB Ramps	C	21.9	D	50.5
Shaded cells contain values indicating unacceptable level of service.				

Source: DKS 2016.
LOS = level of service
(s) = seconds
EB = eastbound
WB = westbound

Freeway Operations

Traffic on US 50 operates at an acceptable LOS during the AM and PM peak hours in both directions. Table 2.5-4 summarizes the traffic delays on US 50.

Table 2.5-4. Existing Freeway Operations Analysis

US 50 Direction	Analysis Segment	Type	AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Sunrise Boulevard to Hazel Avenue	Basic	B	14.9	B	16.3
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.0	B	13.3
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	B	19.7	B	17.5
	NB Hazel Avenue Slip On-Ramp	Weave	B	17.6	B	13.9
	Aerojet Off-Ramp					
	Aerojet Road to Folsom Boulevard (Mixed)	Basic	C	19.7	B	16.9
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	C	26.2	C	21.3
	Folsom Boulevard On-Ramp	One-Lane Merge	C	24.5	C	22.3
	Folsom Boulevard to Prairie City Road	Basic	C	19.5	B	17.4
WB	Prairie City Road to Folsom Boulevard (Mixed)	Basic	C	24.1	B	17.3
	Folsom Boulevard Off-Ramp	One-Lane Diverge	D	32.3	C	25.0
	Folsom Boulevard On-Ramp	One-Lane Merge	D	29.8	C	24.6
	Folsom Boulevard to Hazel Avenue	Basic	D	26.4	C	21.7
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.8	A	8.5
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	25.2	C	20.3
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	D	32.5	C	21.3
	Hazel Avenue to Sunrise Boulevard (mixed)	Basic	D	30.6	C	19.4

Source: DKS 2016.
LOS = level of service
EB = eastbound
WB = westbound
NB = northbound
SB = southbound

Ramp and Intersection Queueing

The queueing analysis from the Traffic Operations Report indicates that queueing is currently affected at three intersections in the study area (DKS 2016). Southbound Hazel Avenue at the westbound off-ramp has available storage of 860 feet with queue lengths of 1,045 feet during the AM peak hour and 1,121 feet during the PM peak hour, due to heavy commute traffic using Hazel Avenue to access US 50. Southbound Hazel Avenue at Folsom Boulevard has available storage of 200 feet with queue lengths of 298 feet during the AM peak hour and 269 feet during the PM peak hour. Table 2.5-5 summarizes the storage lengths and existing AM and PM peak hour queues for US 50 off-ramps within the study area. Table 2.5-6 summarizes the storage lengths and existing AM and PM peak hour queues for intersections in the study area.

Table 2.5-5. Existing Ramp Queueing

Direction	Ramp Queue	Storage Length (feet)	AM Queue (feet)	PM Queue (feet)
US 50 EB	Off-Ramp to Hazel Avenue	1,350	257	683
	Off-Ramp to Aerojet Road	1,425	121	50
	Off-Ramp to Folsom Boulevard	1,300	312	268
US 50 WB	Off-Ramp to Folsom Boulevard	1,550	47	37
	Off-Ramp to Hazel Avenue	2,030	299	389

Source: DKS 2016.
EB = eastbound
WB = westbound

Table 2.5-6. Existing Intersection Queueing

Intersection	Approach	Movement	Storage Length (ft)	AM Queue (ft)	PM Queue (ft)
Hazel Avenue & US 50 WB Ramps/ Tributary Point Drive	EB	RT	275	287	368
	WB	LT	2030	299	389
		TH			
		RT	2030	51	377
	NB	LT	320	246	140
		TH	1440	146	266
		RT	Free Movement		
	SB	TH	860	1045	1121
		RT	225	56	211
Hazel Avenue & US 50 EB Ramps	EB	LT	1350	257	683
		RT			
	NB	TH	Free Movement		
		RT			
	SB	TH	1140	412	126
		RT	Free Movement		
Hazel Avenue & Folsom Boulevard	EB	LT	350	107	492
		TH	>2,500	78	302
		RT			
	WB	LT	200	43	12
		TH	2140	619	425
		RT	2140	230	350
	NB	LT	700	30	58
		TH	700	80	289
		RT			
	SB	LT	200	298	269
		TH			
		RT			
Folsom Boulevard & Aerojet Road	EB	TH	2140	161	437
		RT			
	WB	LT	370	205	65
		TH	665	204	230
	NB	LT	415	22	325
		RT	415	0	179
	SB	LT	1425	121	50
		TH			
		RT			

Source: DKS 2016.
Shaded cells contain values indicating queue lengths in excess of storage capacity of turn pocket.
LOS = level of service
EB = eastbound
WB = westbound
NB = northbound
SB = southbound
LT = left turn
TH = through
RT = right turn

Collision Rates

The Traffic Operations Report included an analysis of collision and collision rate data from the Traffic Accident Surveillance Analysis System based on a 3-year period from January 1, 2011, to December 31, 2013, for locations on the US 50 mainline between Sunrise Boulevard and Folsom Boulevard and the ramps at the Hazel Avenue and Folsom Boulevard interchanges. Out of 15 mainline and ramp locations analyzed, 7 locations were found to have higher total collision rates than the average total rates for similar State facilities. Table 2.5-7 summarizes the results of the analysis.

Table 2.5-7. Existing Collision Rates

Location	Number of Collisions	Location Collision Rate (per million vehicle miles)	Average Collision Rate (per million vehicle miles)
Eastbound US 50 from Sunrise Boulevard to Hazel Avenue	48	0.89	0.61
Eastbound US 50 from Hazel Avenue to Folsom Boulevard	75	0.79	0.65
Westbound US 50 from Folsom Boulevard to Hazel Avenue	41	0.43	0.65
Westbound US 50 from Hazel Avenue to Sunrise Boulevard	20	0.37	0.61
Eastbound Off-Ramp to Hazel Avenue	18	1.71	0.92
Eastbound Loop On-Ramp from Southbound Hazel Avenue	4	0.38	0.71
Eastbound Slip On-Ramp from Northbound Hazel Avenue	2	1.04	0.56
Eastbound Off-Ramp to Aerojet Road	2	1.29	0.78
Eastbound Off-Ramp to Folsom Boulevard	7	0.42	0.92
Eastbound On-Ramp from Folsom Boulevard	6	1.88	0.67
Westbound Off-Ramp to Folsom Boulevard	18	2.38	0.92
Westbound On-Ramp from Folsom Boulevard	16	0.92	0.60
Westbound Off-Ramp to Hazel Avenue	18	1.51	0.92
Westbound Loop On-Ramp from Northbound Hazel Avenue	2	0.84	0.71
Westbound Slip On-Ramp from Southbound Hazel Avenue	13	0.93	0.56
Eastbound On-Ramp from Hazel (Loop and Slip Merged)	0	0.00	0.20

Source: California Department of Transportation 2018.
Shaded cells contain values indicating locations with crash rates higher than average.

Transit and Bicycle/Pedestrian Facilities

SacRT operates a light rail transit system that is parallel and adjacent to Folsom Boulevard through the project area, with a light rail station situated roughly 0.25 mile east of the Hazel Avenue and Folsom Boulevard intersection. Additionally, SacRT runs a weekday commuter bus from Orangevale to downtown Sacramento, using Hazel Avenue north of the US 50 interchange and US 50 to the west.

Folsom Boulevard has Class II bicycle lanes (i.e., paved bicycle paths separated by a painted line from mixed traffic lanes) that are approximately 6 feet wide on either side of the roadway through the project area. There is also a sidewalk on the north side of Folsom Boulevard through the project area, and a sidewalk on the south side of the roadway between Hazel Avenue and the RT light rail station. Hazel Avenue has a Class II bicycle lane for northbound traffic north of the US 50 interchange and a sidewalk on the east side of the roadway through the project area.

A bicycle/pedestrian overcrossing of US 50 approximately 0.4 mile east of the US 50/Hazel Avenue interchange provides a Class I facility for pedestrians and bicyclists between Hazel Avenue north of the US 50 ramps and the Hazel Avenue/Folsom Boulevard intersection. The overcrossing connects to the trail system within the Nimbus Flat Recreation Area, including the Jedediah Smith Memorial Trail.

2.5.3 Environmental Consequences

The following methodology and environmental consequence data is adapted and summarized from the Traffic Operations Report (DKS 2016; provided in Volume 3).

2.5.3.1 Travel Demand Forecasting Methodology

Caltrans' guidelines call for designing a project based on a horizon or cumulative year that is 20 years after the identified opening year of a project. The proposed project is assumed to be open to traffic in 2022, so the horizon or cumulative year for the project design is 2042. Traffic forecasts were developed for the study area for 2022 and 2042 conditions with and without the project.

New roadways and interchanges are planned near the proposed project that will affect future traffic conditions. The planned improvements are assumed to be implemented in the timeframes identified in SACOG's MTP/SCS 2035 that was adopted in April 2012. Table 2.5-8 lists the assumed roadway network for existing (2015) conditions, 2022 and 2042. Implementation of the following improvements would especially affect volumes of traffic on US 50 and Hazel Avenue in the future.

- Phased implementation of auxiliary lanes along US 50 between Sunrise Boulevard and East Bidwell Street.
- Widening of Hazel Avenue from Curragh Downs Drive to Madison Avenue.
- Construction of the Rancho Cordova Parkway interchange and the extension of Rancho Cordova Parkway from US 50 to White Rock Road.
- Phased construction of Easton Valley Parkway through the Easton Project, the westward extension through the Westborough Specific Plan, and the eastward extension through the Folsom South of U.S. Highway 50 Specific Plan Project area.

Table 2.5-8. Roadway Network Assumptions

Roadway	Limits	Number of Travel Lanes or Network In Place		
		2015	2022	2042
Hazel Avenue	Greenback Lane to Madison Avenue	4	4	4
	Madison Avenue to Curragh Downs Drive	4	6	6
	Curragh Downs Drive to Route 50	6	6	6
	Route 50 to Jughandle	0	4	6
	Jughandle to Easton Valley Parkway	0	4	6
Folsom Boulevard	Sunrise Boulevard to Hazel Avenue	4	4	4
	Hazel Avenue to Route 50	4	4	4
Easton Valley Parkway	Rancho Cordova Parkway to Hazel Avenue	0	Partial[a]	6
	Hazel Avenue to Prairie City Road	0	Partial[a]	4
	Prairie City Road to Oak Avenue Parkway	0	0	4
Rancho Cordova Parkway	Interchange with Route 50	No	Yes	Yes
	Route 50 to Easton Valley Parkway	0	4	6
	Easton Valley Parkway to White Rock Road	0	4	6
White Rock Road	Prairie City to Grant Line Road	4	4	4
	Grant Line Road to Sunrise Boulevard	2	4	4
Route 50 EB Aux Lanes	Sunrise Avenue to Rancho Cordova Parkway	No	Yes	Yes
	Rancho Cordova Parkway to Hazel Avenue	No	Yes	Yes
	Hazel Avenue to Folsom Boulevard	No	Yes[b]	Yes[b]
	Folsom Boulevard to Prairie City Road	No	Partial[c]	Yes
Route 50 WB Aux Lanes	Prairie City Road to Folsom Boulevard	No	No	Yes
	Folsom Boulevard to Hazel Avenue	No	No	Yes
	Hazel Avenue to Rancho Cordova Parkway	No	No	Yes
	Rancho Cordova Parkway to Sunrise Boulevard	No	No	Yes

Source: DKS 2016.
EB = eastbound
WB = westbound
[a] Assumes partial construction of Easton Valley Parkway to provide local access, but no complete connection from Rancho Cordova Parkway to Hazel Avenue, or from Hazel Avenue to Prairie City Road.
[b] An auxiliary lane along eastbound Route 50 from Hazel Avenue to the Folsom Boulevard overcrossing is part of this project.
[c] Assumes auxiliary lane extends east of Folsom Boulevard, consistent with Route 50 Auxiliary Lane PSR.

2022 Forecasts

SACOG's SACSIM travel demand model was used to develop the traffic forecasts. SACOG has region wide development assumptions for 2014 and 2020. SACOG's SACSIM model was run for these two years, with some adjustments made to the 2020 land use scenario to better reflect the Easton/Glenborough development phasing. The difference between the traffic volumes generated by those model runs provides a 6-year growth that would be added to 2015 traffic count data. In order to bring the 2015 traffic counts up to a 2022 forecast, the 6-year growth forecast was "straight-line" increased by 16.7% to represent a 7-year growth. This 7-year growth was then added to the 2015 counts.

Based on phasing information provided by Aerojet, 2,732 single family residences and a growth of approximately 1,309 jobs were assumed in the 2022 forecasts for the Easton Project. This equates closely to the 3,000 dwelling unit equivalents the County established as the trigger point for the need to construct the proposed interchange project.

As shown in Table 2.5-8, the 2022 network, and therefore the forecasts, also assumes implementation of the following components of the proposed project.

- Grade separation of the Hazel Avenue/Folsom Boulevard intersection and construction of the jughandle.
- Extension of Hazel Avenue south of Folsom Boulevard to the future Easton Valley Parkway.
- Construction of a transition lane on eastbound US 50 from Hazel Avenue to Folsom Boulevard.

2042 Forecasts

The 2042 forecasts are based on the forecasted cumulative conditions included in the *Folsom South of U.S. Highway 50 Specific Plan Project EIR/EIS* (Folsom South SP EIR/EIS). The development forecasts for Folsom South SP EIR/EIS started with SACOG's MTP/SCS 2035 land use forecasts, and were then modified by the following assumptions.

- Buildout of City of Folsom (both the current boundaries and the proposed sphere of influence) which is higher than SACOG's MTP/SCS 2035.
- Buildout of the Easton Project, which have higher employment levels than SACOG's MTP/SCS 2035.
- City of Rancho Cordova buildout estimates, which are higher (especially for employment levels) than SACOG's MTP/SCS 2035 development levels.
- El Dorado County General Plan EIR estimates for the El Dorado Hills area, which have higher employment levels than SACOG's MTP/SCS 2035.

The growth assumptions used in the Folsom South SP EIR/EIS have 41,000 more jobs and 15,000 more housing units than SACOG's 2035 MTP/SCS that was adopted in 2008. Due to the recession, SACOG lowered its 2035 development forecasts in the MTP/SCS that was adopted in 2012. Therefore, the growth and development assumptions provide conservatively high 2042 traffic demand estimates for the proposed project. However, on some key elements of the roadway system, the 2042 forecasted traffic demand volumes would exceed actual capacity.

Additional AM and PM peak period VISSIM simulation models were prepared to determine the volumes served based on capacities. The analysis of the alternatives for the proposed project is based on the "constrained" 2042 peak period volumes that resulted from the additional simulation models using the traffic demand from the cumulative conditions in the Folsom South SP EIR/EIS.

2.5.3.2 Existing (2015) Plus Project Conditions

While the proposed project is scheduled to be constructed starting in 2020 and be open to traffic in 2022, the discussions below and the tables that follow provide some context for how the interchange modifications may influence existing travel patterns.

2015 Intersection Operations

Implementation of the proposed project does not worsen existing (2015) intersection operation conditions. As shown in Table 2.5-9, the following study intersection does not operate at an acceptable LOS during the AM peak hour in 2015.

Intersection #6: Folsom Boulevard & Auto Mall Circle (West)
(**LOS E** in the AM peak hour r)

Intersection #6 is shared by Sacramento County and the City of Folsom. Sacramento County has a LOS E policy, but the City of Folsom has a more restrictive LOS D policy for that location. Because it is more restrictive, acceptable operation conditions were defined by Folsom's policy.

Alternatives 1 and 1A

Implementation of all build alternatives would improve intersection operations at two study locations. As shown in Table 2.5-9, Alternatives 1 and 1A show greater improvements in the PM peak hour at Intersection #1 and greater improvements in both the AM and PM hours at Intersection #2, compared to Alternative 2. Alternatives 1 and 1A improve operations at Intersection #3 compared to existing conditions without the project.

Implementation of the proposed project under each build alternative does not change operations at the location operating at unacceptable LOS (Intersection #6).

Alternative 2

Alternative 2 improves operations at the same two study locations as Alternatives 1 and 1A, but to a lesser degree as shown by the LOS and delay in Table 2.5-9, and does not change operations at Intersection #6. Alternative 2 also changes the Hazel Avenue and US 50 eastbound ramps intersection (Intersection #3) to a free movement.

2015 Freeway Operations

As shown in Table 2.5-10, both without and with the project, all basic, merge/diverge, and weave segments operate at an acceptable LOS during the AM and PM peak hours.

Alternatives 1 and 1A

Implementation of Alternatives 1 and 1A would maintain or improve existing freeway operation conditions with the exception of changes at the eastbound Hazel Avenue exit segment. At that location, the analysis results in Table 2.5-10 illustrate that LOS would change from A to B in the AM peak hour and delay would increase very slightly during both the AM and PM peak hours. These alternatives would also change the northbound Hazel Avenue slip on-ramp, and eastbound Aerojet Road and Folsom Boulevard off-ramps, with improved LOS and reduced delays.

Alternative 2

The effects on freeway operations of Alternative 2 are the same as for Alternatives 1 and 1A.

Table 2.5-9. Existing (2015) Intersection Operations Analysis

Analysis Segment	Existing (2015) No Build				Existing (2015) with Alt 1/1A				Existing (2015) with Alt 2			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Hazel Avenue & Gold Country Boulevard	C	23.2	D	39.7	C	23.2	B	19.8	C	23.2	C	23.8
2. Hazel Avenue & US 50 WB Ramps/ Tributary Point Drive	C	32.4	E	62.8	C	24.6	C	28.4	C	27.0	C	33.0
3. Hazel Avenue & US 50 EB Ramps	D	50.1	D	47.4	B	13.4	B	19.9	Free movement			
4. Hazel Avenue & Folsom Boulevard	C	34.7	D	39.8	Does not exist				Does not exist			
5. Folsom Boulevard & Aerojet Road	C	20.7	C	33.3	C	20.7	C	33.3	C	20.7	C	33.3
6. Folsom Boulevard & Auto Mall Circle (West)	(E)	(35.6)	(D)	(26.4)	(E)	(35.6)	(D)	(26.4)	(E)	(35.6)	(D)	(26.4)
7. Folsom Boulevard & Birkmont Drive/ Auto Mall Circle (East)	B	11.8	B	17.3	B	11.8	B	17.3	B	11.8	B	17.3
8. Folsom Boulevard & US 50 EB Ramps	C	26.6	B	16.9	C	26.6	B	16.9	C	26.6	B	16.9
9. Folsom Boulevard & US 50 WB Ramps	C	21.9	D	50.5	C	21.9	D	50.5	C	21.9	D	50.5
10. Hazel Avenue & Jughandle	Does not exist				B	18.7	C	25.6	B	18.7	C	25.6
11. Folsom Boulevard & Jughandle	Does not exist				B	18.9	D	38.8	B	18.9	D	38.8

Source: DKS 2016.
Shaded cells contain values indicating unacceptable level of service.
(X)(Y) indicates LOS shown for the highest delay stop-controlled approach.
LOS = level of service
(s) = seconds
EB = eastbound
WB = westbound

Table 2.5-10. Existing (2015) Freeway Operations Analysis

US 50 Direction	Analysis Segment	Type	Existing (2015) No Build				Existing (2015) with Alternative 1, 1A, or 2			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Sunrise Boulevard to Hazel Avenue	Basic	B	14.9	B	16.3	B	14.9	B	16.3
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.0	B	13.3	B	10.5	B	13.7
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	B	19.7	B	17.5	B	18.2	B	17.1
	NB Hazel Avenue Slip On-Ramp	Weave	B	17.6	B	13.9	B	16.0	B	13.7
	Aerojet Off-Ramp									
	Aerojet Road to Folsom Boulevard	Basic	C	19.7	B	16.9				
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	C	26.2	C	21.3				
	Folsom Boulevard On-Ramp	One-Lane Merge	C	24.5	C	22.3	B	16.2	B	15.8
	Folsom Boulevard to Prairie City Road	Basic	C	19.5	B	17.4	C	19.5	B	17.4
WB	Prairie City Road to Folsom Boulevard	Basic	C	24.1	B	17.3	C	24.1	B	17.3
	Folsom Boulevard Off-Ramp	One-Lane Diverge	D	32.3	C	25.0	D	32.3	C	25.0
	Folsom Boulevard On-Ramp	One-Lane Merge	D	29.8	C	24.6	D	29.8	C	24.6
	Folsom Boulevard to Hazel Avenue	Basic	D	26.4	C	21.7	D	26.4	C	21.7
	Hazel Avenue Off-Ramp	Two-Lane Diverge	A	9.8	A	8.5	A	9.8	A	8.5
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	25.2	C	20.3	C	25.2	C	20.3
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	D	32.5	C	21.3	D	32.5	C	21.3
	Hazel Avenue to Sunrise Boulevard (mixed)	Basic	D	30.6	C	19.4	D	30.6	C	19.4

Source: DKS 2016.
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
EB = eastbound
WB = westbound

2015 Transit and Bicycle/Pedestrian Facilities

Alternatives 1 and 1A

Current or future access or planned improvements to light rail or UPRR facilities would not be affected by implementation of Alternatives 1 or 1A. After construction, pedestrian access would be maintained on the east side of Hazel Avenue. Roadway improvements on Folsom Boulevard would include sidewalk improvements and street lighting. The reconstructed westbound loop on-ramp would include a squared-up, pedestrian-friendly entrance.

Bicycles may continue to use the Sacramento County standard 7-foot shoulders as well as the Class I overcrossing east of the Hazel Avenue interchange. A separate pedestrian path/bicycle trail that would directly or indirectly connect with the Jedediah Smith Memorial Trail is proposed at the northeast quadrant.

Alternative 2

Impacts of Alternative 2 on transit, bicycle, and pedestrian facilities would be the same as described for Alternatives 1 and 1A.

2.5.3.3 Opening Year (2022) Conditions

The discussions below and the tables that follow compare the opening year (2022) conditions of each alternative. Traffic operations for Alternatives 1 and 1A are identical, so the results and effects of these two alternatives are discussed together.

2022 Intersection Operations

Table 2.5-11 summarizes the LOS and delay (in seconds) expected for each roadway segment under each alternative.

No Build Alternative

As shown in Table 2.5-11, without project construction, at the opening year (2022), five intersections would operate at an unacceptable LOS during AM or PM peak hours.

Intersection #3: Hazel Avenue & US 50 Eastbound Ramps (**LOS F** in the PM peak hour)

Intersection #4: Hazel Avenue & Folsom Boulevard (**LOS F** in the PM peak hour)

Intersection #5: Folsom Boulevard & Aerojet Road (**LOS E** in the PM peak hour)

Intersection #6: Folsom Boulevard & Auto Mall Circle (West) (**LOS F** in the AM peak hour and **LOS E** in the PM peak hour)

Intersection #7: Folsom Boulevard & Birkmont Drive/Auto Mall Circle (East) (**LOS F** in the PM peak hour)

Alternatives 1 and 1A

Alternatives 1 and 1A would not cause any adverse intersection operations because they would not deteriorate an acceptable LOS to an unacceptable LOS or increase an average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

As shown in Table 2.5-11, under Alternatives 1 and 1A, the LOS at Intersection #3, the eastbound ramps at the US 50/Hazel Avenue interchange, would improve in both the AM and PM peak hours and would operate at an acceptable LOS. The Hazel Avenue/Folsom Boulevard intersection (Intersection #4) would be removed under all build alternatives.

A new street, the jughandle, would intersect Folsom Boulevard west of Hazel Avenue and Hazel Avenue south of Folsom Boulevard, creating two new intersections. Both new intersections would operate at an acceptable LOS.

Alternative 2

Alternative 2 would not cause any adverse intersection operations as it would not deteriorate an acceptable LOS to an unacceptable LOS or increase an average driver delay by more than 5 sections at an intersection that already operated at an unacceptable LOS without the project.

Under Alternative 2, Intersection #3, the eastbound ramps at the US 50/Hazel Avenue interchange, would be changed to operate with free movement.

The Hazel Avenue/Folsom Boulevard intersection (Intersection #4) would be removed, and as under Alternatives 1 and 1A, both new intersections that would be created with construction of the jughandle would operate at an acceptable LOS.

2022 Freeway Operations

Table 2.5-12 summarizes the LOS expected for each US 50 segment under each alternative. The results are the same for the build alternatives.

No Build Alternative

The following basic, merge/diverge, and weave segments do not operate at an acceptable LOS during the AM or PM peak hours under 2022 no-build conditions.

US 50 Eastbound – Diverge Segment at the Folsom Boulevard Off-Ramp (**LOS F** in the AM peak hour)

US 50 Westbound – Merge Segment at the Folsom Boulevard On-Ramp (**LOS F** in the AM peak hour)

Alternatives 1, 1A and 2

The build alternatives would not cause any adverse freeway operations as they would not deteriorate an acceptable LOS to an unacceptable LOS. As shown in Table 2.5-12, with all build alternatives, freeway operations improve compared to the No Build Alternative from LOS F to LOS B at the eastbound Folsom Boulevard exit, as a result of the proposed transition lane. Westbound US 50 at the Folsom Boulevard on-ramp would continue to operate at LOS F during the AM peak hour.

2022 Transit and Bicycle/Pedestrian Facilities

No Build Alternative

Under the No-Build Alternative, access to light rail and existing bicycle facilities would remain as is. Pedestrian improvements include sidewalks, street lighting, and landscaping along the north side of Folsom Boulevard, and landscaping and lighting along the south, would not be constructed.

Alternatives 1, 1A and 2

The proposed project would not affect current or future access or planned improvements to light rail or UPRR facilities. After construction, pedestrian access would be maintained on the east side of Hazel Avenue. Roadway improvements on Folsom Boulevard would include sidewalk improvements and street lighting. The reconstructed westbound loop on-ramp would include a squared-up, pedestrian-friendly entrance.

Bicycles may continue to use the Sacramento County standard 7-foot shoulders as well as the Class I overcrossing east of the Hazel Avenue interchange. A separate ADA compliant pedestrian path/bicycle trail that would directly or indirectly connect with the Jedediah Smith Memorial Trail is proposed at the northeast quadrant.

Table 2.5-11. Opening Year (2022) Intersection Operation Analysis

Analysis Segment	Opening Year (2022) No Build				Opening Year (2022) with Alt 1/1A				Opening Year (2022) with Alt 2			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Hazel Avenue & Gold Country Boulevard	C	23.7	E	66.1	C	26.5	E	69.3	C	23.7	E	78.5
2. Hazel Avenue & US 50 WB Ramps/ Tributary Point Drive	D	40.3	D	42.6	D	36.4	D	40.5	C	30.0	E	63.7
3. Hazel Avenue & US 50 EB Ramps	D	43.1	F	82.7	B	14.4	C	23.4	Free movement			
4. Hazel Avenue & Folsom Boulevard	D	50.9	F	120.8	Does not exist				Does not exist			
5. Folsom Boulevard & Aerojet Road	D	37.5	E	61.0	D	37.5	E	61.0	D	37.5	E	61.0
6. Folsom Boulevard & Auto Mall Circle (West)	(F)	50.7	(E)	(46.9)	(F)	50.7	(E)	(46.9)	(F)	50.7	(F)	(46.9)
7. Folsom Boulevard & Birkmont Drive/ Auto Mall Circle (East)	C	25.7	F	80.6	C	25.7	F	80.6	C	25.7	F	80.6
8. Folsom Boulevard & US 50 EB Ramps	C	24.1	B	18.0	C	24.1	B	18.0	C	24.1	B	18.0
9. Folsom Boulevard & US 50 WB Ramps	D	42.4	E	62.0	D	42.4	E	62.0	D	42.4	E	62.0
10. Hazel Avenue & Jughandle	Does not exist				E	64.1	C	26.8	E	64.1	C	26.7
11. Folsom Boulevard & Jughandle	Does not exist				C	26.1	D	44.3	C	26.1	D	44.3

Source: DKS 2016.
Shaded cells contain values indicating unacceptable level of service.
(X)(Y) indicates LOS shown for the highest delay stop-controlled approach.
LOS = level of service
(s) = seconds
EB = eastbound
WB = westbound

Table 2.5-12. Opening Year (2022) Freeway Operation Analysis

US 50 Direction	Analysis Segment	Type	Opening Year (2022) No Build				Opening Year (2022) with Alternative 1, 1A, or 2			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Sunrise Boulevard to Hazel Avenue	Basic	C	21.9	C	23.7	C	21.9	C	23.7
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	17.7	C	23.4	B	19.3	C	24.1
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	23.1	B	19.9	C	21.6	B	19.1
	NB Hazel Avenue Slip On-Ramp	Weave	C	21.2	B	15.3	B	19.2	B	14.7
	Aerojet Road Off-Ramp									
	Aerojet Road to Folsom Boulevard	Basic	C	24.0	C	18.1				
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	F	32.8	C	23.4				
	Folsom Boulevard On-Ramp	One-Lane Merge	D	30.4	C	24.2	B	19.8	B	17.0
	Folsom Boulevard to Prairie City Road	Basic	D	26.0	C	19.2	D	26.0	C	19.2
WB	Prairie City Road to Folsom Boulevard	Basic	D	26.7	C	19.4	D	26.7	C	19.4
	Folsom Boulevard Off-Ramp	One-Lane Diverge	D	34.7	C	27.5	D	34.7	C	27.5
	Folsom Boulevard On-Ramp	One-Lane Merge	F	32.8	C	26.9	F	32.8	C	26.9
	Folsom Boulevard to Hazel Avenue	Basic	D	30.2	C	23.3	D	30.2	C	23.3
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	11.5	A	9.2	B	11.5	A	9.2
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	C	27.7	C	21.7	C	27.7	C	21.7
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	D	34.7	C	25.9	D	34.7	C	25.9
	Hazel Avenue to Sunrise Boulevard (mixed)	Basic	D	34.4	C	23.7	D	34.4	C	23.7

Source: DKS 2016.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
pc/mi/ln = passenger cars per mile per lane
EB = eastbound
WB = westbound
SB = southbound
NB = northbound

2.5.3.4 Horizon Year (2042) Conditions

The discussions below and the tables that follow compare the horizon year (2042) conditions of each alternative. Traffic operations for Alternatives 1 and 1A are identical, so the results and effects of these two alternatives are discussed together.

2042 Intersection Operations

Table 2.5-13 summarizes the LOS and delay (in seconds) expected for each roadway segment under each alternative.

No Build Alternative

As shown in Table 2.5-13, without project construction, the following study intersections would not operate at an acceptable LOS during the AM or PM peak hours in 2042.

Intersection #2: Hazel Avenue & US 50 WB Ramps (**LOS F** in the PM peak hour)

Intersection #3: Hazel Avenue & US 50 EB Ramps (**LOS F** in the PM peak hour)

Intersection #4: Hazel Avenue & Folsom Boulevard (**LOS F** in the AM and PM peak hours)

Intersection #6: Folsom Boulevard & Auto Mall Circle (West) (**LOS F** in the PM peak hour)

Intersection #6 is shared by Sacramento County and the City of Folsom. Sacramento County has a LOS E policy, but the City of Folsom has a more restrictive LOS D policy for this location. Because it is more restrictive, acceptable operation conditions were defined by Folsom's policy.

Alternatives 1 and 1A

Alternatives 1 and 1A would not cause any adverse intersection operations as they would not deteriorate an acceptable LOS to an unacceptable LOS or increase an average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

With Alternatives 1 and 1A, the LOS and delay at the Hazel Avenue /US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps would improve from LOS F to LOS E and LOS D respectively, during the PM peak hour and from LOS E to LOS C at the eastbound ramp during the AM peak hour.

The Hazel Avenue/Folsom Boulevard intersection (Intersection #4) would be removed under all build alternatives.

The Folsom Boulevard/Auto Mall Circle intersection (Intersection #6) would continue to operate at LOS F during the PM peak hour and the eastbound US 50 ramps at Folsom Boulevard (Intersection #8) would improve to LOS C in the AM peak hour.

Alternative 2

Alternative 2 would not cause any adverse intersection operations because it would not deteriorate an acceptable LOS to an unacceptable LOS or increase an average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

With Alternative 2, the LOS and delay at the Hazel Avenue/US 50 westbound (Intersection #2) during the PM peak hour would improve from LOS F to LOS E and the delay would improve more than under Alternatives 1 and 1A. Intersection #3, the eastbound ramps at the US 50/Hazel Avenue interchange, would be changed to operate with free movement under Alternative 2.

Other intersection operation results are the same as for Alternatives 1 and 1A.

2042 Freeway Operations

Table 2.5-14 summarizes the LOS expected for each freeway segment under each alternative. The results are the same for each build alternative.

No Build Alternative

Without project construction, the following 10 freeway segments would operate at an unacceptable LOS during AM or PM peak hours in 2042.

US 50 Eastbound – Basic Segment from Rancho Cordova Parkway to Hazel Avenue (**LOS F** in the AM and PM peak hours)

US 50 Eastbound – Diverge Segment at the Hazel Avenue Off-Ramp (**LOS F** in the AM and PM peak hours)

US 50 Eastbound – Diverge Segment at the Folsom Boulevard Off-Ramp (**LOS F** in the AM and PM peak hours)

US 50 Eastbound – Merge Segment at the Folsom Boulevard On-Ramp (**LOS F** in the AM and PM peak hour)

US 50 Eastbound – Basic Segment from Folsom Boulevard to Prairie City Road (**LOS F** in the AM and PM peak hours)

US 50 Westbound – Basic Segment from Prairie City Road to Folsom Boulevard (**LOS F** in the PM peak hour)

US 50 Westbound – Diverge Segment at the Folsom Boulevard Off-Ramp (**LOS F** in the PM peak hour)

US 50 Westbound – Merge Segment at the Folsom Boulevard On-Ramp (**LOS F** in the AM and PM peak hour)

US 50 Westbound – Merge Segment at the SB Hazel Avenue Slip On-Ramp (**LOS F** in the AM and PM peak hour)

US 50 Westbound – Basic Segment from Hazel Avenue to Rancho Cordova Parkway (**LOS F** in the PM peak hour)

Alternatives 1, 1A and 2

The build alternatives would not cause any adverse freeway operations as they would not deteriorate an acceptable LOS to an unacceptable LOS. As shown in Table 2.5-14, with all build alternatives, eastbound freeway operations improve compared to the No Build Alternative conditions in the vicinity of Hazel Avenue as a result of the proposed transition lane. Westbound US 50 at the Folsom Boulevard on-ramp would continue to operate at LOS F during the AM peak hour.

2042 Transit and Bicycle/Pedestrian Facilities

No Build Alternative

As described under the Opening Year (2022) No Build scenario, access to light rail and existing bicycle facilities would remain as is. Pedestrian improvements include sidewalks, street lighting, and landscaping along the north side of Folsom Boulevard, and landscaping and lighting along the south, would not be constructed.

Alternatives 1, 1A, and 2

The proposed project would not affect current or future access or planned improvements to light rail or UPRR facilities. After construction, pedestrian access would be maintained on the east side of Hazel Avenue. Roadway improvements on Folsom Boulevard would include sidewalk improvements and street lighting. The reconstructed westbound loop on-ramp would include a squared-up, pedestrian-friendly entrance.

Bicycles may continue to use the Sacramento County standard 7-foot shoulders as well as the Class I overcrossing east of the Hazel Avenue interchange. A separate, ADA-compliant, pedestrian path/bicycle trail that would directly or indirectly connect with the Jedediah Smith Memorial Trail is proposed at the northeast quadrant.

Table 2.5-13. Horizon Year (2042) Intersection Operation Analysis

Analysis Segment	Horizon Year (2042) No Build				Horizon Year (2042) with Alt 1/1A				Horizon Year (2042) with Alt 2			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Hazel Avenue & Gold Country Boulevard	C	30.8	D	54.5	C	29.6	E	55.5	C	30.3	E	61.5
2. Hazel Avenue & US 50 WB Ramps/ Tributary Point Drive	D	42.2	F	86.6	D	42.1	E	72.4	C	32.1	E	65.7
3. Hazel Avenue & US 50 EB Ramps	E	78.2	F	90.9	C	27.1	D	36.6	Free movement			
4. Hazel Avenue & Folsom Boulevard	F	84.3	F	316.8	Does not exist				Does not exist			
5. Folsom Boulevard & Aerojet Road	B	10.5	B	15.8	B	10.5	B	15.8	B	10.5	B	15.8
6. Folsom Boulevard & Auto Mall Cir (West)	(D)	(33.4)	(F)	(280.8)	(D)	(33.4)	(F)	(280.8)	(D)	(33.4)	(F)	(280.8)
7. Folsom Boulevard & Birkmont Drive/ Auto Mall Circle (East)	B	14.1	B	17.4	B	14.1	B	17.4	B	14.1	B	17.4
8. Folsom Boulevard & US 50 EB Ramps	D	43.1	D	40.2	C	32.8	D	39.4	C	32.8	D	39.4
9. Folsom Boulevard & US 50 WB Ramps	B	15.9	B	12.3	B	16.3	B	16.5	B	16.6	B	16.5
10. Hazel Avenue & Jughandle	Does not exist				D	37.2	E	71.9	C	32.8	E	68.0
11. Folsom Boulevard & Jughandle	Does not exist				B	12.5	E	61.6	B	12.5	E	61.6

Source: DKS 2016.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
(s) = seconds
EB = eastbound
WB = westbound

Table 2.5-14. Horizon Year (2042) Freeway Operation Analysis

US 50 Direction	Analysis Segment	Type	Horizon Year (2042) No Build				Horizon Year (2042) with Alternative 1, 1A, or 2			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
EB	Rancho Cordova Parkway to Hazel Avenue	Basic	F	54.2	F	60.8	F	54.2	F	60.8
	Hazel Avenue Off-Ramp	Two-Lane Diverge	F	35.0	F	38.1	F	23.5	F	26.7
	SB Hazel Avenue Loop On-Ramp	One-Lane Merge	D	34.1	D	33.0	D	32.1	D	31.4
	NB Hazel Avenue Slip On-Ramp	Weave	D	28.7	C	27.9	C	26.2	C	26.2
	Aerojet Road Off-Ramp									
	Aerojet Road to Folsom Boulevard	Basic	E	35.7	E	35.5				
	Folsom Boulevard Off-Ramp	Two-Lane Diverge	F	45.8	F	45.7				
	Folsom Boulevard On-Ramp	One-Lane Merge	F	41.4	F	44.4	C	26.3	D	28.9
	Folsom Boulevard to Prairie City Road	Basic	F	56.2	F	67.7	F	56.2	F	67.7
WB	Prairie City Road to Folsom Boulevard	Basic	E	41.4	F	51.8	E	41.4	F	51.8
	Folsom Boulevard Off-Ramp	One-Lane Diverge	E	44.0	F	48.0	E	44.0	F	48.0
	Folsom Boulevard On-Ramp	One-Lane Merge	F	42.7	F	46.0	F	42.7	F	46.0
	Folsom Boulevard to Hazel Avenue	Basic	D	30.1	D	33.8	D	30.1	D	33.8
	Hazel Avenue Off-Ramp	Two-Lane Diverge	B	11.5	B	13.0	B	11.5	B	13.0
	NB Hazel Avenue Loop On-Ramp	One-Lane Merge	D	29.4	D	32.6	D	29.4	D	32.6
	SB Hazel Avenue Slip On-Ramp	One-Lane Merge	F	35.7	F	39.8	F	35.7	F	39.8
	Hazel Avenue to Rancho Cordova Parkway	Basic	E	41.8	F	52.3	E	41.8	F	52.3

Source: DKS 2016.
Shaded cells contain values indicating unacceptable level of service.
LOS = level of service
pc/ln/mi = passenger cars per mile per lane
EB = eastbound
WB = westbound
NB = northbound
SB = southbound

2.5.3.5 Construction Impacts

Construction would temporarily affect accessibility for vehicles, transit service, bicycles, and pedestrians. Travel lane and sidewalk closures may occur during various phases of construction, resulting in detours and temporary traffic delays associated with the construction period. Local streets would be temporarily affected during construction to allow contractor access and construction tasks. None of the project alternatives require temporary detours or other changes to the Jedediah Smith Memorial Trail; access to the trail would be maintained during the construction period (California Department of Transportation 2017:11, 20; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). Access to SacRT light rail and UPRR tracks would be maintained during construction.

A project-specific TMP, as described in more detail in Chapter 1, *Proposed Project*, would be developed and implemented before and during construction. With standardized measures of the TMP incorporated in the project, the temporary effects of construction would not be adverse.

2.5.3.6 Americans with Disabilities Act Compliance

All transportation facilities being modified or installed by the proposed project would be designed and constructed to the standards of the ADA. Construction of the proposed project would not remove or change any currently compliant facilities to a non-compliant condition. However, facilities adjacent to the proposed project or that will not be directly modified by the project may remain out of compliance, if that is the existing condition. No adverse effects related to ADA compliance would occur as a result of the proposed project.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. A project-specific TMP, as described in more detail in Chapter 1, would be developed and implemented before and during construction. The TMP would follow Caltrans' *Transportation Management Plan Guidelines* (California Department of Transportation 2015) and would include public information in multiple media; motorist information using radio announcements, traveler information systems, and signage; construction scheduling coordination; and other strategies as appropriate to the scale and scope of the project. In addition, Caltrans Standard Specifications Section 12, a part of all construction contracts, provides instructions on traffic control systems and devices to maintain traffic during construction within areas under Caltrans' control.

2.5.5 References Cited

California Department of Transportation. 2002. *Guide for the Preparation of Traffic Impact Studies*. December.

California Department of Transportation. 2015. *Transportation Management Plan Guidelines.* Division of Traffic Operations, Office of Traffic Management. November.

California Department of Transportation. 2017. *Community Impact Assessment for Hazel Avenue/U.S. Route 50 Interchange Project*. *City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

California Department of Transportation. 2018. *Traffic Accident Surveillance and Analysis System-Transportation Systems Network Reports*. OTM22130, Table B – Selective Accident Rate Calculation. April.

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Sacramento, CA. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company.

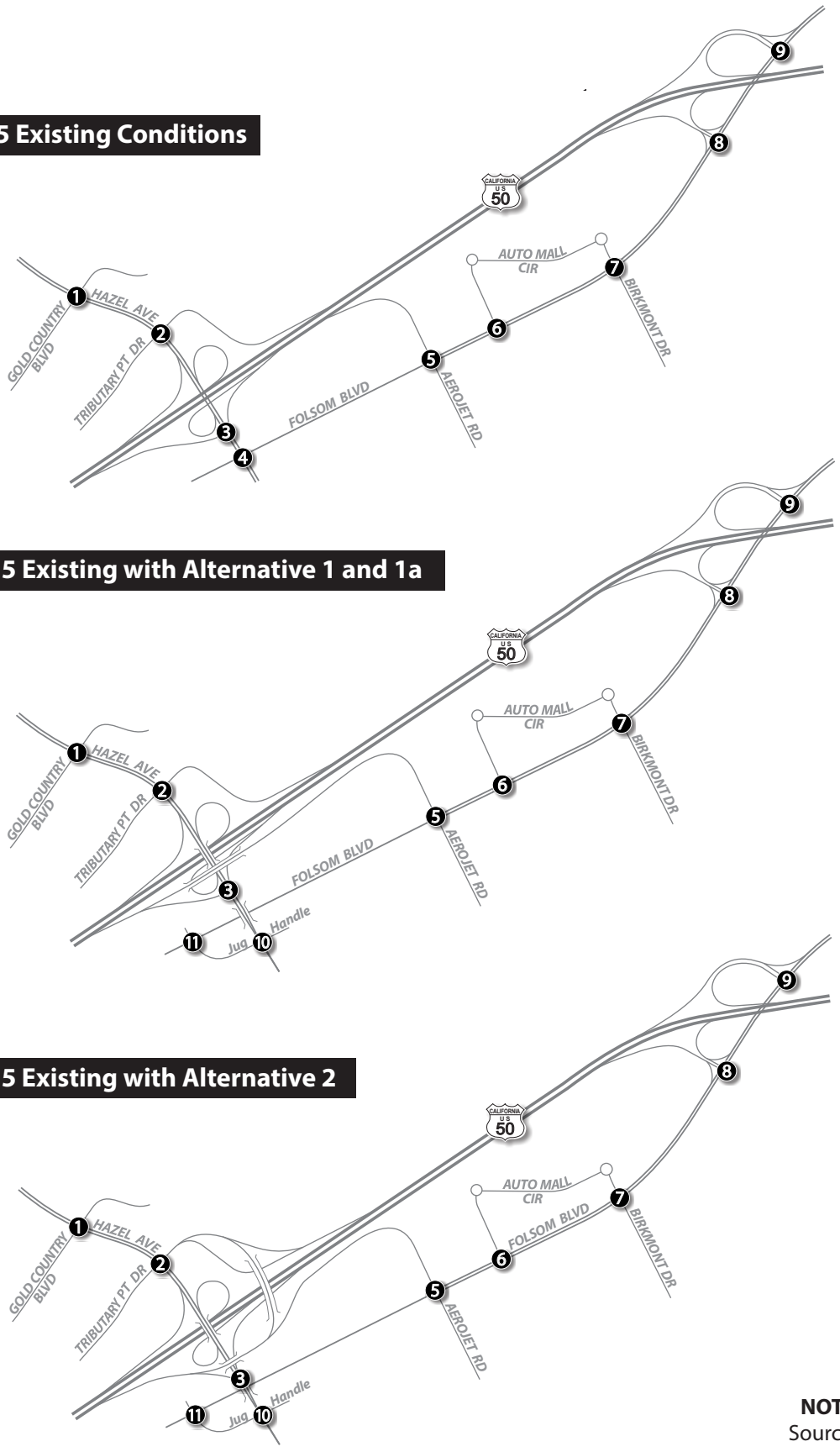
City of Folsom. 2018. *Folsom General Plan 2035*. Mobility Element. Final Draft. May. Adopted August 28, 2018. Available: Accessed: October 10, 2018.

City of Rancho Cordova. 2006. *City of Rancho Cordova General Plan Draft Environmental Impact Report*. March.

County of Sacramento. 2017. *General Plan of 2005-2030*. Circulation Element. Office of Planning and Environmental Review. Amended December 13.

Transportation Research Board. 2000. *Highway Capacity Manual*.

Transportation Research Board. 2010. *Highway Capacity Manual*. Fifth edition. Available: http://hcm.trb.org/?qr=1.



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Figure 2.5-1
Traffic Study Intersections

2.6 Visual/Aesthetics

2.6.1 Regulatory Setting

NEPA of 1969, as amended, 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, 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 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" (California Public Resources Code [PRC] 21001[b]).

The Sacramento County General Plan Circulation Element applies scenic corridor protections to freeway corridors in the county, which includes the portion of US 50 affected by the project (County of Sacramento 2014). There are no roadways in or near the project area that are designated in Federal or State plans as a scenic highway or important route for protection of maintaining and enhancing scenic viewsheds (California Department of Transportation 2017a). In addition, the portion of US 50 affected by the proposed project is not a classified Landscaped Freeway (California Department of Transportation 2016a).

2.6.2 Affected Environment

This section was prepared using information from the *Visual Impact Assessment* (VIA) technical report prepared for this project (California Department of Transportation 2017b; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). The VIA assesses potential visual impacts of the proposed project based on guidance outlined in the *Visual Impact Assessment for Highway Projects* published by the FHWA. The following key terms describe visual resources in a project area. The terms are used as descriptors and as part of a rating system to assess a landscape's visual quality.

- *Visual character* includes attributes such as form, line, color, and texture and is used to describe, not evaluate, visual resources.
- *Visual quality* is evaluated by identifying the vividness, intactness, and unity present in the project area.
  - *Vividness* is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
  - *Intactness* is the integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions.

– *Unity* is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

In addition to their use as descriptors, vividness, intactness, and unity are used more objectively as part of a rating system to assess a landscape's visual quality. Visual quality is evaluated using the equation:

$$\text{Visual Quality (VQ)} = \frac{\text{Vividness (V)} + \text{Intactness (I)} + \text{Unity (U)}}{3}$$

Vividness, intactness, and unity are evaluated independently; each quality is assigned a rating from 0.0–7.0. On this scale, 0.0 = very low, 4.0 = average/moderate, and 7.0 = very high. The overall rating for visual quality uses the same 0.0–7.0 scale. Ratings have been included in parentheses (e.g., VQ = 2.0) in the visual quality description of the visual assessment units (VAUs).

Resource change is one of the two major variables that determine visual impacts. *Resource change* refers to the evaluation of the visual character and the visual quality of the visual resources that comprise the project corridor before and after construction of a proposed project. The other major variable is *viewer response*, the response of viewers to changes in their visual environment.

2.6.2.1 Project Location and Setting

The project location and setting provide the context for determining the type and severity of changes to the existing visual environment. The project setting is the *project corridor*, defined as the area of land that is visible from, adjacent to, and outside the highway ROW. The project corridor is determined by topography, vegetation, and viewing distance and, consequently, is larger than the project area.

The proposed project is at the Hazel Avenue interchange on US 50 between approximately post mile 15 and post mile 17.5 and includes portions of Folsom Boulevard and the Aerojet Road off-ramp. The project is within Sacramento County, the city of Rancho Cordova, and is located west of the base of the Sierra Nevada foothills. It is within the transition zone between the flat Sacramento Valley to the west and the Sierra Nevada range to the east. The westernmost portion of the region primarily consists of agricultural land uses bordering the suburban development that radiates out from the urban core of Sacramento and the eastern portion of the region is characterized by open grasslands and oak woodlands leading up to the foothills. The landscape pattern is influenced by development sprawling from existing city cores and the major roadways, such as US 50, Interstate 80 (I-80), SR 99, I-5, SR 16, and SR 49. This portion of the county primarily supports suburban land uses associated with Rancho Cordova, Folsom, Orangevale, Fair Oaks, and Gold River, in addition to open space and agricultural land uses.

Flat to gently sloping terrain characterizes the immediate project area. Development, transportation infrastructure, and foothills with mature trees and shrubs prevent wide-ranging views of the Sierra Nevada range to the east, but portions of the foothills and the mountains are visible down the US 50 and Folsom Boulevard corridors. The Hazel Avenue overcrossing

provides slightly wider ranging views of the foothills and mountains, but views are still limited by mature trees and terrain. Views toward the foothills from the US 50 corridor are hindered by highway overcrossings and blockage from adjacent vegetation, and consequently, are not considered scenic vistas. Atmospheric conditions such as haze and fog can act to further limit views of the Sierra Nevada range.

The land uses within the corridor are primarily commercial, business park, and industrial along US 50. These include Comfort Inn and Suites, California Backyard, Nimbus Winery Village with The Old Spaghetti Factory and Cattlemens restaurant, Folsom Auto Mall, and other miscellaneous restaurants and office/industrial buildings. Immediately north of the highway are recreational open space lands and associated facilities, including the Jedediah Smith Memorial Trail, Lake Natoma, Sacramento State Aquatic Center, Nimbus Fish Hatchery, and the Nimbus Dam. The Twilight RV and Mobile Home Park and Oak Brook Apartments are the only residential land uses along the project corridor, and are situated amongst the commercial development between US 50 and Folsom Boulevard. Wooden utility poles and lines, the light rail tracks, and the overhead lines for the light rail and their support poles parallel Folsom Boulevard to the south. Lands south of Folsom Boulevard and the light rail tracks consist of a mixture of industrial warehouse facilities, paved or graveled lots, and vacant parcels that are vegetated with ruderal grasses and mature trees. The light rail station is also south of Folsom Boulevard and the light rail tracks, as are remnant dredge tailings from past mining operations. Transportation facilities are a dominant visual feature in the project vicinity and include US 50, Hazel Avenue, Folsom Boulevard, and light rail. In addition, the Jedediah Smith Memorial Trail, starting from downtown Sacramento to the city of Folsom, passes along the project area to the north. Water bodies in the project vicinity include the American River, Lake Natoma, and the Folsom South Canal.

As described in Section 2.6.1, *Regulatory Setting*, there are no roadways in or near the project area that are designated in Federal or State scenic highways but, the portion of US 50 affected by the project is a Sacramento County scenic corridor.

2.6.2.2 Visual Assessment Units

The project corridor was divided into a series of four VAUs based on specific vantage points and differing sensitivities of viewer groups. Each VAU has its own visual character and visual quality, and is typically defined by the limits of a particular viewshed. The four VAUs that were evaluated are listed and described below.

- US 50
- Recreational
- Commercial
- Residential

The VAUs and four representative key views (KVs) are shown in Figure 2.6-1.

US 50 Visual Assessment Unit

The existing US 50 corridor is generally at-grade, varies from three to five lanes in each direction with paved shoulders, and has a continuous concrete barrier in the median. Views in this VAU are largely of grassy terrain, trees and shrubs, buildings and signage associated with the adjacent commercial and industrial land uses to the north and south, sound walls, highway signage, bridges crossing over US 50, and the immediate paved surface of the highway. Vegetation along the highway shoulders consists of un-landscaped grasslands and some mature trees. This VAU also includes the interchange ramps associated with the project at Hazel Avenue and Folsom Boulevard. Both interchange loops are vegetated with grasslands and mature trees and shrubs.

Views of the bordering VAUs are present to the northwest and southeast when traveling either northeast or southwest (refer to KV 1a and KV 1b in Section 2.6.3, *Environmental Consequences*). Views in the US 50 VAU are limited by the adjacent commercial and industrial development; sound walls by residential areas; trees and shrubs associated with residential, open space, and commercial areas; and gently rolling terrain on either side of the corridor that limits views to the immediate land uses bordering the highway corridor along this segment of US 50. Overcrossings also limit views down the corridor and often prevent views beyond the structure. Views toward the foothills are available to varying degrees when looking east along the highway corridor. Lighting along the US 50 corridor is focused at the existing interchanges. Lighting is also associated with vehicle headlights and nearby businesses and residences, including interior and exterior building lighting and overhead lighting within parking lots.

The vividness (V) of the US 50 VAU is moderately high (V = 5.0) since development along the highway is noticeable and highway infrastructure (e.g., sound walls, guardrails, overcrossings, bridges, light standards, and other barriers) interrupts views of the Sierra Nevada range and foothills. The surrounding landscape and vegetation associated with nearby VAUs provide visual interest and improve the appearance of the ROW. Utilities along Folsom Boulevard can be seen from US 50 but they do not detract greatly from the corridor. The intactness (I) and unity (U) are moderate (I = 4.5 and U = 4.5) due to sound walls and vegetation blocking portions of development. Mature trees and shrubs are prominent in the corridor—softening the appearance of the corridor's edges and reducing the apparent scale of overcrossings. The resulting visual quality (VQ) of the US 50 corridor is moderately high (VQ = 4.7). The vividness of this VAU along the Hazel Avenue corridor (KV 1) is moderate (V = 4.0) because development, the roadway corridor, and utilities along the roadway are prominent features that interrupt and draw attention away from views of the surrounding trees and landscape. The intactness and unity are moderate (I = 4.0 and U = 4.0) because utilities along Hazel Avenue and Nimbus Road, beyond, detract from views of the corridor. Mature trees and shrubs in the corridor and also obscure and soften views of the surrounding development. The resulting visual quality of the Hazel Avenue corridor is moderate (VQ = 4.0).

Recreational VAU

The Recreational VAU consists of open space lands associated with the Lake Natoma Unit of the Folsom Lake State Recreation Area (recreation area) and the Jedediah Smith Memorial Trail. The Jedediah Smith Memorial Trail connects to a bikeway and pedestrian overcrossing that

crosses US 50 and then terminates at Folsom Boulevard. These open space areas support land- and water-based recreational uses that border the project (refer to KV 2a and 2b in Section 2.6.3). The trail system within the recreation area is adjacent to the project corridor and Alder Creek runs underneath the highway to Lake Natoma. The trails travel over flat to gently rolling terrain, through grasslands and oak woodlands and pass by riparian corridors. These open space and recreational areas are used for biking, walking, running, sightseeing, photography, swimming, canoeing, kayaking, paddle boarding, and fishing. Views within the unit include views of the natural landscape and the surrounding US 50 and Commercial VAUs. However, vegetation within the recreation area limits views within this unit and many views are focused on the surrounding natural landscape and the lake, not US 50. The recreation area is not lit; however, the Caltrans Park & Ride lot has minimal overhead security lighting.

The vividness of this VAU is high (V = 6.0) because the Recreational VAU provides visually appealing natural areas in an otherwise developed area. The intactness and unity are high (I = 5.5 and U = 5.5) because although large, paved parking areas are visible, the recreational open space area is largely continuous, and other encroachments that could detract from the unit are minimal. Mature vegetation obscures portions of nearby development and helps to reduce the apparent scale of highway infrastructure. The resulting visual quality is high (VQ = 5.7). The vividness of this VAU closer to the Nimbus Flat entry drive (KV 2), however, is moderate (V = 4.0) because development, the roadway corridor, and utilities along the roadway are prominent features that interrupt and draw attention away from views of the surrounding trees and landscape. The intactness and unity at KV 2 are moderate (I = 4.0 and U = 4.0) because utilities, street and traffic lighting along Hazel Avenue, and highway infrastructure are more prominent at this location. The resulting visual quality of KV 2 is moderate (VQ = 4.0).

Commercial VAU

Commercial uses in this unit include furniture stores (Naturwood, La-Z-Boy, and California Backyard), Comfort Inn and Suites, restaurants (The Old Spaghetti Factory, Cattlemen's restaurant, Taco Bell, Samurai Sushi, Rudy's Hideaway Lobsterhouse), Sentry Storage, Gold Point Office Park, Folsom Auto Mall, Nimbus Winery Village, gas stations, and smaller businesses, banking, and retail uses. The Hazel light rail station and Sacramento Metro Fire Station #63 are also within this VAU. Aboveground utilities (e.g., roadway lights, traffic lights, wooden utility poles, steel transmission towers, and utility lines) are prominent features in the viewshed (refer to KV 3 in Section 2.6.3). This unit has the most direct views of the project site because it is the largest VAU adjacent to the project area and has the most unobstructed views of the US 50 corridor, the US 50/Hazel Avenue interchange, and Folsom Boulevard (refer to KV 4a and 4b in Section 2.6.3). Trees and shrubs buffer some views toward the project site from this unit but views of the project corridor are available from bordering buildings and parking lots where landscaping is limited. Lighting within this unit includes safety lighting from interior and exterior building lighting, vehicle headlights, parking lot lighting, landscape lighting, and street and traffic lights.

The vividness of this VAU is moderate (V = 3.5) because of the various commercial and industrial buildings and vacant lots in the unit are typical of other such development in the region. They contain larger- to smaller-scale buildings and parking lots that sometimes lack mature landscaping to offset the scale of development. These areas have limited views of the US

50 corridor and of the Residential and Recreational VAUs. The intactness and unity are moderate (I = 3.5 and U = 3.5) because the commercial development in the area is fairly consistent but there are some abrupt transitions between developed land uses and vacant lots. In addition, smaller-scale utilities are present, but large-scale utility corridors that often detract from views in the region are minimal. The resulting visual quality is moderate (VQ = 3.5) and both KV 3 and KV 4 are consistent with this rating.

Residential VAU

The single-story Twilight RV and Mobile Home Park and two-story Oak Brook Apartments, which abut each other, are the only residential land uses along the project corridor. The mobile home park is separated from US 50 by a sound wall, parking for the Nimbus Winery Village and Cattlemens, and mature landscaping associated with the commercial parking lot and the mobile home park. Similarly, the Oak Brook Apartments are separated from US 50 by a sound wall, apartment carports, and mature landscaping associated with the commercial parking lots and the apartments. First-story views of US 50 are not available from the mobile home park and the apartments because views are limited by residential and commercial structures, landscaping, and sound walls. However, one apartment building that is located adjacent to US 50 has second-story units that face US 50 with views of the highway corridor. Lighting within this VAU is concentrated within the residential developments and is associated with interior and exterior house lighting, landscape lighting, vehicle headlights, and street and parking lot lighting.

The vividness of this VAU is moderate (V = 4.0) because the housing units in this VAU are fairly well kept. These areas have limited views of the US 50 corridor, open space areas, and commercial land uses in the area due to sound barriers, vegetation, and adjacent residential structures that limit views. The project corridor is not a dominant visual element in the landscape. The intactness and unity are moderately low (I = 3.5 and U = 3.5) because the area is not uniformly developed and there is an abrupt transition between residential land uses and the surrounding commercial land uses. The resulting visual quality is moderately low (VQ = 3.7).

2.6.2.3 Viewers and Viewer Response

Two major types of viewer groups are of primary concern for highway projects: highway neighbors and highway users. Each viewer group has its own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group that help to evaluate their responses to visual changes.

Viewer Groups

Highway Neighbors (Views to the Road)

Highway neighbors are people who have views *to* the road. They can be divided into different viewer groups by land use. For example, residential, commercial, industrial, retail, institutional, civic, educational, recreational, and agricultural land uses may generate highway neighbors or viewer groups with distinct reasons for being in the corridor and therefore with distinct responses to changes in visual resources. For this project, the following highway neighbors were considered:

- Residents within the Residential VAU.
- Workers and patrons within the Commercial VAU.
- Recreationists within the Recreational and Commercial VAUs.
- Roadway users within Residential and Commercial VAUs.

Roadway neighbors constitute viewers who would have longer-term, stationary views (residents and businesses) and viewers who would have shorter-term, transient views (recreationists and roadway travelers on nearby local roadways) as they pass by the proposed project. Roadway neighbors' views of the project vary based on location within the landscape and distance from the project site. A limited amount of roadway neighbors have immediate and direct views of the project site, including stationary views from the buildings, parking lots, and trails that are directly adjacent to the project site. Direct views of the project site are also available to transient viewers approaching and passing the project site, such as along Folsom Boulevard. Most roadway neighbors do not have immediate and direct views of the project because views are limited by development, vegetation, and topography. Views of the project site from a distance are not available because development, vegetation, and topography intervene and prevent such views. Residents would have moderate-high exposure, businesses would have high exposure, and transient roadway neighbors would have moderate exposure.

Highway Users (Views from the Road)

Highway users are people who have views *from* the road. They can be divided into different viewer groups in two different ways—by mode of travel or by reason for travel. For example, dividing highway users by mode of travel may yield pedestrians, bicyclists, transit riders, car drivers and passengers, and truck drivers. Dividing highway users or viewer groups by reason for travel creates categories like tourists, commuters, and haulers. It is also possible to use both mode and reason for travel simultaneously, creating a category like *bicycling tourists,* for example. For this project, the following highway users were considered within the US 50 VAU:

- Recreational travelers
- Local commuters
- Haulers

Roadway users within the US 50 VAU represent the largest number of viewers who would come into direct visual contact with the proposed project. It is estimated that between 2,827 and 6,779 vehicles per hour travel in each direction on US 50 through the project area during peak hours.[1] Views of the interchange from US 50 would be most apparent as drivers are about to enter the interchange because development, vegetation, and curvature of the road obscure views. However, many roadway users likely travel this route on a daily basis for work commutes. Roadway users' exposure would range from moderate-high to high based on traffic volumes.

[1] Refer to Figure 5-1 of the *Transportation Operations Report* (DKS 2016; provided in Volume 3) for more information. The numbers provided include the totals for the mixed-flow lanes plus the HOV lanes to determine the total number of vehicles traveling at peak hours.

Viewer Sensitivity

The proposed project is in an area that is well-established with continuous infill land development. Thus, all viewer groups are familiar with maintenance and construction activities occurring on local roadways within and in proximity to the project site.

Roadway neighbors would have moderate-high to high sensitivity to visual changes resulting from the project because the neighbors that are adjacent to or near the project site have short- to long-term stationary and transient views of the US 50 corridor and the vegetation located adjacent to the ROW.

Roadway users would have moderate to moderate-high sensitivity to visual changes resulting from the project. Although viewers would have direct visual contact with the project only while traveling through the area and views would be intermittent, many roadway users travel this route on a daily basis for work commutes and are familiar with the existing visual conditions.

Group Viewer Response

The roadway neighbors viewer group has a range in exposure. Residents would have moderate-high exposure, businesses would have high exposure, and transient recreationists and roadway neighbors would have moderate exposure. Roadway neighbor viewers have a moderate-high to high visual sensitivity. The response of roadway neighbors to the project would be moderate-high to high. These responses would result from project features that would alter the visual character of the interchange; remove vegetation; affect commercial parking lots and buildings, and be visually inconsistent with other nearby overcrossings, interchanges, and roadways combined with viewer familiarity of the project site.

The roadway users viewer group has moderate-high to high exposure to the project site and moderate to moderate-high visual sensitivity. The response of roadway users to the project would be moderate-high to high.

2.6.3 Environmental Consequences

As noted above, the project area is not located near a Federal or State scenic highway or other designated scenic corridor. Accordingly, the proposed project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway; and there would be no effect to such scenic resources in any VAU for all build alternatives. However, the portion of US 50 affected by the project is designated as a County scenic corridor.

Build Alternatives

Visual Character and Visual Quality, including Scenic Vistas

US 50 Visual Assessment Unit

Construction and operation features would be the same or very similar under all three build alternatives.

Alternatives 1 or 1A would take approximately two years to construct and Alternative 2 would take three years to construct. Construction activities would temporarily introduce considerable heavy equipment and associated vehicles, including bulldozers/excavators, graders, water trucks, rollers/compactors, backhoes, tractors, cranes, pile drivers, asphalt pavers, and trucks, into the viewshed of highway users. Construction staging would occur within the ROW on the westbound US 50 ramp loops that are north of US 50 and east of Hazel Avenue and on the ramp loops for eastbound US 50 at Folsom Boulevard; these areas would be immediately visible to passing viewers. Construction signaling and signage would also be visible to direct traffic, signifying lane shifts and closures. The presence of construction activities and equipment would affect views of and from the project site during the construction period. Although construction would last for only two or three years, construction delays would likely be perceived as negative due to the level of traffic that passes through this area. Highway users are transient and familiar with heavy equipment associated with other highway construction projects; nevertheless, the proposed project and its alternatives constitute a major highway construction project.

The primary visual difference between the alternatives is that Alternative 1 would construct an elevated viaduct over the new raised portion of Hazel Avenue, which would be located between US 50 and Folsom Boulevard (see Figure 2.6-2 for KV 1a), Alternative 1A would construct a tunnel under this raised segment of Hazel Avenue (see Figure 2.6-3 for KV 1b), and Alternative 2 would create a flyover structure to cross US 50. All project alternatives would include highway widening to accommodate the modified eastbound on- and off-ramps, an eastbound auxiliary lane, ramp improvements, introduction of retaining wall structures and embankments, introduction of a bridge over the light rail tracks and Folsom Boulevard, a new roadway connecting Folsom Boulevard and Nimbus Road, vegetation removal, and changes to private properties. All of these project components would be visible to highway and roadway users within the US 50 VAU.

Some changes associated with the project alternatives would not greatly alter the existing visual character of the US 50 corridor, such as widening eastbound US 50 to the south between the Aerojet Road and Folsom Boulevard exits and modifying the Aerojet Road and Folsom Boulevard exit off-ramps from eastbound US 50. The widening of US 50 at this location and the widening of the Aerojet Road and Folsom Boulevard ramps would appear similar to existing visual conditions, even though a few mature trees that are close to the existing edge of pavement would need to be removed.

Under Alternatives 1 and 1A, the Hazel Avenue overcrossing would be replaced with a wider structure over US 50 to accommodate additional lanes but would be approximately the same height as the existing overcrossing. Although the overcrossing would be widened, all of the

features associated with the proposed overcrossing are visual elements of the existing overcrossing. The widened overcrossing would not significantly alter the existing visual character of the project area as seen by highway users. All additions would be similar in appearance to existing facilities in the area. The Hazel Avenue overcrossing would remain the same width and approximately the same height under Alternative 2. Utilities would be relocated to accommodate the proposed project alternatives, but this would only result in minor visual changes while the modifications are occurring. The changes would not result in substantial visual changes once built, thus keeping with existing visual conditions.

Changes to the north of US 50 would be noticeable at the ramps east of Hazel Avenue. All alternatives would create an independent bicycle off-ramp in the same location, connecting Hazel Avenue to the Nimbus Flat entrance of the recreation area. The northbound Hazel Avenue highway on-ramp to westbound US 50 would be widened and modified to skirt the outer edge of the bicycle off-ramp. The segment of existing on-ramp at this location that would no longer be in use would be restored by removing the pavement, re-grading the terrain, and hydroseeding the exposed soils. In addition, all alternatives would shift the Caltrans Park & Ride lot further north to directly border the Nimbus Flat entry drive, removing the existing grassy median that separates the parking lot from the entry drive. Mature trees and shrubs within the ramp loops north of US 50 and east of Hazel Avenue would be removed to accommodate the ramp modifications and construction staging that would occur at this location. This would reduce the amount of landscape and quality of views currently seen at this location. Grassland areas along the ROW would also be reduced to accommodate highway widening. Removing mature trees and shrubs, which are aesthetic resources, within ramp loops and on the edges of the ROW to accommodate widening and the new and reconfigured interchange ramps would negatively affect the visual character of the corridor.

Bridge and ramp embankments would also be modified and constructed to support the widenings and new ramps, which would stand out slightly and increase the presence of such features in the area. Placement of fill would introduce new landforms into views, but the embankments would be similar to the existing landforms associated with US 50. Improvements to infrastructure within Caltrans' control are required to comply with the Caltrans HDM, which utilizes Context Sensitive Solutions consistent with Director's Policy DP-22 (California Department of Transportation 2011). This includes implementing Design Standards 304.1, *Side Slope Standards*; 304.4, *Contour Grading and Slope Rounding*; and 902.1, *Design Considerations, Aesthetics*. These design standards require that slopes be graded to 4:1 or flatter; gentle, smooth, and well transitioned with slope rounding and topsoil replacement; have flowing contours that tie gracefully into the existing adjacent roadside and landforms; and that steep, obvious cuts and fills be avoided to improve project aesthetics associated with roadside slopes. In addition, these design standards require that replanting reflect adjacent communities and natural surroundings; serve as a visual buffer for objectionable views of the highway facility for adjacent land uses; soften visual impacts associated with graded slopes and large structures; and act to frame or enhance good views (California Department of Transportation 2016b). The proposed project would comply with these standards. Compliance with these HDM design standards would help minimize visual impacts associated with roadside grading and slopes.

Widening US 50 to the south and modifying eastbound US 50 on- and off-ramps would increase the amount of visible traffic lanes, pavement, and striping associated with the project. This

would slightly alter the existing visual character of the project area as seen by highway users. However, the remaining project-related visual changes to the south of US 50 would result in a higher degree of change, especially when all the changes are seen together in context. The shifted and widened eastbound US 50 off-ramp to Hazel Avenue proposed under all alternatives would require the modification of the northern ends of the Sentry Storage Units and the full take and removal of the Folsom Chevron Gas Station and Convenience Market and Cattlemens restaurant. Parking lots and landscaping associated with the Comfort Inn and Suites, Samurai Sushi, Rudy's Hideaway Lobsterhouse, Sacramento Metro Fire Station #63, and Nimbus Winery Village would also be affected to varying degrees. These changes would be visible from the US 50 VAU and would create more exposed views toward commercial areas south of US 50. The widening and ramp modifications would also bring highway users closer to adjacent commercial and residential land uses south of the corridor. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with these HDM design standards and County Improvement Standards (County of Sacramento 2018) would help minimize visual impacts associated with roadside grading and slopes.

All alternatives would also create a bridge that travels over the light rail tracks and Folsom Boulevard and a new "jughandle" roadway connecting Folsom Boulevard and Nimbus Road. These changes would be visible from the southern extent of the US 50 VAU, which ends at the Hazel Avenue intersection with Folsom Boulevard, and from the eastbound US 50 off-ramp. The existing Folsom Boulevard intersection with Hazel Avenue would be removed and replaced with the bridge structure and would increase the presence of bridge structures within the US 50 VAU. As seen in the simulations for KV 1a and KV 1b (Figures 2.6-2 and 2.6-3), the apex of the new bridge would block the existing view corridor to the south, down Nimbus Road. Visible trees in the foreground and on the horizon would be blocked by the bridge, while the scale of utility poles and lines would be reduced because the bridge would obscure views of the lower portions of the poles. The bridge deck would become a prominent visual element in this view and the trees, utility poles, and upper portion of the Nimbus Winery building would be ancillary visual elements to the bridge.

Similar to the ramps north of US 50, the modified ramps south of US 50 would also have modified and constructed embankments to support the widenings. Thus, the reconfigured and new ramps would stand out slightly, because the modified embankments would be slightly more prominent than the existing ramp embankments due to the embankments being larger, taking up more surface area. This would increase the visual presence of embankments in the area. The connectors would require fill and mounding to provide bridge clearance over other connector ramps. This would create new landforms that would obscure views beyond only to a small degree, in passing, and would alter the existing visual character. The bridge materials would be visually similar to the existing structures, but the visual prominence of the retaining walls, tunnels, and ramp structures would be greatly increased by the extent of reconfigured ramps that would be introduced into the viewshed. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.

The primary difference between the alternatives is Alternative 1 would create an elevated viaduct over the new raised portion of Hazel Avenue located between US 50 and Folsom Boulevard, whereas Alternatives 1A would have a tunnel run underneath Hazel Avenue, and Alternative 2 would have a new flyover spanning US 50 (Figures 1-3, 1-4, and 1-5). Effects of constructing each alternative would vary, as described below. Changes resulting from the construction of the off-ramp to Aerojet Road and Folsom Boulevard (Alternatives 1, 1A, and 2) and the flyover to northbound Hazel Avenue (Alternative 2) are also discussed by alternative below.

- Under Alternative 1, the elevated viaduct off-ramp to Aerojet Road and Folsom Boulevard would transect the eastbound US 50 on-ramps from Hazel Avenue south of US 50, and cross the Nimbus Winery Village and Cattlemens restaurant parking lots. The Cattlemens restaurant structure would be completely removed and replaced with transportation infrastructure. This construction would also require the removal of the mature trees and shrubs within the ramp loops and in the parking lots. As seen in Figure 2.6-2, Simulated Conditions for KV 1a, the elevated viaduct over Hazel Avenue would be highly visible to roadways users and recreationists on Hazel Avenue. The new support piers and elevated roadway of the proposed connector would introduce a prominent viaduct structure to the landscape and increase the amount of visible transportation infrastructure at this location. The viaduct structure would also be highly visible to roadways users traveling in both directions on US 50. Therefore, Alternative 1 would be more visible than Alternative 1A, which would tunnel under Hazel Avenue. Overall, these changes would increase the visual prominence of the US 50/Hazel Avenue interchange.
- Under Alternative 1A, the off-ramp to Aerojet Road and Folsom Boulevard would tunnel under the raised segment of Hazel Avenue and transect the eastbound US 50 on-ramps from Hazel Avenue south of US 50. Construction would require the complete removal of the Cattlemens restaurant and of mature trees and shrubs within the ramp loops and in the parking lots. These features would be replaced with transportation infrastructure. As seen in Figure 2.6-3, Simulated Conditions for KV 1b, the tunnel under Hazel Avenue would not be visible to roadway users and recreationists on Hazel Avenue when looking straight ahead down the roadway corridor. However, viewers on the outer lanes of Hazel Avenue and on the sidewalks may be able to see the retaining walls, embankments, and paved ramp associated with the tunnel as they approach the undercrossing while looking east and west. The tunnel under Hazel Avenue would be more visible to travelers on US 50 because they would have a more direct line of sight toward the tunnel. These viewers would also have a more exposed view of the retaining walls, embankments, and paved ramps. Although the features associated with the tunnel would not be as visible or prominent in the landscape as the viaduct structure proposed in Alternative 1, these changes would still increase the visual prominence of the US 50/Hazel Avenue interchange.
- Alternative 2 would create a new flyover ramp structure over US 50. The new structure would carry vehicles travelling from eastbound US 50 to northbound Hazel Avenue over the freeway to join with the westbound off-ramp. Alternative 2 would require the complete removal of Nimbus Winery and the mature trees and shrubs at the existing ramp loops and parking lots. Alternative 2's flyover ramp would require more vegetation removal than Alternatives 1 and 1A. The US 50 westbound off-ramp would be widened to accommodate traffic from both the flyover and traffic exiting from westbound US 50. Although the flyover would be similar in appearance to the existing bikeway and pedestrian overcrossing over US

50 and would not greatly contrast with the existing visual setting, the flyover would introduce another elevated crossing over US 50 that would be more visible to highway traffic and increase the visual presence of such crossings at this location. Alternative 2 would have a greater impact than Alternatives 1 and 1A because of the increased impact to private properties. In addition, the off-ramp to Aerojet Road and Folsom Boulevard would come much closer to the mobile home park, requiring the removal of residential landscaping and introducing a freeway structure much closer to residences. Like Alternative 1A, the eastbound off-ramp running under Hazel Avenue would not be visible to roadways users and recreationists on Hazel Avenue when looking straight ahead down the roadway corridor. However, viewers on the outer lanes of Hazel Avenue and on the sidewalks may be able to see the retaining walls, embankments, and paved ramp associated with the tunnel as they approach the undercrossing while looking east and west. The off-ramp running under Hazel Avenue would be more visible to travelers on US 50 because they would have a more direct line of sight toward the tunnel. These viewers would also have a more exposed view of the retaining walls, embankments, and paved ramp. The new flyover ramp and footprint of the off-ramps would occupy a larger area under Alternative 2 than the other alternatives. The features of Alternative 2 would be more prominent than those of Alternative 1 and 1A and these changes would further increase the visual prominence of the US 50/Hazel Avenue interchange.

Once in operation, the primary visual changes would be regular highway maintenance activities, which are already a common visual element. Traffic would increase over time, but the proposed project would help alleviate backups on the highway, reducing the visible presence of traffic congestion. Utility relocation underground would improve visual conditions by removing visual clutter. The interchange embankments, modified ramps, and bridge structures would result in alterations to the visual character and would increase the prominence of highway infrastructure. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with these HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes.

During operation under Alternative 1, roadway users and recreationists on Hazel Avenue would be able to see passing vehicles on the off-ramp viaduct because the structure would be elevated. Under Alternative 1A, roadways users and recreationists on Hazel Avenue would not be able to see passing vehicles on the off-ramp tunnel because the structure travels under Hazel Avenue, which would block views. Therefore, Alternative 1A would be less visible than Alternative 1 during operation.

Visual impacts under Alternative 2 would be greater than 1A and 1 due to the new flyover ramp connector over US 50. Because it would be elevated, roadways users and recreationists on US 50 and Hazel Avenue would be able to see the flyover. Therefore, Alternative 2 would be more visible than Alternatives 1 and 1A.

Summary

The overall visual quality (vividness, intactness, and unity) of the US 50 VAU would be affected by the proposed project because all alternatives would alter the appearance of the highway corridor and introduce substantial human-made features. The assessment of changes by alternative for this VAU is shown in Table 2.6-1. This table is also available in the VIA (California Department of Transportation 2017b; provided in Volume 3).

Table 2.6-1. Visual Quality Change for US 50 Visual Assessment Unit

Alternative (Key View)	Existing Visual Quality	Visual Quality with Project	Visual Quality Change
1 (KV 1a)	4.0 (M)	2.5 (ML)	-1.5
1A (KV 1b)	4.0 (M)	3.0 (ML)	-1.0
2 (N/A)	4.0 (M)	2.8 (ML)	-1.2

L = Low
ML = Moderately low
M = Moderate
MH = Moderately high
H = High

Response of highway users would be moderate-high to high (refer to Tables 5, 9, and 13 in the VIA; provided in Volume 3) for all build alternatives. Viewers within the US 50 VAU have the greatest exposure to major changes associated with the project area. Although they would come in direct visual contact with the project only while travelling through the area and views would be intermittent, many roadway users travel this route on a daily basis for work commutes and are familiar with the existing visual conditions. The modified interchange, roadway widening, and associated vegetation removal would alter the existing visual character and visual quality of the project area, and highway users would likely view these changes negatively. All build alternatives would result in a resource change to this VAU that is moderate-low to moderate. When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate to moderate-high for all build alternatives. However, because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with these HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Therefore, these permanent built changes would not result in adverse visual impacts for all build alternatives. No mitigation is required.

Recreational Visual Assessment Unit

Construction and operation features would be the same or very similar in the Recreational VAU under all three build alternatives. Consequently, visual impacts associated with construction and operation would not vary among the build alternatives, as described below.

Construction in the Recreational VAU would occur during the same timeframe and in the same manner as described for the US 50 VAU. Mature trees and shrubs limit most views toward the proposed project from trails within the Recreational VAU. The widening along the south side of US 50 would occur between the Folsom Boulevard off-ramp and the bikeway and pedestrian overcrossing over US 50. Many views toward the widening along this segment of US 50 would

be obscured by gentle terrain variation, vegetation within the Recreational VAU, and concrete barriers separating east- and westbound traffic within the US 50 VAU. However, in areas where gaps in vegetation are present, small areas of vegetation removal associated with widening south of US 50 may be visible. However, when seen in conjunction with the surrounding landscape that backdrops these areas, where most of the surrounding vegetation would remain, it is not anticipated that these areas would stand out or be perceived as a negative visual change. The majority of visual changes associated with the proposed project would be visible from the bikeway and pedestrian overcrossing over US 50, which has a direct line of sight to the US 50 corridor, and from the southwestern limits of the Recreational VAU, where the Jedediah Smith Memorial Trail connects to the bikeway and pedestrian overcrossing near the Nimbus Flat entry drive. The focus of visual changes associated with the proposed project would be on changes occurring north of US 50, because these features would be closest to and fall within a small portion of the Recreational VAU. Visual changes to the south of US 50 would not be as notable because, as seen in the Simulations for KV 2a (Figure 2.6-4) and KV 2b (Figure 2.6-5), the embankments for the Hazel Avenue bridge over US 50 and westbound on- and off-ramps limit most views toward changes south of US 50. Views from the bikeway and pedestrian bridge over US 50 looking toward the widened Hazel Avenue bridge (Alternatives 1 and 1A) or replaced bridge (Alternative 2) over US 50 not be greatly altered by the wider structure over US 50 because it would be approximately the same height as the existing overcrossing, be made of the same materials, and be similar in appearance to existing facilities.

All alternatives would create an independent bicycle off-ramp in the same location, connecting Hazel Avenue to the Nimbus Flat entrance of the recreation area. The Hazel Avenue on-ramp to westbound US 50 would be widened and modified to skirt the outer edge of the bicycle off-ramp, as shown in the Simulations for KV 2a (Figure 2.6-4) and KV 2b (Figure 2.6-5). The existing on-ramp would be restored by removing the pavement, re-grading the terrain, and by hydroseeding the exposed soils. In addition, all alternatives are anticipated to slightly modify the Caltrans Park & Ride. As shown in the Simulations for KV 2a and KV 2b, the modified parking lot would not greatly alter views associated with this KV. Removal of mature trees and shrubs within the ramp loops north of US 50 and east of Hazel Avenue would be required to accommodate the ramp modifications and construction staging at this location, which is not readily visible in KV 2. This would reduce the amount of landscape and quality of views that are currently seen at this location. Grassland areas along the ROW would also be reduced to accomplish highway widening. Removing mature trees and shrubs, which are aesthetic resources, within ramp loops and on the edges of the ROW to accommodate widening and the new and reconfigured interchange ramps would negatively affect the visual character of the Recreational VAU.

As shown in the Simulations for KV 2a and KV 2b, the modified ramps north of US 50 would have modified and constructed embankments to support the widenings and the new and reconfigured ramps that would stand out slightly and increase the presence of such features in the area. This would create new landforms that would further obscure views beyond, to changes south of US 50, and would slightly alter the existing visual character. The most notable visual difference between the alternatives is that the viaduct structure in Alternative 1 would be a visible addition to the landscape, as shown in the Simulation for KV 2a, but would be absent under Alternative 1A, as shown by Simulation for KV 2b, and under Alternative 2. However, the retaining wall structure for the US 50 eastbound on-ramp would be slightly visible. Under Alternative 2, this same retaining wall for the US 50 eastbound on-ramp would be visible from

the KV 2 location (Figure 2.6-1), as would the flyover that would be prominent in the view. All of these changes would also be visible from the bikeway and pedestrian overcrossing over US 50, which has a direct line of sight to the US 50 corridor. Alternative 1A would cause the least prominent changes from this location because it lacks elevated structures. Alternative 1 would create more prominent change with the viaduct off-ramp, and the flyover structure in Alternative 2 would be the most prominent change.

Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes.

Traffic using the Hazel Avenue eastbound off-ramp to Aerojet Road and Folsom Boulevard would not be visible to viewers in the Recreational VAU under Alternatives 1, 1A, and 2. If the Alternative 1 viaduct is present, then recreational viewers would also see vehicles using this ramp, which would not be present under Alternative 1A. However, it is anticipated that such views would be extremely limited from within the Recreational VAU. Therefore, Alternatives 1 and 1A would result in similar operational impacts. Views of the Alternative 2 flyover ramp would likely be present, to a limited degree, so that recreational viewers would see vehicles using this ramp. However, it is anticipated that such views would be limited to the westernmost edge of the Recreational VAU.

Summary

The overall visual quality (vividness, intactness, and unity) of the Recreational VAU would be affected by the proposed project because all the alternatives would alter the appearance of the highway corridor and introduce substantial human-made features. The assessment of changes by alternative for this VAU is shown in Table 2.6-2. This table is also available in the VIA (California Department of Transportation 2017b; provided in Volume 3).

Table 2.6-2. Visual Quality Change for Recreational Visual Assessment Unit

Alternative (Key View)	Existing Visual Quality	Visual Quality with Project	Visual Quality Change
1 (KV 2a)	4.0 (M)	2.7 (ML)	-1.3
1A (KV 2b)	4.0 (M)	3.3 (ML)	-0.7
2 (N/A)	4.0 (M)	2.7 (ML)	-1.3

L = Low
ML = Moderately low
M = Moderate
MH = Moderately high
H = High

Response of recreational viewers would be moderate (KV 2b) to moderate-high (KV 2a and Alternative 2) (refer to Table 17 in the VIA; provided in Volume 3) for all build alternatives. Viewers within the Recreational VAU would have limited exposure to major changes associated with the project area. Most viewers within this unit would have less-direct exposure to changes associated with the project area, but would come in direct visual contact with the proposed project while in proximity to the US 50/Hazel Avenue interchange, and views would be

intermittent. The modified interchange, roadway widening, and associated vegetation removal would alter the existing visual character and visual quality of the project area, and recreational viewers would likely view these changes negatively. However, the proposed bicycle off-ramp connection to Hazel Avenue and the Nimbus Flat entrance, may be viewed as either negative or beneficial change. Build alternatives would result in a resource change to this VAU that is moderate for Alternatives 1 and 2 and moderate-low for Alternative 1A. When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate-high for both Alternatives 1 and 2 and moderate for Alternative 1A. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Therefore, these permanent built changes not would result in adverse visual impacts in the Recreational VAU for all build alternatives.

Commercial Visual Assessment Unit

The following construction and operation features would be the same or very similar in the Commercial VAU under all three build alternatives. Where impacts differ, they are discussed under the appropriate build alternative below.

Construction in the Commercial VAU would occur during the same timeframe and in the same manner as described for the US 50 VAU. Business workers and patrons lining the westbound on-ramp to US 50 would be able to see the construction staging within the westbound US 50 ramp loops north of US 50 and east of Hazel Avenue. Business workers and patrons at this location are more likely to be focused to views inside, on shopping, eating, or working, rather than having a prolonged focus on the US 50/Hazel Avenue interchange. Business workers and patrons accessing the northernmost lot for Folsom Lake Ford, which is adjacent to the eastbound US 50 off-ramp for Folsom Boulevard, would be able to see the construction staging within ramp loops. However, the loop of the nearby eastbound US 50 on-ramp from Folsom Boulevard has recently been used for construction staging so this is a common visual element at this location. Therefore, the visual impacts from construction staging upon the Commercial VAU are expected to be minimal.

All project alternatives would include highway widening to accommodate the modified eastbound on- and off-ramps, ramp improvements, introduction of retaining wall structures and embankments, introduction of a bridge over the light rail tracks and Folsom Boulevard, a new roadway connecting Folsom Boulevard and Nimbus Road, vegetation removal, and changes to private properties. All of these project components would be visible to highway and roadway users within the Commercial VAU.

Some changes associated with the project alternatives would not greatly alter the existing visual character as seen from the Commercial VAU, such as widening eastbound US 50 to the south between the Aerojet Road and Folsom Boulevard exits, and modifications to the Aerojet Road and Folsom Boulevard exit off-ramps from eastbound US 50. The widening of US 50 at this location and the widening of the Aerojet Road and Folsom Boulevard ramps would appear similar to existing visual conditions and would not constitute a substantial visual change when

seen from the Commercial VAU. In addition, the features associated with the proposed widened Hazel Avenue overcrossing over US 50 would be similar to visual elements of the existing overcrossing, so that views of the bridge would not greatly change under Alternatives 1 and 1A. The Hazel Avenue overcrossing would remain the same width under Alternative 2. Effects of constructing each alternative would vary, as described below.

- The primary difference between the alternatives is that Alternative 1 would create an elevated viaduct over the new raised portion of Hazel Avenue that would be between US 50 and Folsom Boulevard, Alternatives 1A would have a tunnel run underneath Hazel Avenue, and Alternative 2 would have a new flyover spanning US 50. As seen in the Simulation for KV 4a (Figure 2.6-7), the viaduct would travel through the Nimbus Winery parking lot, introducing a large, elevated structure on large support piers into view that would increase the amount of visible transportation infrastructure at this location and cause shading. In addition, trees lining the parking lot would be removed and replaced with a large retaining wall for the ramp. Tree removal would make the widened Hazel Avenue bridge a more prominent element within the view compared to existing conditions where trees limit views of the existing bridge. The viaduct structure would also require the complete removal of Cattlemen's restaurant and trees in the restaurant's parking lot. Alternative 1 would be more visible than Alternative 1A, which would tunnel under Hazel Avenue. Overall, these changes would increase the visual prominence of the US 50/Hazel Avenue interchange. Compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.
- Under Alternative 1A, as seen in the Simulation for KV 4b (Figure 2.6-8), a viaduct structure would not be constructed. However, the new ramps would still travel through the Nimbus Winery parking lot, substantially reducing its size. In addition, trees lining the parking lot would be removed and replaced with a large retaining wall structure for the ramp; this wall would be slightly taller than the retaining walls proposed under Alternative 1. Tree removal would make the widened Hazel Avenue bridge a more prominent element within the view compared to existing conditions where trees limit views of the existing bridge. As in Alternative 1, the modified ramps would require the complete removal of the Cattlemen's restaurant and trees within the restaurant's parking lot. Alternative 1A would be slightly less prominent than Alternative 1 because there would be no viaduct structure. Overall, the changes would increase the visual prominence of the US 50/Hazel Avenue interchange. Compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.
- Under Alternative 2, the new flyover ramp over the freeway from eastbound US 50 to northbound Hazel Avenue and eastbound on-ramp to US 50 would travel through the Nimbus Winery parking lot, and require the complete removal of the building, parking lot, and associated landscaping. Therefore, the small portion of the Nimbus Winery roofline that would be visible over the new bridge structure under other alternatives (Figure 2.6-6) would

not exist. Although the flyover would be similar in appearance to the existing bikeway and pedestrian overcrossing over US 50 and would not greatly contrast with the existing visual setting, the flyover would introduce another elevated crossing over US 50 that would be more visible to commercial viewers and increase the visual presence of such crossings. Large retaining wall structures and embankments would also be needed to support ramps and flyover. Like Alternatives 1 and 1A, the modified ramps would also require the complete removal of Cattlemens restaurant and trees within the restaurant parking lot. Impacts resulting from the new bridge over the light rail tracks and Folsom Boulevard would be the similar to those described for Alternative 1. Removal of the existing elements and addition of new structures would greatly increase the prominence of highway infrastructure seen in views from the Commercial VAU, especially in proximity to the interchange. Overall, the changes would increase the visual prominence of the US 50/Hazel Avenue interchange. Compliance with Caltrans' HDM design standards County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Selection of either Alternative 1 or Alternative 1A would reduce the visual prominence of the interchange and retain the Nimbus Winery Building.

Utility relocations would only result in minor visual changes during construction, and would not result in substantial visual changes once built because they are minor changes or are consistent with existing visual conditions within the Commercial VAU.

Structures and landscaping associated with commercial areas located north of US 50 would not be directly affected by construction. Visual changes to the north of US 50 would be focused on the ramps that are east of Hazel Avenue because the ramps to the west of Hazel Avenue would not be modified. Under all alternatives, the new infrastructure elements that would be built north of US 50 and east of Hazel Avenue are not likely to be visible from the commercial areas north of US 50, because the existing ramp and bridge embankments along the westbound on-ramp would continue to prevent views to this area, as they do now. If such elements are slightly visible, compliance with Caltrans' HDM design standards would aid in minimizing visual impacts associated with roadside grading and slopes. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.

The remaining project-related visual changes that would occur to the south of US 50 would result in a higher degree of change to the Commercial VAU and to views from within it. Widening to the south of US 50 and modifying eastbound US 50 on- and off-ramps would bring transportation infrastructure and traffic closer to commercial land uses. This would alter the existing visual character of the project area, as seen by commercial neighbors, by expanding the highway corridor and the amount of lanes visible and increasing the amount of paved surfaces. In addition, all alternatives would require the modification of the northern ends of the Sentry Storage Units and require the full take and removal of the Folsom Chevron and Cattlemen's restaurant because of the shifted and widened eastbound US 50 off-ramp to Hazel Avenue. Parking lots and landscaping associated with the Comfort Inn and Suites, Samurai Sushi, Ruby's Hideaway, Sacramento Metro Fire Station 63, and Nimbus Winery would also be affected to varying degrees. These changes would be visible from the Commercial VAU and would create more exposed views of transportation infrastructure. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the

proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM design standards would help minimize visual impacts associated with roadside grading and slopes.

All alternatives would also create a bridge that spans the light rail tracks and Folsom Boulevard, replacing the existing Folsom Boulevard and Hazel Avenue intersection, as seen in the Simulation for KV 3 (Figure 2.6-6). These changes would be visible mostly from Folsom Boulevard and commercial areas directly adjacent to the new bridge within the Commercial VAU. The new bridge structure would be a new element in the Commercial VAU. The new bridge would block views of Nimbus Winery because the bridge and the associated embankment would be a prominent feature (except under Alternative 2, the Nimbus Winery would be demolished and therefore not visible). However, the slightly widened roadway corridor would not differ greatly from existing conditions and the sidewalk and fencing would help to visually delineate the Folsom Boulevard and light rail corridors. The removal of the fire station traffic light and existing Folsom Boulevard and Hazel Avenue intersection traffic light and undergrounding of utilities along the south side of Folsom Boulevard would declutter views down the roadway corridor and the bridge would frame and accentuate views of roadside landscaping and the foothills in the distance. The undergrounding of utilities along the south side of Folsom Boulevard would also declutter westward views down the roadway corridor. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.

Under all alternatives, the proposed project would also create the "jughandle"—a new road connecting Folsom Boulevard and Nimbus Road. This would transform an already degraded site into a roadway corridor in preparation for redevelopment of the area. Because this area is already degraded, the new roadway would not further degrade views and would only result in a slight visual character shift from a vacant industrial lot that is largely paved to a paved roadway corridor.

Minor visual changes would result from operation of the proposed project, which would be the same for all alternatives. Once in operation, the primary visual changes would be regular highway maintenance activities, which are already a common visual element. Traffic would increase over time, but the proposed project would help alleviate backups on the highway, reducing the visible presence of traffic congestion. As discussed above, some utilities would be relocated, but the presence of utilities is already a visual element within the project corridor. Therefore, their relocation would not alter the visual character of views to and from the project corridor. Utility removals would improve visual conditions by removing visual clutter. The interchange embankments, modified ramps, and bridge structures would result in alterations to the visual character of the Commercial VAU and would increase the prominence of highway infrastructure. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM design standards would help minimize visual impacts associated with roadside grading and slopes.

During operation, viewers within the Commercial VAU would be able to see passing vehicles on the modified ramps, viaduct, and (depending on alternative) flyover, because the ramps and structures would be elevated compared to existing conditions.

Summary

The overall visual quality (vividness, intactness, and unity) of the Commercial VAU would not be substantially affected by the proposed project under Alternatives 1 and 1A because the project would alter the appearance of the highway corridor and introduce substantial human-made features that would affect visual quality. However, the overall visual quality of the Commercial VAU would be substantially affected by Alternative 2 because the project would remove the Nimbus Winery Building and increase the visual prominence of the interchange, affecting visual quality. The assessment of changes by alternative for this VAU is shown in Table 2.6-3. This table is also available in the VIA (California Department of Transportation 2017b; provided in Volume 3).

Table 2.6-3. Visual Quality Change for Commercial Visual Assessment Unit

Alternative (Key View)	Existing Visual Quality	Visual Quality with Project	Visual Quality Change
1 (KV 3)	3.5 (M)	3.3 (ML)	-0.2
1 (KV 4a)	4.0 (M)	2.3 (L)	-1.2
1A (KV 4b)	3.5 (M)	2.8 (ML)	-0.7
2 (N/A)	3.5 (M)	1.8 (L)	-1.7

L = Low
ML = Moderately low
M = Moderate
MH = Moderately high
H = High

Response of commercial viewers would be moderate-high (KV 3) to high (KV 4a, KV 4b, and Alternative 2) (refer to Tables 21, 25, and 29 in the VIA; provided in Volume 3) for all build alternatives. Viewers within the Commercial VAU would be the most affected by the changes associated with the proposed project. The widened bridge, addition of the new bridge and viaduct structure, associated vegetation removal, and removal of commercial properties would alter the existing visual character of the project area, and commercial viewers would likely view these changes negatively. All build alternatives would result in a resource change to this VAU that is moderate-low for KV 3 and KV 4b and low for KV 4a and Alternative 2. When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate for KV 3 and moderate-high for KV 4a, KV 4b, and Alternative 2. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Therefore, these permanent built changes would not result in adverse visual impacts for all Alternatives 1 and 1A. However, permanent built changes would be adverse for Alternative 2. Implementation of Mitigation Measure, *Select Build Alternative that Retains Nimbus Winery Building*, would further reduce impacts by ensuring that either Alternative 1 or Alternative 1A is implemented, which would reduce the visual prominence of the interchange and retain the Nimbus Winery Building.

Residential Visual Assessment Unit

Construction in the Residential VAU would occur during the same timeframe and in the same manner as described for the US 50 VAU. The existing Hazel Avenue overcrossing over US 50 is not visible from the Residential VAU because of sound walls surrounding residential areas, residential landscaping, and surrounding commercial landscaping, and mature trees and shrubs in open spaces would block views wall of the overcrossing. Under all alternatives, features associated with the proposed widened or replacement of the Hazel Avenue overcrossing over US 50 would remain obscured and not visible because the overcrossing would be the same height and blocked from view by features in the landscape. Visual changes to the north of US 50 and changes to Hazel Avenue, the interchange ramps, and the proposed bridge over the light rail tracks and Folsom Boulevard, and the jughandle south of US 50 would not be detectible from within the Residential VAU. Sound walls surrounding residential areas, residential landscaping, and surrounding commercial landscaping, and mature trees and shrubs in open spaces would block views of visual changes. Therefore, the only visible changes would be those occurring south of US 50 and along portions of the proposed eastbound off-ramp that would carry traffic from the Hazel Avenue off-ramp to Aerojet Road and Folsom Boulevard, and which pass by residential areas. The effects of construction each alternative would vary, as described below.

- Under Alternatives 1 and 1A, the highway widening and ramp to Aerojet Road and Folsom Boulevard would bring highway facilities and traffic closer to the Residential VAU. The raised viaduct structure would terminate at the western edge of the mobile home park (refer to Figure 1-3) under Alternative 1, and this structure may be slightly visible over the existing tree line that would remain. However, it is anticipated that such views would be extremely limited from within the Residential VAU. The remainder of the ramp length would not be visible beyond the sound walls surrounding residential areas under Alternative 1. Similarly, under Alternative 1A, the tunnel structure and the length of the ramp would not be visible beyond the sound walls surrounding residential areas. Therefore, it is anticipated that the primary visual change would be a slight reduction in the amount of tree canopy from surrounding commercial areas that can be seen rising above the residential sound walls. In addition, a small number of residents may no longer be able to see small portions of the roof and walls of Cattlemen's Restaurant that may presently be visible. However, because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.
- Under Alternative 2, the flyover ramp would have a greater effect than under Alternatives 1 and 1A due to the increased impact to private properties. In addition, the off-ramp to Aerojet Road and Folsom Boulevard would come much closer to the mobile home park, requiring the removal of landscaping immediately adjacent to residences and introducing a freeway structure much closer to residences. However, the ramp would not be elevated, so the sound walls surrounding residential areas would obscure direct views of the ramp. Therefore, it is anticipated that the primary visual change would be a slight reduction in the amount of tree canopy from surrounding commercial areas that can be seen rising above the residential sound walls. In addition, a small number of residents would no longer see small portions of the roof and walls of Cattlemen's restaurant that may presently be visible, because it will be gone. However, because the project is at an existing interchange and because the new project

features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area.

During operation, traffic using the Hazel Avenue eastbound off-ramp to Aerojet Road and Folsom Boulevard would not be visible under Alternatives 1 and 1A. If views of the Alternative 1 viaduct are present, then residential viewers would also see vehicles using this ramp, which would not be seen under Alternative 1A. However, it is anticipated that such views would be extremely limited from within the Residential VAU. Therefore, Alternatives 1 and 1A would result in similar operational impacts. Alternative 2 would be similar to Alterative 1A in that it would create a tunnel under the raised segment of Hazel Avenue (refer to Figures 1-3, 1-4, and 1-5). Alternative 2 would also create a flyover ramp connector over US 50, but the flyover and associated traffic would not be visible from the Residential VAU. Traffic using the Hazel Avenue eastbound off-ramp to Aerojet Road and Folsom Boulevard would also not be visible under Alternative 2.

Summary

The overall visual quality (vividness, intactness, and unity) of the Residential VAU would be substantially affected by the proposed project changes occurring south of US 50 because the project would introduce substantial human-made features through ramp improvements that pass by residential areas and would affect visual quality. The assessment of changes by alternative for this VAU is shown in Table 2.6-4. This table is also available in the VIA (California Department of Transportation 2017b; provided in Volume 3).

Table 2.6-4. Visual Quality Change for Residential Visual Assessment Unit

Alternative (Key View)	Existing Visual Quality	Visual Quality with Project	Visual Quality Change
1 (N/A)	3.7 (M)	3.7 (M)	0.0
1A (N/A)	3.7 (M)	3.3 (ML)	-0.3
2 (N/A)	3.7 (M)	3.0 (ML)	-0.7

L = Low
ML = Moderately low
M = Moderate
MH = Moderately high
H = High

Viewer response of residential viewers would be moderate-high (refer to Tables 33 and 37 in the VIA) for all build alternatives. Most residential highway neighbors do not have immediate or direct views of the project because views are limited by development, vegetation, and topography. However, longer-term, stationary views are available to residential highway neighbors on the edges of development that are directly adjacent to the project site. The modified ramps and associated vegetation removal would alter the existing visual character and visual quality of the project area, and residential viewers would likely view these changes negatively. All build alternatives would result in a resource change to this VAU that is low for Alternative 1 and moderate-low for Alternatives 1A and 2. When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate for all alternatives. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. In addition, compliance with Caltrans' HDM

design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Therefore, these permanent built changes would not result in adverse visual impacts for all build alternatives. No mitigation is required.

Scenic Roadways

There are no Federal or State scenic roadways in or near the project area, so there would be no effect on such resources during construction. However, the portion of US 50 affected by the project is considered to be in a County scenic corridor. As such, the US 50 VAU is the only VAU containing the County scenic corridor. Impacts to scenic roadways would not occur in the Recreational, Commercial, or Residential VAUs. Construction and operation impacts to the visual character and quality of the County scenic corridor would be the same as described for the US 50 VAU under *Visual Character and Visual Quality, including Scenic Vistas*, above, for all alternatives. Because the proposed changes are at an existing interchange with significant transportation-related features, and the new features would include modern aesthetic treatment, the changes to transportation infrastructure would not substantially affect the scenic nature of the US 50 corridor. In addition, compliance with Caltrans' HDM design standards and County Improvement Standards would help minimize visual impacts associated with roadside grading and slopes. Therefore, the permanent built changes would not result in adverse visual impacts to the County scenic roadway for all build alternatives. No mitigation is required.

Light and Glare

US 50 Visual Assessment Unit

Impacts related to light and glare would be the same or very similar under all build alternatives.

Evening and nighttime construction activities would require the use of extremely bright lights, which would negatively affect highway users and nighttime views of and from the work area, resulting in adverse impacts. Implementation of Mitigation Measure, *Minimize Fugitive Light from Portable Sources Used for Construction*, will reduce this impact by helping to prevent nuisance light spill during construction.

The proposed project would result in a nominal increase in daytime glare by increasing the paved area and by removing some of the roadside vegetation that provides shade. However, the pavement would be dark and greatly reduce glare, and roadside vegetation would still be present along the ROW to provide some shade. In addition, retaining walls and elevated structures would create new vertical surfaces to reflect light and increase glare. The project's aesthetic design would reduce this effect by implementing a design motif that would soften the appearance of new structures. The project's landscaping would create visual buffers that would replace existing sources and introduce new sources of shade that would help reduce glare. The project's aesthetics and landscaping are expected to minimize glare sources. Although project features would remove some of the existing roadside vegetation, the overall effect would be a nominal increase in light and glare. This impact would not be adverse. No mitigation is required.

New light coming from ramp metering would add an inconsequential amount of light to the project area when meters are in use. Installation of traffic signals at the intersections of the jughandle with Folsom Boulevard and Nimbus Road would result in an incremental increase in light and glare associated with the proposed project. However, street lighting is proposed along the project corridor and ramps and this lighting, if not properly designed, could negatively affect nearby roadway neighbors and roadway users. In particular, street lighting could include light-emitting diode (LED) lighting for security and safety purposes. LED lights can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if shielding is not provided and blue-rich white light lamps (BRWL) are used (International Dark-Sky Association 2010a, 2010b, 2015). However, lighting added or replaced as part of the project would conform to Caltrans and County standards consistent with the lighting used on nearby roadways and ramps, and would therefore not result in a substantial new source of nighttime light. This impact is not considered adverse.

Recreational Visual Assessment Unit

Under all alternatives, most views of construction would be obscured by vegetation within the Recreational VAU and recreationists generally do not access the Recreational VAU at night. Therefore, while evening and nighttime construction activities would require the use of extremely bright lights, it is not anticipated that this would negatively affect recreational viewers adjacent to the work area and result in adverse impacts. Nevertheless, implementation of Mitigation Measure, *Minimize Fugitive Light from Portable Sources Used for Construction*, will reduce this impact by helping to prevent nuisance light spill onto recreational areas during construction.

New light coming from ramp metering would add an inconsequential amount of light to the project area when meters are in use. However, street lighting is proposed along the project corridor and ramps and this lighting, if not properly designed, could negatively affect nearby roadway neighbors. In particular, street lighting could include LED lighting for security and safety purposes. LED lights can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if shielding is not provided and BRWL are used (International Dark-Sky Association 2010a, 2010b, 2015). However, lighting added or replaced as part of the project would conform to Caltrans and County standards consistent with the lighting used on nearby roadways and ramps, and would therefore not result in a substantial new source of nighttime light. This impact is not considered adverse.

Commercial Visual Assessment Unit

Evening and nighttime construction activities would require the use of extremely bright lights, under all alternatives, which would negatively affect commercial areas and nighttime views of and from the work area and result in adverse impacts. Implementation of Mitigation Measure, *Minimize Fugitive Light from Portable Sources Used for Construction*, will reduce this impact by helping to prevent nuisance light spill during construction.

The widening of US 50 between the Aerojet Road and Folsom Boulevard exits and the widening of the Aerojet Road and Folsom Boulevard off-ramps would appear similar to existing visual conditions and would not greatly increase daytime glare when seen from the Commercial VAU.

Widening to the south of US 50 and modifying eastbound US 50 on- and off-ramps would bring transportation infrastructure and traffic closer to commercial land uses. This would expand the highway corridor and the amount of lanes visible, increasing the amount of paved surfaces, and slightly increasing daytime glare by changing less-reflective vegetated surfaces to more-reflective paved and concrete surfaces. These changes would be visible from the Commercial VAU and would create more exposed views of transportation infrastructure. However, the project's aesthetic design would reduce this effect by implementing a design motif that would soften the appearance of new structures. The project's landscaping would create visual buffers that would replace existing sources and introduce new sources of shade that would help reduce glare. The project's aesthetics and landscaping are expected to minimize glare sources. Although project features would remove some of the existing roadside vegetation, the overall effect would be a nominal increase in light and glare. This impact would not be adverse.

New light coming from ramp metering would add an inconsequential amount of light to the Commercial VAU when meters are in use. Installation of traffic signals at the intersections of the jughandle with Folsom Boulevard and Nimbus Road would result in an incremental increase in light and glare associated with the proposed project. However, street lighting is proposed along the project corridor and ramps and this lighting, if not properly designed, could negatively affect nearby commercial neighbors. In particular, street lighting could include LED lighting for security and safety purposes. LED lights can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if shielding is not provided and BRWL are used (International Dark-Sky Association 2010a, 2010b, 2015). However, lighting added or replaced as part of the project would conform to Caltrans and County standards consistent with the lighting used on nearby roadways and ramps, and would therefore not result in a substantial new source of nighttime light. This impact is not considered adverse.

Residential Visual Assessment Unit

Although most views of construction would be obscured by residential areas and nearby landscaping, evening and nighttime construction activities would require the use of extremely bright lights under all alternatives, which would negatively affect residential viewers adjacent to the work area and result in adverse impacts. Implementation of Mitigation Measure, *Minimize Fugitive Light from Portable Sources Used for Construction*, will reduce this impact by helping to prevent nuisance light spill onto residential areas during construction.

During operation, traffic using the Hazel Avenue eastbound off-ramp to Aerojet Road and Folsom Boulevard would not be visible to viewers in the Residential VAU under all alternatives. Alternative 2 would create a tunnel under the raised segment of Hazel Avenue and would also create a flyover ramp connector over US 50 but the flyover and associated traffic would not be visible from the Residential VAU. Therefore, all alternatives would primarily have operational impacts resulting from new ramp lighting. As described above, LED lights can negatively affect humans by increasing nuisance light and glare. However, lighting added or replaced as part of the project would conform to Caltrans and County standards consistent with the lighting used on nearby roadways and ramps, and would therefore not result in a substantial new source of nighttime light. This impact is not considered adverse.

No Build Alternative

Under the No Build Alternative, the project would not be constructed and there would be no visual impacts on the existing visual character, visual quality, or affected viewer groups. While maintenance activities such as repaving and restriping may occur in the foreseeable future along portions of the US 50 corridor, such maintenance activities are a part of the existing visual environment and they would not affect the existing visual character of the project area or negatively affect viewer groups. Such activities would be visible in the US 50 VAU and would be visible to only a limited degree to viewers in the Recreational, Residential, and Commercial VAUs.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following minimization measure and BMPs would be implemented as part of the project.

Minimize Fugitive Light from Portable Sources Used for Construction

At a minimum, the construction contractor will minimize project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights will be used, or the latest requirements in Caltrans Standard Specifications will be followed. Portable lights will be operated at the lowest allowable wattage and height and will be raised to a height no greater than 20 feet. All lights will be screened and directed downward toward work activities and away from the night sky and roadway users and highway neighbors to the maximum extent possible. Lights will not be directed toward residential land uses after 10 p.m. The number of nighttime lights used will be minimized to the greatest extent possible.

2.6.5 References Cited

California Department of Transportation. 2011. *Director's Policy DP-22, Context Sensitive Solutions*. Available: http://www.dot.ca.gov/hq/transprog/ocip/te/dp-22.pdf. Effective: November 29, 2001. Accessed: March 21, 2017.

California Department of Transportation. 2016a. *Classified "Landscaped Freeways" January 12, 2018*. Available: http://www.dot.ca.gov/design/lap/livability/docs/class_ls_fwy_01122018_.pdf. Accessed: July 3, 2018.

California Department of Transportation. 2016b. *Caltrans Highway Design Manual*. Available: http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm. Last updated: December 16, 2016. Accessed: March 20, 2017.

California Department of Transportation. 2017a. *List of Eligible and Officially Designated State Scenic Highways*. Available: http://www.dot.ca.gov/design/lap/livability/scenic-highways/index.html. Accessed: July 3, 2018. List last updated: March 2017.

California Department of Transportation. 2017b. *Visual Impact Assessment. Hazel Avenue/U.S. 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. November. Sacramento, CA. Prepared by ICF.

County of Sacramento. 2014. *Sacramento County General Plan Circulation Element*. Amended May 28, 2014.

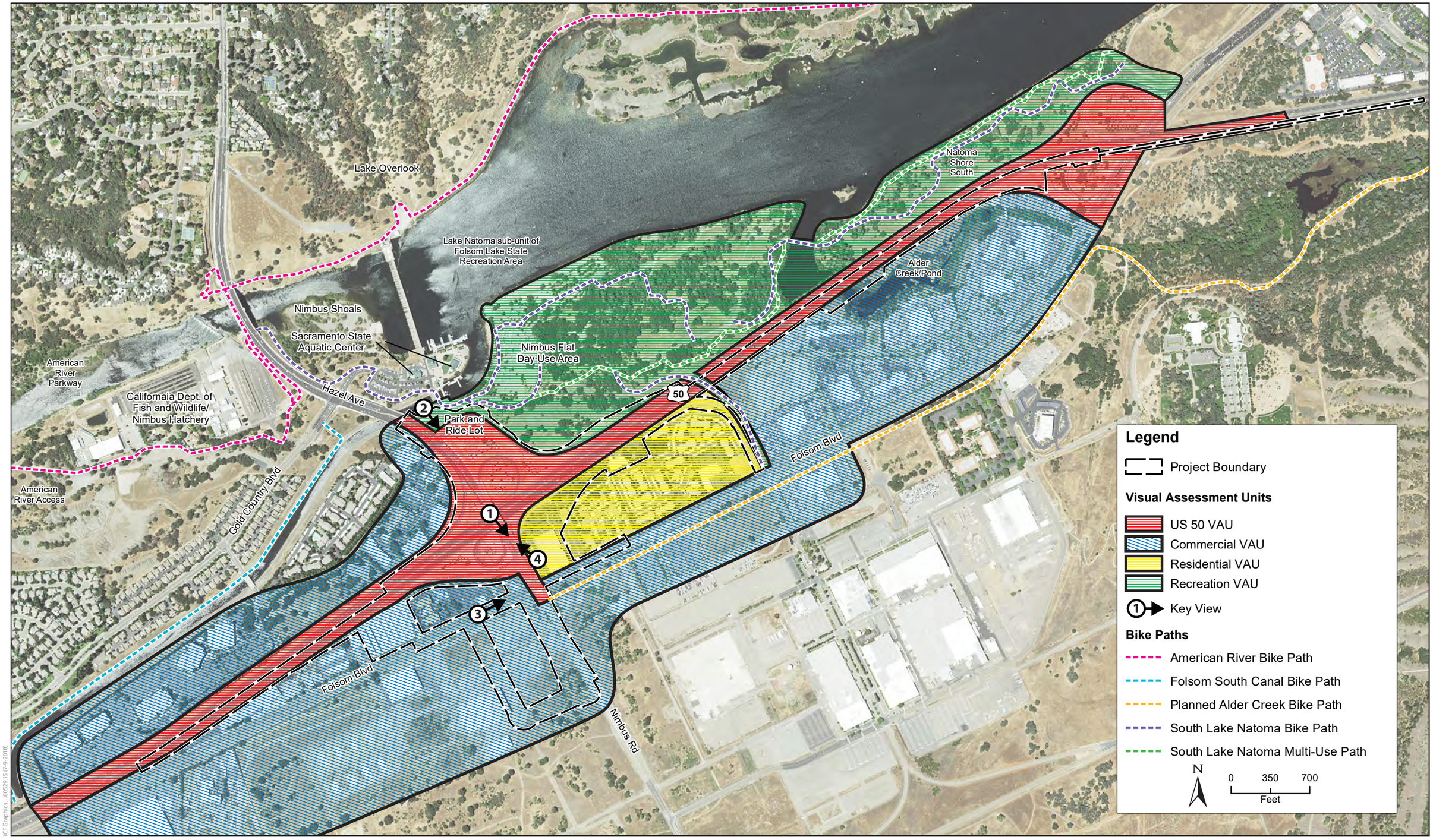
County of Sacramento. 2018. *Improvement Standards*. Adopted February 6, 2018. Effective April 1, 2018. Available: http://www.engineering.saccounty.net/Pages/ImprovementStandards.aspx.

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company. Federal Highway Administration. 1988. *Visual Impact Assessment FOR Highway Projects.* (FHWA-HI-88-054.) USDOT (US Department of Transportation), 1988.

International Dark-Sky Association. 2010a. Seeing Blue. April 2010. *Nightscape Issue #80:* 8-12.

International Dark-Sky Association. 2010b. *Visibility, Environmental, and Astronomical Issues Associated with Blue-Rich White Outdoor Lighting*. May 4.

International Dark-Sky Association. 2015. IDA Issues New Standards on Blue Light at Night. April 2015. *Nightscape Issue #94*: 10.



CF Graphics...09529.15 (7-9-2018)

Figure 2.6-1
Visual Assessment Units





ICF Graphics...00529.15 (5-9-18) AB

Figure 2.6-2
Key View 1a, Existing View and Alternative 1 Simulated Conditions—from the Hazel Avenue overcrossing of US 50 looking southeast





ICF Graphics...00529.15 (5-9-18) AB

Figure 2.6-3
Key View 1b, Existing View and Alternative 1A Simulated Conditions—from the Hazel Avenue overcrossing of US 50 looking southeast



ICF Graphics... 00529.15 (5-9-2018) AB

Figure 2.6-4
Key View 2a, Existing View and Alternative 1 Simulated Conditions—from the Nimbus Flat entrance to the Lake Natoma Unit of the Folsom Lake State Recreation Area off of Hazel Avenue looking southeast



ICF Graphics... 00529.15 (5-9-2018) AB

Figure 2.6-5
Key View 2b, Existing View and Alternative 1A Simulated Conditions—from the Nimbus Flat entrance to the Lake Natoma Unit of the Folsom Lake State Recreation Area off of Hazel Avenue looking southeast





ICF Graphics...00529.15 (9-29-2017)

Figure 2.6-6
Key View 3, Existing View and Alternatives 1, 1A, and 2 Simulated Conditions—from Folsom Boulevard looking east





ICF Graphics...00529.15 (9-29-2017)

Figure 2.6-7
Key View 4a, Existing View and Alternative 1 Simulated Conditions—from the Nimbus Winery Village Parking lot looking northwest





ICF Graphics...00529.15 (9-29-2017)

Figure 2.6-8
Key View 4b, Existing View and Alternative 1A Simulated Conditions—from the Nimbus Winery Village Parking lot looking northwest

2.7 Cultural Resources

2.7.1 Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under Federal and State laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," "historical resources," and "tribal cultural resources." 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 (NRHP). 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 (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the FHWA, the ACHP, the California State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both State and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR Part 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).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California PRC Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill (AB) 52 added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires State agencies to identify and protect State-owned historical resources that meet the NRHP listing criteria. It further requires Caltrans to inventory State-owned structures in its ROWs. Sections 5024(f) and 5024.5 require State agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing State-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are

registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between Caltrans and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.7.1.1 Regional Requirements

Sacramento County General Plan

Relevant objectives and policies pertaining to cultural resources are listed in the Conservation Element of the Sacramento County General Plan (County of Sacramento 2017). The general plan identifies six objectives pertaining to cultural resources.

Objective #1 Comprehensive knowledge of archeological and historic site locations

Objective #2 Attention and care during project review and construction to ensure that cultural resource sites, either previously known or discovered on the project site, are properly protected with sensitivity to cultural and ethnic values of all affected.

Policies:

CO-150. Utilize local, state and national resources, such as the North Central Information Center (NCIC), to assist in determining the need for cultural resources survey during project review.

CO-151. Projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space shall be noticed to all appropriate Native American tribes in order to aid in the protection of traditional tribal cultural places.

CO-152. Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.

CO-153. Refer projects with identified archeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations.

CO-154. Protection of significant prehistoric, ethnohistoric and historic sites within open space easements to ensure that these resources are preserved in situ for perpetuity.

CO-155. Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeologic significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that offsite reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.

CO-156. The cost of all excavation conducted prior to completion of the project shall be the responsibility of the project developer.

CO-157. Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.

CO-158. As a condition of approval of discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

CO-159. Request a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

CO-160. County Planning and Environmental Review staff shall take historical and cultural resources into consideration when conducting planning studies and documents in preparation of, including but not limited to, areas plans, corridor plans, community plans, and specific plans.

CO-161. As a condition of approval for discretionary projects, require appropriate mitigation to reduce potential impacts where development could adversely affect paleontological resources.

CO-162. Projects located within areas known to be sensitive for paleontological resources, should be monitored to ensure proper treatment of resources and to ensure crews follow proper reporting, safeguards and procedures.

CO-163. Require that a certified geologist or paleoresources consultant determine appropriate protection measures when resources are discovered during the course of development and land altering activities.

Objective #3 Preserve structures such as buildings, bridges, or other permanent structures with architectural or historical importance to maintain contributing design elements.

Policies:

CO-164. Structures having historical and architectural importance shall be preserved and protected.

CO-165. Refer projects involving structures or within districts having historical or architectural importance to the Cultural Resources Committee to recommend appropriate means of protection and mitigation.

CO-166. Development surrounding areas of historic significance shall have compatible design in order to protect and enhance the historic quality of the areas.

CO-167. When conducting planning studies, County Planning and Environmental Review staff, shall encourage the adaptive reuse of historic resources when the original use is no longer feasible or allowed under proposed area planning efforts.

CO-168. County-owned historic and cultural resources shall be preserved and maintained, such that modifications, alterations, and rehabilitations are conducted in a manner that is consistent with the U.S. Secretary of the Interiors Standards for the Treatment of Historic Properties.

Objective #4 Protect any known cultural resources from vandalism, unauthorized excavation, or accidental destruction.

Policies:

CO-169. Restrict the circulation of cultural resource location information to prevent potential site vandalism. This information is exempt from the "Freedom of Information Act".

CO-170. Cooperate with other agencies to enforce laws and aggressively prosecute illegal collection of artifacts.

CO-171. Design and implement interpretive programs about known archeological or historical sites on public lands or in public facilities. Interpretation near or upon known sites should be undertaken only when adequate security is available to protect the site and its resources.

Objective #5 Properly stored and classified artifacts for ongoing study.

Objective #6 Increase public education, awareness and appreciation of both visible and intangible cultural resources.

Policies:

CO-172. Provide historic and cultural interpretive displays, trails, programs, living history presentations, and public access to the preserved artifacts recovered from excavations.

CO-173. Interpretive elements involving Native American cultural resources shall be located at village sites (provided any unexcavated resources are properly protected) representative of different physical environments found in the County.

CO-174. Promote and support the California Indian Heritage Center.

CO-175. The County shall support efforts to develop Cultural Resources Tourism program within the County as a tool to preserve important cultural resources and in order to encourage economic development of resources within the County.

City of Rancho Cordova General Plan

Relevant policies pertaining to cultural resources are listed in the Cultural and Historic Resources Element of the City of Rancho Cordova General Plan.

Goal CHR.1: Identify and preserve the history of Rancho Cordova for future generations.

Policy CHR.1.1 - Establish, support, and fund programs that enhance Rancho Cordova's sense of community and identity, such as the collection of oral histories; genealogical research; and the acquisition of collections of historic artifacts, photographs, memorabilia, or other information relevant to the history of the City.

Policy CHR.1.2 - Establish and promote programs that identify, maintain, and protect buildings, sites, or other features of the landscape possessing historic or cultural significance.

Policy CHR.1.3 - Establish review procedures for development projects that recognize the history of the area in conjunction with State and Federal laws.

Policy CHR.2.1 - Celebrate the City's cultural diversity through public art, cultural centers, and community events for the benefit and enjoyment of all residents.

Goal CHR.3: Enhance the quality of life in Rancho Cordova by promoting, preserving, and sustaining the cultural and performing arts.

2.7.2 Affected Environment

The analysis in this section is based on the *Historic Property Survey Report*, which includes the *Archaeological Survey Report* (California Department of Transportation 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the project.

2.7.2.1 Area of Potential Effects

The Area of Potential Effects (APE) for this undertaking was established by Caltrans in accordance with Stipulations VI.B.8 and VIII.A of the PA. The APE encompasses the area of direct or indirect impact resulting from all activities associated with all build alternatives,

including all construction activities, easements, and staging areas. The archaeological APE includes the project footprint and follows the maximum possible area of direct impact resulting from the proposed project, including all new construction and easements. The built-environment APE includes the project footprint and the entirety of all parcels that are within the archaeological APE.

The vertical APE, which is the maximum extent of ground disturbance, ranges from 2–4 feet for grading, 10–30 feet for footings, and 50–80 feet for pile driving. Depths vary at different bridge locations depending on foundation type.

2.7.2.2 Research Methodology

An investigation for the cultural resources located in the project APE was conducted beginning in 2015. The investigation included a records search, Native American consultation, historical society consultation, archaeological field surveys, and architectural field surveys.

Archival Research and Records Search

A records search conducted in December 2015 at the NCIC at California State University, Sacramento, indicated that 20 previous cultural resources studies have been conducted within portions of the APE, yielding approximately 75% of the APE having been previously surveyed. Twenty-six additional cultural resources studies have been conducted within 0.25 mile of the APE.

The record search revealed that 31 cultural resources were previously recorded within 0.25 mile of the APE. Of those 31 cultural resources, 17 were archaeological and 14 were built environment resources. Of the 31 resources identified within 0.25 mile of the APE, the following were previously recorded within the APE: CA-SAC-1013H (Natomas-Aerojet Dredge Fields); one archaeological district, CA-SAC-308H (Folsom Mining District); three built environment resources, CA-SAC-428H (Sacramento Valley Railroad [SVRR]), P-34-1667 (Nimbus Winery), P-34-596 (shed associated with the Nimbus Winery) and P-34-2183 (Industrial building-Aerojet facility). One additional built environment resource: the Sacramento County Fire Station #63, was identified within the APE through a search of the California Inventory of Historic Resources.

Consultation with Interested Parties

Native American Consultation

On December 7, 2015 and May 31, 2016, letters were sent to the Native American Heritage Commission (NAHC) requesting a Sacred Lands File search on behalf of the County of Sacramento. On June 15, 2016, the NAHC replied that the Sacred Lands File contains no record of any Native American cultural resources in or within the immediate vicinity of the APE, and provided a list of 17 Native American contacts who may be interested in the project. A copy of the NAHC letter and list of Native American contacts was provided to the County.

The County sent letters on October 31, 2016, and follow-up emails on November 1 and 2, 2016, to all Native American contacts provided by the NAHC as part of their Native American consultation obligations under the NHPA. Through their consultation efforts, the County received responses from the Native Americans and other tribal representatives. Below are the summarized responses from the outreach efforts.

- Robert Columbo representing the Buena Vista Rancheria stated in a phone conversation (March 6, 2017) that he was aware of the project and that the tribe did not have any issues or concerns.
- Judith Marks from the Colfax-Todds Valley Consolidated Tribe sent an email dated March 8, 2017 requesting a site visit and that tribal monitors be present when the project is constructed. On May 5, 2017, Ms. Marks met with Stephen Pappas (ICF) and Carol Gregory (Sacramento County) for a field visit. Ms. Marks was provided detailed project maps and was briefed on the project plans. Ms. Marks asked to be updated on any project developments. In lieu of construction monitors, Ms. Marks asked that she be contacted if anything is found during construction.
- Randy Yonemura then of the Ione Band of Miwok Indians (IBMI) Cultural Committee, stated in a phone call (December 8, 2016) that he had concerns with the project and requested consultation. A meeting between Mr. Yonemura, ICF, and the County was conducted on January 27, 2017 to discuss the project and to receive comments and questions from the consulting parties. Technical reports were requested by Mr. Yonemura. Additional meetings occurred in May and December 2017, February, March, and May, 2018. During these meetings, Mr. Yonemura described the Native American usage of the areas surrounding the APE and indicated that the entire region was used by the Native Americans. Although the area surrounding the APE was heavily used by Native Americans, Mr. Yonemura did not identify or provide any specific documentation of cultural resources within the APE. In July 2018 ICF drafted a summary of the information gathered during the meetings and provided the documentation to the County for their records.
- Grayson Coney and a tribal representative on behalf of Jason Ryberg of the Tsi Akim Maidu indicated in phone conversations (both on December 8, 2016) that the Tsi Akim Maidu did not have any concerns regarding the project.
- Marcos Guerrero of the United Auburn Indian Community (UAIC) stated in an email (November 2, 2016) that the UAIC had concerns regarding the project and requested a site visit. On November 17, 2016, representatives from the UAIC met with ICF and County representatives to discuss the project and receive comments and questions from the UAIC. Mr. Guerrero suggested that a search of the UAIC's files be completed for the project and that the UAIC would be able to conduct their own survey of the project in addition to possible Native American monitors during ground disturbing activities. The County requested a record search with the UAIC; however, no results from the record search have been provided. The UAIC mentioned that one prehistoric site in the vicinity of the APE was of concern. The site is outside of the APE and listed on the California Office of Historic Preservation's Archaeological Determinations of Eligibility as an individual property determined eligible for the NRHP by consensus through the Section 106 process; the site is also listed in the CRHR. As a result of the archaeological pedestrian survey, no evidence of the site was observed within the APE. On January 18, 2018 representatives from the UAIC,

Sacramento County, and ICF conducted a field visit of the portion of the APE within the Aerojet property as requested by UAIC. Following the Aerojet visit, UAIC staff did not present any additional concerns or information regarding the project. On September 20, 2018, per UAIC's request, the County provided the geographic information system shapefile of the approved APE boundary to UAIC for their records. In response, on September 26, 2018, the UAIC requested a tribal monitor for the project per previous consultation discussions.

- Ed Silva, Tribal Resources Coordinator with the Wilton Rancheria coordinated a meeting with County representatives to discuss the project as well as other County projects. The project was briefly discussed, but no formal comments, site visits, or additional follow-up was requested by tribal representatives present at the meeting.

AB 52 Consultation

The County, as the CEQA lead agency, emailed AB 52 consultation letters to three tribes that requested formal notification for projects requiring AB 52 consultation. On January 28, 2016, a letter was emailed to Steven Hutchason, Executive Director Environmental for the Wilton Rancheria, on January 29, 2016 a letter was emailed to Gene Whitehouse, Chairperson of the UAIC of the Auburn Rancheria, and a letter was emailed to Randy Yonemura, then the Cultural Committee Chair of the IBMI, on June 1, 2016. This letter to Mr. Yonemura was sent later as the County of Sacramento did not receive a formal request for AB-52 notification from this tribe prior to the project being deemed complete.

The only response from the initial AB 52 notification letters was from Antonio Ruiz, Cultural Resources Officer from the Wilton Rancheria, who responded to the letter by email on February 4, 2016 notifying that the Wilton Rancheria would like to further consult. The Wilton Rancheria also requested cultural reports and geotechnical reports for the project. Geotechnical reports were emailed to Mr. Ruiz on November 9, 2016. Although only the Wilton Rancheria responded to the initial notification letters, the County invited all three tribes to AB 52 consultation later in 2016. On November 2, 2016, the County sent an updated AB 52 notification letter to the UAIC. In response to this letter, on December 15, 2016 the County received a response letter from Gene Whitehouse with the UAIC, stating that UAIC would like to initiate consultation under AB 52, and the point of contact would be Marcos Guerrero. A second response letter from the UAIC was also received requesting Section 106 consultation.

Consultation is ongoing and will continue throughout the life of the proposed project. Native American groups and individuals will be kept apprised of any developments concerning cultural resources.

Local Historical Society and Historic Preservation Group Consultation

On March 25, 2016, ICF sent contact letters to the Sacramento County Historical Society, Rancho Cordova Historical Society, Folsom Historical Society, Heritage Preservation League, and the California Historical Society. The letters briefly described the proposed project and requested information about cultural resources near the proposed project area. ICF sent a letter to an additional interested party, the Heritage Preservation League of Folsom, on August 30, 2016.

On November 16, 2016, ICF received email communication from Beth Kelly of the Heritage Preservation League of Folsom informing ICF that the organization is interested in preserving the Nimbus Winery building and that they do not have any information pertaining to the property in their files. The same day, a reply was sent via email thanking them for their response. As of the date of publication of this document, ICF has not received further responses from any of the other historical societies/groups.

2.7.2.3 Prehistoric Setting

The history of human occupation and use of the Sacramento Valley and northern Sierra Nevada foothills is characterized by a number of related trends taking place throughout the last 10,000 years. Archaeologically visible cultural patterns can be attributed to responses to gradual changes in climate, resource availability, and human population growth. Cultural responses to these changes include technological specialization, resource intensification, sedentism, and the development of regional economic networks. The prehistory of the APE and surrounding region is summarized below.

It is probable that humans have inhabited the Sacramento Valley for the last 10,000 years. However, evidence of early occupation is likely deeply buried under alluvial sediments deposited during the late Holocene, although rare archaeological remains of the early period have been identified in and around the Central Valley. Early archaeological manifestations are categorized as the Farmington Complex, which is characterized by core tools and large, reworked percussion flakes.

Later periods are better understood because of more abundant representation in the archaeological record. Fredrickson (1973:7-6) identified three general patterns of cultural manifestations for the period between 4500 B.P. and 2000 B.P.: the Windmiller Pattern (4500–3000 B.P.), the Berkeley Pattern (3500–2500 B.P.), and the Augustine Pattern (2500–2000 B.P.).

Windmiller Pattern sites seem to occur with more frequency in or near the Delta, while Berkeley Pattern sites tend to be more prevalent farther north. Windmiller Pattern origins are believed to be linked to the arrival of Utian peoples (ancestors to the Maidu) from outside California who were adapted to riverine and wetland environments (Moratto 1984). Windmiller sites are concentrated on low rises or knolls within the floodplains of major creeks or rivers with habitation sites in the valley occupied during the winter with population movements into the foothills during the summer (Moratto 1984).

Berkeley Pattern sites are more numerous and more widely distributed than Windmiller sites and tend to be more prevalent farther north. Berkeley Pattern sites are characterized by deep midden deposits, suggesting intensified occupation and a broadened subsistence base. The Berkeley Pattern also has a greater emphasis on the exploitation of the acorn as a staple. Although gathered resources gained importance during this period, the continued presence of projectile points and atlatls (spear-throwers) in the archaeological record indicates that hunting was still an important activity (Fredrickson 1973). Although resources and commodities were being exchanged throughout the region before this period, more extensive and more frequently used economic networks developed during this time. Transported resources likely included foods—trans-Sierra acorn movement is known from later periods (d'Azevedo 1986)—and commodities

more visible in the archaeological record, such as shell and lithic materials (Rosenthal et al. 2007:155).

The predominant generalized subsistence pattern from 1200 B.P. to Historic Period is identified as the Augustine Pattern. Archaeological evidence from this period shows a high degree of technological specialization (Fredrickson 1973). Development of the Augustine Pattern was apparently stimulated by the southward expansion of Wintuan populations into the Sacramento Valley and reflects a change in subsistence and land use patterns to those of the ethnographically known people of the historic era. (Moratto 1984). Traits associated with the Augustine Pattern include the introduction of preinterment burning of offerings in a grave pit during a mortuary ritual, increased village sedentism, maintenance of extensive exchange networks, population growth, and an incipient monetary economy in which beads were used as a standard of exchange (Moratto 1984).

2.7.2.4 Ethnographic Setting

The project is located near the territorial boundary of the Valley Nisenan and the Valley Miwok (Kroeber 1976; Shipley 1978). Nisenan and Miwok settlement locations were chosen based on elevation, exposure, and proximity to water and other resources. Permanent villages usually were established on low rises along major watercourses such as the American and Sacramento Rivers. Village size ranged from 3 houses to 40 or 50. Larger villages often had semi-subterranean dance houses that were covered in earth and tule or brush and had a central smoke hole at the top and an east-facing entrance. Permanent settlements were established from which specific task groups set out to harvest the seasonal bounty of flora and fauna that the rich valley environment provided (Wilson and Towne 1978). Many Nisenan villages were documented along the length of the American River; the nearest documented Nisenan village to the project is Yokok, located in the vicinity of the Lake Natoma State Recreation Area (Wilson and Towne 1978).

2.7.2.5 History

The project is located on the eastern edge of Sacramento County, which experienced its first influx of American settlers with the Gold Rush beginning in 1848. Mormon Island, a gravel bar set in the American River approximately 8 miles northeast of the APE, was a central gold-mining area in northern California, and by 1853 was a busy center of commerce. Meanwhile, the Folsom area helped supply huge amounts of water for mining operations in the American River Mining District with a series of dams, ditches, and sluice gates built mainly by the Natoma Water and Mining Company. Easily accessible gold deposits located along the major waterways only held out for a few years, and by the late 1850s miners had moved to the interior foothill areas and the mother lode region (Jones & Stokes 1991:12-7, 12-8).

In 1856, the SVRR brought modernized transportation to the city of Folsom with stage and freight lines. Ease of transport for both people and goods led to a period of marked growth. Despite the closure of the SVRR in 1869, mining continued in various forms through the 1940s, with placer and drift mining in the late nineteenth century, and later dredge mining. Dredge mining stopped only during World War II when the U.S. Government put a moratorium on the mining of nonessential metals. The Natomas Company continued dredge mining near Folsom until 1962 (Jones & Stokes 1991:12-7–12-9; Thompson and West 1880).

Parallel to the mining success of Sacramento County was its agricultural growth, with the region producing wine grapes as well as orchard fruits and other agricultural products, including wine. Following World War II, subdivisions, apartments, shopping centers, and industrial facilities took the place of agricultural land. This growth included the 1953 arrival of Aerojet, designer and producer of rockets, fuel, engines, and motors. Aerojet bought over 10,000 acres of land from the Natomas Company, whose dredge mining left huge furrows of earth from dredging; these dredge tailings were well-suited for rocket testing (Allen 2007:8–11).

The 1960–61 build of US 50 increased commercial and residential development in the Folsom corridor. The Sacramento Aerojet facility employed more than 20,000 people by 1963, providing important technologies and manufactured items for space exploration, military defense and a multitude of other purposes. In the 1970s and 1980s, Aerojet downsized considerably while merging, cooperating and renting its property to other companies. Today, Aerojet operates as Aerojet Rocketdyne out of multiple locations across the United States. (Allen 2007:8–11).

2.7.3 Environmental Consequences

Build Alternatives

The discussions below apply equally to all build alternatives. The finding for the project (undertaking) as a whole is "no historic properties affected."

Identified Cultural Resources

The archaeological and built environment surveys conducted on June 8, 2016, found no newly recorded archaeological resources or built environment resources within the APE.

Four previously recorded built environment resources identified from the record search and additional background research on the project area were determined to still be present within the APE: a segment of the SVRR alignment (CA-SAC-428H), one Aerojet industrial building (P-34-2183), the Nimbus Winery (P-34-1667) and the Sacramento County Fire Station #63. Three of these properties are not eligible for listing in the NRHP. The Aerojet industrial building (P-34-2183) was evaluated and determined ineligible for the NRHP listing through the Section 106 process under the Memorandum of Agreement for the Easton Project. While in good condition, it was determined that the building does not convey any particular Aerojet history, is not associated with the company's leaders or researchers, has no particular architectural merit or interest, and does not have the potential to contribute important information in history. The Nimbus Winery (P-34-1667) was evaluated and determined ineligible for NRHP listing by consensus through the Section 106 process due to extensive building modifications and changes to the cultural landscape resulting in an overall lack of integrity. Although the Sacramento County Fire Station #63 was initially determined to be a landmark or point of interest, it was later found ineligible for that designation by the State Historic Resources Commission (California Department of Transportation 2018).

The SVRR is well documented and was previously determined eligible for listing in the NRHP in 1993 under Criteria A, as the State's first passenger railroad west of the Mississippi River and

for its role in the growth of the cities of Sacramento and Folsom, and under Criteria B, for its association with Theodore Judah. The character-defining features of the SVRR are the rail alignment, its historic setting, and location. Although the resource is located in the APE, specifically at the jughandle near the intersection of Hazel Avenue and Folsom Boulevard, no proposed project construction will compromise the character defining features that help define why the rail line is significant under NRHP Criteria A and B. Consequently, as currently designed, the proposed project does not have the potential to affect, either directly or indirectly, the SVRR alignment.

Three previously recorded cultural resources within the APE were determined by the current field survey to be no longer extant. A single-story shed (P-34-0596) associated with the existing Nimbus Winery has been removed since its original recording and no associated remains of the shed were found. No associated features or elements of the Natomas-Aerojet Dredge Fields (CA-SAC-1013-H) or the Folsom Mining District (CA-SAC-308-H) were observed within the APE.

The UAIC considers one prehistoric site outside of the APE, but in the vicinity, to be culturally sensitive. Portions of the APE nearest to the site have been completely paved over and the project would not cause any ground disturbance near the site. To ensure complete avoidance, an avoidance measure is proposed to delineate the limits of the APE and instruct crews to keep construction-related staging, equipment, and worker parking within the approved APE boundary.

The overall finding for the project is No Historic Properties Affected for all build alternatives.

Unidentified Cultural Resources

The existence of known archaeological sites and historic activities in the area make the project area moderately sensitive for archaeological resources. As a result, it is possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives.

No Build Alternative

The No Build Alternative would not result in project-related effects on either known or unidentified archaeological resources because there would be no project-related ground disturbance. Similarly, the No Build Alternative would result in a finding of no historic properties affected for architectural/built-environment cultural resources.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following avoidance and minimization measures would be implemented as part of the project.

Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Before any ground-disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel, including contractors and subcontractors, to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas, their responsibility to report potential resources if observed, and the penalties for not complying with applicable State and Federal laws and permit requirements.

Monitor for Archaeological Resources during Initial Ground Disturbance

A Native American monitor will be retained to monitor all initial ground disturbing activities (e.g., grading, excavation, tree removal). The purpose of the monitoring is to ensure that no unrecorded archaeological resources are affected by the project and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. There will be tribal monitors from more than one tribe, depending on the availability of the tribes' monitors at the time of construction. It is County practice to have one paid tribal monitor at a time during construction, with the multiple tribes coordinating on the sharing of monitoring duties.

Implement Avoidance and Notification Procedures for Cultural Resources

It is County and Caltrans' policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner shall be contacted. Additionally, the Caltrans PQS will be contacted if human remains are identified. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The County will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

2.7.5 References Cited

Allen, Rebecca and Roger Mason. 2007. *Evaluation of the Structures Associated with the Aerojet Complex, Glenborough at Easton, Sacramento County, California.* October 5, 2007. Past Forward, Inc., and ECORP Consulting, Inc. Prepared for GenCorp Realty Investments, Folsom, California.

California Department of Transportation. 2018. Historic Property Survey Report. Hazel Avenue/U.S. 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. September. Sacramento, CA. Prepared by ICF.

County of Sacramento. 2017. *General Plan of 2005-2030.* Conservation Element. Office of Planning and Environmental Review. Amended September 26.

d'Azevedo, W. L. 1986. Washoe. In *Great Basin*, edited by W. L. d'Azevedo, pp. 466-498. Handbook of North American Indians, Vol. 11, William C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Fredrickson, D. A. 1973. Early Cultures of the North Coast of the North Coast Ranges, California. Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Jones & Stokes Associates, Inc. 1991. Draft Hazel Avenue State Route 60 interchange improvement environmental impact report. November 8, 1991. (JSA 91-215.) Sacramento, California. Prepared for Sacramento County Department of Environmental Review and Assessment, Sacramento CA.

Kroeber, A. L. 1976. *Handbook of the Indians of California*. Reprinted. Dover Publications, New York. Originally published in 1925, Bulletin No. 78, Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

Moratto, Michael J. 1984. *California Archaeology*. Coyote Press, Salinas, CA.

Rosenthal, J. S., G. G. White, and M. Q. Sutton. 2007. The Central Valley: A View from the Catbird's Seat. In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. L. Jones and K. A. Klar, pp. 147-163. AltaMira Press, Lanham, MD.

Shipley, William F. 1978. Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80–90. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Thompson and West and Company. 1880. History of Sacramento County, California. Oakland, California.

Wilson, N. L., and A. H. Towne. 1978. Nisenan. In *California*, edited by Robert F. Heizer, pp. 387–397. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Physical Environment

2.8 Hydrology and Floodplain

2.8.1 Regulatory Setting

2.8.1.1 Federal Requirements

Executive Order 11988

EO 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 FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

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.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected 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."

2.8.1.2 Regional Requirements

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 to address the Sacramento area's vulnerability to catastrophic flooding. This vulnerability was exposed during the record flood of 1986, when Folsom Dam exceeded its normal flood control storage capacity and several area levees nearly collapsed under the strain of the storm. In response, the City of Sacramento, Sacramento County, Sutter County, the American River Flood Control District, and Reclamation District (RD) No. 10000 created SAFCA through a Joint Exercise of Powers Agreement to provide the Sacramento region with increased flood protection along the American and Sacramento Rivers.

Sacramento County General Plan

Relevant goals and policies pertaining to hydrology and floodplains are listed in the Safety Element (County of Sacramento 2017a) and Open Space Element (County of Sacramento 2017b) of the Sacramento County General Plan. Other objectives and policies related to hydrology and floodplain resources are also found in the Conservation Element.

GOAL: Minimize the loss of life, injury, and property damage due to flood hazards.

Policies:

SA-5. A comprehensive drainage plan for major planning efforts shall be prepared for streams and their tributaries prior to any development within the 100-year floodplain and/or the 200-year floodplain in areas subject to the Urban Level of Flood Protection, defined by full watershed development without channel modifications.

SA-6c. The County will continue to coordinate with local, regional, state, and federal agencies to maintain an adequate flood management information base, prepare risk assessments, and identify strategies to mitigate flooding impacts. **(Added 2016)**

SA-8. Maintain the structural and operational integrity of essential public facilities during flooding.

SA-9. New and modified bridge structures should minimize any increase in water surface elevations of the 100-year floodplain, or the 200-year floodplain in areas subject to the Urban Level of Flood Protection. **(Modified 2016)**

SA-10. Fill within the 100-year floodplain of creeks outside of the Urban Service Boundary is permissible to accommodate structures (e.g., residential, commercial, accessory) and septic systems, and only when the Board of Supervisors finds that the fill will not impede water flows or storm runoff capacity. Such development shall not cause an increase in base flood elevation of the 100-year floodplain exceeding 0.10 feet, unless analysis clearly indicated that the physical and/or economic use of adjacent property within the floodplain will not be adversely affected. A permit is required if the fill is within the jurisdiction of the Central Valley Flood Protection Board.

SA-11. The County shall implement the improvement of natural drainage channels and certain floodplains for urbanized or urbanizing portions of the County to reduce local flooding. Such improvements shall comply with the General Plan policies contained in the Conservation Element, Urban Streams, and Channel Modification Section.

SA-12. The County shall continue local efforts that encourage implementation of the Federal Flood Insurance Program.

SA-13. Where new upstream development in Sacramento County will increase or potentially impact runoff onto parcels downstream in a neighboring jurisdiction, such as the City of Sacramento, Sacramento County will coordinate with the appropriate neighboring jurisdiction to mitigate such impacts.

SA-14. The County shall require, when deemed to be physically or ecologically necessary, all new urban development and redevelopment projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.

OS-1. Actively plan to protect, as open space, areas of natural resource value, which may include but are not limited to wetlands preserves, riparian corridors, woodlands, and floodplains associated with riparian drainages.

City of Rancho Cordova General Plan

Relevant goals and policies pertaining to hydrology and floodplains are listed in the Safety Element and Natural Resource Element of the City of Rancho Cordova General Plan (City of Rancho Cordova 2006).

Goal S.2: Reduce the possibility of a flooding or drainage issue causing loss of life or damage to property.

Policy NR.2.5. The City shall require that drainage improvements that discharge into areas of wetlands to be preserved are, to the maximum extent feasible, designed to mimic the undeveloped surface water flow conditions of the area in terms of seasonality, volume, and flow velocity.

Policy NR.5.6. Incorporate Storm Water, Urban Runoff, and Wetland Mosquito Management Guidelines and Best Management Practices into the design of water retention structures, drainage ditches, swales, and the construction of mitigated wetlands in order to reduce the potential for mosquito-borne disease transmission.

2.8.2 Affected Environment

This section is based on the analysis documented in the *Water Quality Assessment Report* prepared for this project (California Department of Transportation 2016; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and the *U.S. 50/Hazel Avenue Interchange Project Location Hydraulic Study Report* also prepared for the project (WRECO 2017; provided in Volume 3, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

2.8.2.1 Regional Hydrology

The project area is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). This region includes the Sacramento River and San Joaquin River basins,

including all areas from the crest of the Sierra Nevada range west to the Coast Range and Klamath Mountains. The region is bounded in the north by the California-Oregon border and extends south past the headwaters of the San Joaquin River to the base of the Tehachapi Mountains. The Sacramento and San Joaquin Rivers meet and form the Delta, ultimately draining into San Francisco Bay. This basin covers about one-fourth of the total area of the State—more than 30 percent of the State's land that can be irrigated—and furnishes about 51 percent of the State's water supply.

The project area is within the Lower American River Watershed, which originates in Folsom Lake. Nimbus Dam is 7 miles downstream from Folsom Dam, where Lake Natoma is formed. Alder Creek flows into Lake Natoma, a reservoir created by Nimbus Dam. The Nimbus Dam manages both Lake Natoma on the American River and the Alder Creek pond at the mouth of Alder Creek and creates a backwater condition. The Lower American River has levees on its north and south banks for about 13 miles from the Sacramento River to Carmichael, west of the project alignment (Sacramento River Watershed Program n.d.). The area has an average annual precipitation of 22.21 inches, with mild and wet winters and precipitation generally between October and April. Summers within the region are dry with rare occurrences of precipitation. The terrain in the project area is flat except at the existing overpass and on- and off- ramps where the grade climbs for an approximately 30 feet. The topography generally trends northwesterly towards the Folsom South Canal and the base of the Nimbus Dam. The soils in the project area are high in loam and have moderate erodibility and, therefore, have a moderate resistance to erosion.

2.8.2.2 Local Hydrology

Alder Creek is a perennial drainage and is the only surface water feature which crosses the project area underneath US 50. Alder Creek and areas east of the Hazel Avenue interchange drain north towards Lake Natoma, which roughly parallels US 50 from the eastern extent of the project area to the Nimbus Dam. The dam discharges water into the American River and Folsom South Canal. The American River and Folsom South Canal generally flow towards the southwest. The project area is less than 100 feet south of the Folsom South Canal and less than 0.25 mile south of both the American River and Lake Natoma. Runoff from the project site west of the Hazel Avenue interchange drains northerly toward the canal. The canal crosses US 50 outside the limits of the project through a reinforced concrete box.

Currently, runoff from the roadway either sheet flows off the roadway over vegetated surfaces and into roadside ditches or is collected by drainage inlets within the median. Runoff from the ramps sheet flows off the roadway onto vegetated surfaces, while runoff along Hazel Avenue is collected by a network of drainage inlets and culverts. Seasonal wetlands are normally inundated during the winter and early spring but are dry by late spring. The seasonal wetlands in the project area consist of features that occur in swales created to carry runoff within the cloverleaf loops of the Hazel Avenue/US 50 interchange and are not naturally occurring features. The project area contains four jurisdictional ditches. Three ditches are south of Folsom Boulevard on property owned by Aerojet Corporation. The fourth ditch is a constructed roadside ditch that extends from the east end of the project area to Alder Creek and receives runoff from US 50 and the interchange loop at Folsom Boulevard (California Department of Transportation 2018; provided in Volume 3).

2.8.2.3 Groundwater Hydrology

The project area is located within the South American subbasin of the larger Sacramento Valley groundwater basin. The subbasin is bound by the Sierra Nevada on the east, the Sacramento River on the west, the American River on the north, and the Cosumnes and Mokelumne Rivers on the south. Basin inflows include natural and applied water recharge. Long-term data indicates a consistent pattern of water level trends through much of the basin. From the mid-1960s to 1980, groundwater elevations generally declined over the period by approximately 20 feet. From 1980 through 1983 water levels recovered by about 10 feet and remained stable until the beginning of the 1987 through 1992 drought, when water levels declined by about 15 feet. From 1995 to 2000 most water levels recovered, leaving them generally higher than levels prior to the drought. Exceptions to this trend include wells in the vicinity of Rancho Cordova, which appear to have recovered less than the other wells in the subbasin since 1995 (California Department of Water Resources 2004).

2.8.2.4 Floodplains

As shown in Figure 2.8-1, the project area is partially within a Federal Emergency Management Agency (FEMA) 100-year floodplain. The majority of the project alignment is within Zone X (unshaded), areas of minimal flood hazard, usually depicted on Flood Insurance Rate Maps (FIRMs) as above the 500-year flood level. However, some portions of the project are within Zone AE, the 100-year Floodplain Zone. The Base Flood Elevation (BFE) for the Zone AE associated with Alder Creek is 128.4 feet referenced to the North American Vertical Datum of 1988 (NAVD 88). In addition, some portions of the project area are within Zone X (shaded), areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Zone X (shaded) also designates base floodplains of lesser hazards, such as areas with 100-year levee protection, or shallow flooding areas with average depths of less than 1 foot or drainage areas less than 1 square mile (Federal Emergency Management Agency 2012a, 2012b). A Letter of Map Revision application (Case No. 14-09-2228P) was submitted on September 15, 2015 and revised by FEMA to a Physical Map Revision (PMR) for a portion of Alder Creek in Sacramento County which will affect FIRM data in the project area. However, revisions to the FIRMs and Flood Insurance Study (FIS) are not yet approved or effective.

The project site is also within a regulatory floodway. According to 44 CFR 60.3(d)(3), a community will "prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge."

2.8.3 Environmental Consequences

2.8.3.1 Methods for Analysis

This section describes potential impacts on hydrology and flooding that could result from the project. Evaluation of the hydrology and floodplain impacts in this section are based on

information from published maps, reports, and other documents that describe the hydrological and floodplain conditions of the county.

2.8.3.2 Build Alternatives

For all build alternatives, the displacement of volume in the floodway can be attributed to the piles proposed to support the auxiliary lane extension for the Alder Pond Bridge. The soffit of the slab of the auxiliary lane extension, elevation 128.9 feet, is 0.5 feet above the BFE of 128.4 feet. The proposed widening of the US 50 travel lanes and shoulders would displace an area of approximately 4,000 square feet in the floodway from an open space land use designation to transportation corridor. Analysis of the topographic survey data indicates that the extent of floodplain of Alder Creek on the southern side of US 50 is equal to the distance between the toes of the abutments. This indicates that the Alder Pond Bridge carrying the US 50 auxiliary lane extension would not encroach upon the floodplain. Considering the relatively large storage volume of Alder Creek pond upstream of US 50, the project would have a negligible impact on the height of the water surface elevation during the base flood. Therefore, while the project is located within a 100-year base floodplain it would not result in a significant encroachment in the 100-year floodplain. (WRECO 2017.)

The paragraph above provides analysis showing no anticipated change in the 100-year water surface elevation as a result of the project based on an evaluation of the effective FEMA floodplain data. The paragraphs below provides analysis showing no increases in the 100-year water surface elevation as a result of the project based on an evaluation of the modified LOMR/PMR HEC-RAS model. (WRECO 2017.)

The HEC-RAS model that was developed in support of the LOMR/PMR for Alder Creek shows a water surface elevation of 132.9 feet National Geographic Vertical Datum of 1929 (NGVD 29) (135.4 feet NAVD 88) just upstream of the US 50 crossing and 125.9 feet NGVD 29 (128.4 feet NAVD 88) just downstream of the US 50 crossing. The modeling shows water surface elevations that are higher than the effective FIRM BFE: 7.4 feet higher upstream of US 50 and no change downstream of US 50. With the soffit of the slab of the auxiliary lane extension at elevation 128.9 feet, the Alder Pond Bridge would be overtopped by the base flood. The bridge deck/roadway elevation of US 50 in the LOMR/PMR hydraulic model was updated to account for the flood flow obstructions caused by the concrete barrier. The resulting 100-year water surface elevation from the existing and proposed condition hydraulic analysis was 132.7 feet NGVD 29 (135.2 feet NAVD 88) for the existing condition and 132.5 feet NGVD 29 (135.0 feet NAVD 88) with the proposed project. The results of the analysis indicated that the proposed project would not result in increases in water surface elevation along Alder Creek. (WRECO 2017.)

Because the proposed improvements would be within the limits of the existing culvert, the LOMR/PMR HEC-RAS model already accounts for the proposed fill that would result from the new piles and cast-in-place/reinforced concrete slab improvements associated with the auxiliary lane extension at the Alder Creek Pond. In addition, the cross section at the location where the widening would occur is just upstream of the existing culvert. The cross section includes ineffective flow areas that extend left and right from the sides of the existing culvert. Because the

proposed piles are within those ineffective flow areas, they would have no impact on the cross-sectional area. (WRECO 2017.)

For all build alternatives, an auxiliary lane bridge on pilings would be constructed on the south side of US 50. The pilings would be within the FEMA floodway for Alder Creek. However, due to the presence of Nimbus Dam, the soffit elevation (128.9 feet) of the proposed auxiliary lane bridge deck is 0.5 feet above the current effective FEMA BFE of 128.4 feet. In addition, the impoundment of Nimbus Dam restricts flow and greatly reduces velocities in the FEMA floodway in Lake Natoma and along Alder Creek through the project area. The continuous maintenance program by the Bureau of Reclamation and the State Department of Parks and Recreation mitigates the risk of a breach of Nimbus Dam. Both Nimbus Dam and Alder Creek Miners Dam control high flows on lower Alder Creek. As a result of these hydraulic control structures, FEMA BFE in Lake Natoma and Alder Creek pond are characterized as a static backwater condition with relatively low velocities during flooding. Therefore, the hydraulic force of flood waters is not considered a threat to structures in the project area. In addition, the project would not create new access to the floodplain or the surrounding areas; therefore, the project would not support or promote incompatible development within the floodplain.

Due to the small area of the proposed widening relative to the large storage area of Alder Creek pond upstream of US 50, the impact associated with floodplain encroachment is minimal. The footprint of the auxiliary lane extension accounts for approximately 4,000 square feet of encroachment within the FEMA floodway/floodplain. All project alternatives involve an auxiliary lane bridge on pilings which are within the FEMA floodway for Alder Creek, just upstream of its intersection with Lake Natoma on the American River. The soffit elevation of the proposed auxiliary lane bridge deck is above the current effective FEMA base flood elevation, which is a static flood elevation for both Alder Creek and lower Lake Natoma due to the presence of Nimbus Dam. The impact associated with this floodplain encroachment is minimal because of the small area of the proposed widening relative to the large storage area of Alder Creek pond upstream of US 50. This encroachment represents approximately 0.98% (less than 1%) of the existing area of the Alder Creek pond floodway/floodplain upstream of the US 50 cross culvert. Therefore, the proposed fill associated with the bridge piles is considered to represent no significant impact on the floodway/floodplain. The project proposes the auxiliary lane extension which is perpendicular to the direction of flow of Alder Creek. Therefore, the proposed project would not represent a longitudinal encroachment of the base floodplain.

Although minor blockage by debris during high flow events may occur, the Alder Creek culverts do not appear to be affected by sediment deposition and there was no evidence of any significant scour or deposition of sediment in the vicinity of the culvert. The proposed improvements at the bridge at the Alder Creek pond would be within the limits of the existing culvert. Therefore, there would be no increase to the 100-year flood water surface elevation. A sensitivity analysis was also performed to assess the impacts of extending the culvert and roadway by 12.5 feet. The analysis indicated insignificant increases in water surface elevation of less than 0.02 feet in the vicinity of the Alder Creek pond.

The estimated detour length around the US 50 bridge over Alder Creek, over which the proposed project would extend the auxiliary lane, is approximately 3 miles (WRECO 2017). Modelling results shows that US 50 would be overtopped by Alder Creek during a 100-year storm event for

both existing and proposed conditions. During a 100-year flood event on the American River, the detour length would increase to nearly 10 miles and motorists would need to take Folsom Boulevard north of US 50 (to avoid the flooding on Folsom Boulevard south of US 50) and eventually over Lake Natoma and then take Greenback Lane and Madison Avenue south to get back to Hazel Avenue (WRECO 2017). Because the proposed project would not result in a significant impact on the floodway/floodplain it would not change the potential for floodwaters at Alder Creek to overtop US 50. Therefore, the proposed project would not increase the potential for a significant interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route.

During construction activities, there would be potential short-term adverse effects on natural and beneficial floodplain values. During construction of the bridge at the Alder Creek pond, potential short-term adverse effects include loss of vegetation during construction and temporary disturbance of wildlife habitat along Alder Creek. There would also be long-term adverse impacts on the natural and beneficial floodplain values that would result from the addition of the piles within the channel under the auxiliary lane widening. Other long-term adverse impacts would be caused by the displacement of habitat along the south side of US 50; however, these impacts would be minor because of the low habitat value and the relatively small construction footprint. Minimization measures, such as Best Management Practices (BMPs), are proposed as part of the project design to address potential adverse effects on the natural and beneficial floodplain values.

2.8.3.3 No Build Alternative

Under the No Build Alternative, there would be no modification to the Hazel Avenue/US 50 interchange, and the existing configuration, ramps, and lanes would be retained. Because this alternative does not alter existing conditions, the same hydrologic and hydraulic conditions would continue at the site.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following avoidance and minimization measures and BMPs would be implemented as part of the project.

Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual

As part of the final design process prior to project construction, the project engineers will develop and incorporate design features or BMPs into the project design. The features selected will comply with the Sacramento County SQIP and the Sacramento Region SQDM for project areas outside of Caltrans ROW, and Caltrans SWMP and Standard Specifications for project areas within Caltrans ROW. The features will be designed to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan.

For project areas outside of Caltrans ROW, the project engineers will follow the guidance in the SQDM including selecting measures from SQDM Table 3-3, Stormwater Quality Control Measure Selection Matrix, for street/road projects with new impervious areas larger than 5 acres. Measures that could be selected and implemented include source control, hydromodification control, treatment control, and low impact development measures such as vegetated swales, water quality detention basins, and bioretention planters.

The project engineers and construction contractor will ensure compliance with the requirements of Caltrans and County NPDES MS4 permits to control stormwater and non-stormwater discharges associated with project construction activities and discharges within the jurisdiction of each permit. Temporary diversion systems and dewatering operations will be implemented, as appropriate. The controls required by all applicable permits will be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate.

The project engineers and the construction contractor will ensure that the requirements of the County SQIP will be followed to reduce the discharge of pollutants to the MS4. The project engineers and construction contractor will also ensure construction activities and project implementation complies with Section 401 (Water Quality Certification) from the Central Valley Regional Water Quality Control Board and the Section 404 Permit from the Sacramento District USACE.

2.8.5 References Cited

California Department of Transportation. 2016. *Water Quality Assessment Report. U.S. 50/Hazel Avenue Interchange Project*. Sacramento County, California *03-SAC-50-PM 15.1/17.5*. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. August. Walnut Creek, California. Prepared by WRECO.

California Department of Transportation. 2018. *Hazel Avenue/U.S. 50 Interchange Project Aquatic Resources Delineation.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. Sacramento, CA. October 2018.

California Department of Water Resources. 2004. Sacramento Valley Groundwater Basin South American Subbasin. Bulletin 118. Available: http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-21.65.pdf. Accessed: May 16, 2017.

City of Rancho Cordova. 2006. General Plan. Available: https://www.cityofranchocordova.org/i-want-to-/learn-about/general-plan. Accessed: October 22, 2018.

County of Sacramento. 2017. General Plan - Safety Element. Available: http://www.per.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan/Safety%20Element%20Amended%2009-26-2017.pdf. Accessed: October 22, 2018.

County of Sacramento. 2017. Open Space Element. Available: http://www.per.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan/Open%20Space%20Element%20-%20Amended%2009-26-17.pdf. Accessed: October 22, 2018.

Federal Emergency Management Agency. 2012a. Flood Insurance Rate Map Sacramento County, California and Incorporated Areas. Map Number 06067C0113H Panel 113 of 705. August 16.

Federal Emergency Management Agency. 2012b. Flood Insurance Rate Map Sacramento County, California and Incorporated Areas. Map Number 06067C0114H Panel 114 of 705. August 16.

Sacramento River Watershed Program. n.d. Lower American River Watershed. Available: http://www.sacriver.org/aboutwatershed/roadmap/watersheds/american/lower-american-river-watershed. Visited: May 15, 2017.

WRECO. 2017. *Location Hydraulic Study Report. U.S. 50 / Hazel Avenue Interchange Project. Sacramento County, California 03-SAC-50-PM 15.1/17.5* Federal Project No.: EA 03-3E380 E-FIS 0300020439. County Control Number 2011-70062. June. Prepared for California Department of Transportation and County of Sacramento.

LEGEND

Project Area

Zone AE
Zone AO
} 100-Year Floodplain

100 to 500-Year Floodplain

N

0 250 500 750 1,000
Feet

Source: FEMA Flood Insurance Rate Map, Sacramento County, Sheets 06067C0113H and 06067C0114H, August 16, 2012.

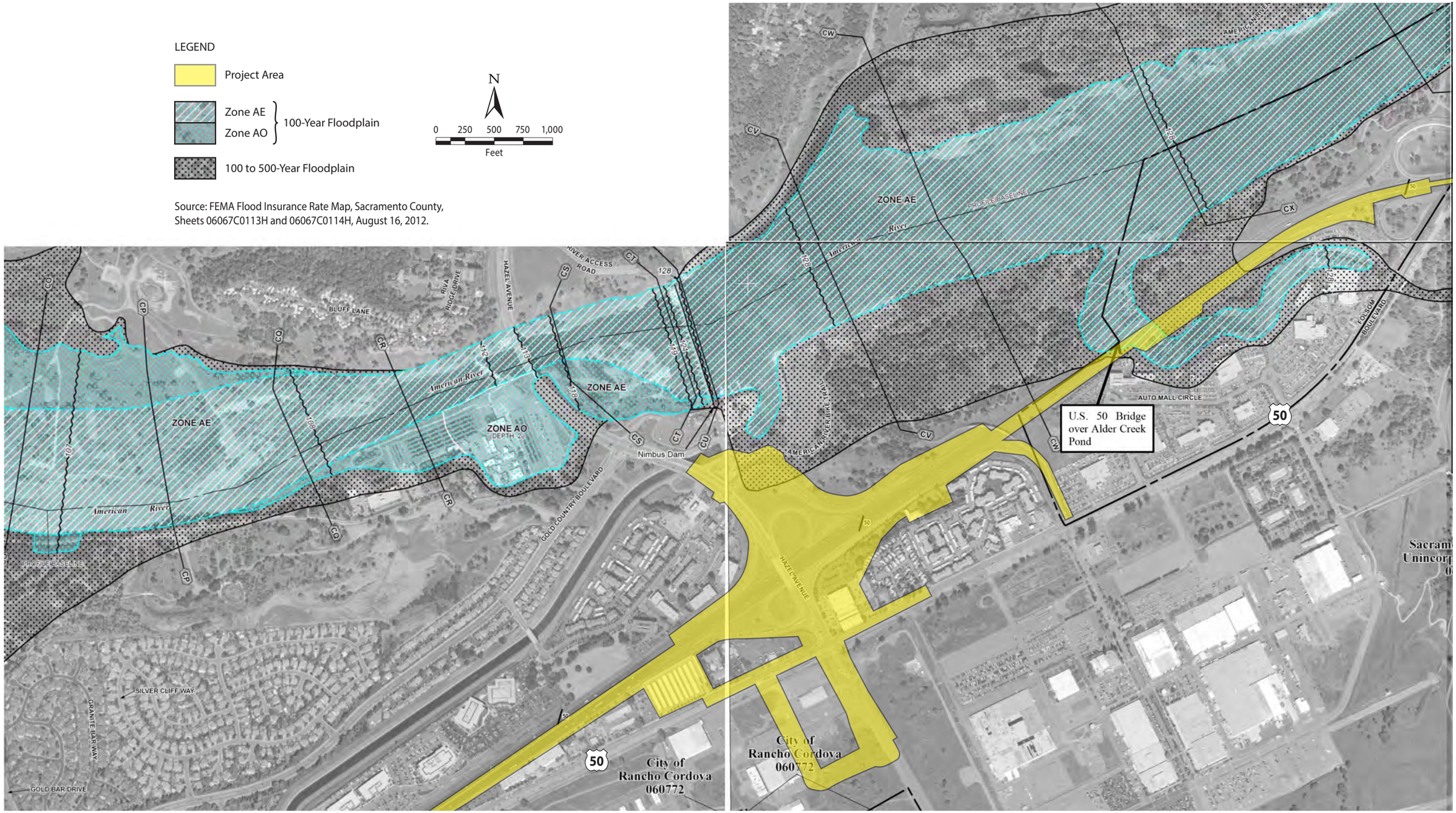


Figure 2.8-1
100-Year Floodplain

ICF Graphics, .005293.15 (7.10.2018)

2.9 Water Quality and Stormwater Runoff

2.9.1 Regulatory Setting

2.9.1.1 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 U.S. from any point source[1] unlawful unless the discharge is in compliance with a 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 stormwater 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 an 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.
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the RWQCBs administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater from industrial/construction and MS4s.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by USACE.

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

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

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual Permits. There are two types of Individual Permits: Standard Permits and Letters of Permission. For Individual Permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (EPA's) Section 404(b)(1) Guidelines (40 CFR 230), and whether the permit approval is in the

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

public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the EPA 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 that would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) 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). A discussion of the LEDPA determination, if any, for the document is included in Section 2.17, *Wetlands and Other Waters*.

2.9.1.2 State Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act (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., such as groundwater and surface waters that are 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 SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and for 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, RWQCBs designate beneficial uses for all waterbody 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 nonpoint 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, nonpoint, and natural) for a given watershed.

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

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. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined 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 storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans' MS4 permit covers all Caltrans ROWs, 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, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective July 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2017) and Order No. 2015-0036-EXEC (effective April 7, 2015) has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below).
2. Caltrans must implement a year-round program in all parts of the State to effectively control stormwater and non-stormwater discharges.
3. Caltrans stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the SWMP to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California (California Department of Transportation 2016a). The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices, and for training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices that Caltrans uses to reduce pollutants in stormwater and non-stormwater 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 stormwater runoff.

Small Municipal Separate Storm Sewer Systems

Phase I MS4 regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 acres or more. Phase II "small" MS4 regulations require stormwater management plans to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres of land.

MS4 permits require cities and counties to develop and implement programs and measures, including management practices, control techniques, system design and engineering methods, and other measures, as appropriate, to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible. As part of permit compliance, permit holders have created SWMPs also known as SQIPs, for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the SWMPs/SQIPs, as defined by the permit holder in that location. Sacramento County is considered a Phase I MS4 permittee under the SWRCB's WDRs for stormwater discharges (NPDES Order R5 2015-0023; NPDES No. CAS082597).

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012), regulates stormwater discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit 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 Stormwater Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit 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 pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the Construction General Permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' SWMP and Standard Specifications, a water pollution control program is necessary for projects with DSA less than 1 acre.

Local Agency Construction Activity Permitting

Project work will occur within Caltrans, Sacramento County, and the City of Rancho Cordova's ROW. The portion of the project within the Caltrans ROW will be subject to Caltrans' SWMP, including Caltrans' MS4 Permit (Order No. 2012-0011-DWQ). The project limits within the city and county are covered under the Sacramento County Region-Wide General Permit for Discharges from MS4s, Permit R5-2016-0040, NPDES No. CAS0085324, adopted on November 1, 2016, and MS4 Permit Order No. R5-2015-0023, NPDES Permit No. CAS082597, adopted on June 23, 2016. The current MS4 Permit requirements for development and redevelopment projects, and the applicable measures to comply with these requirements are outlined in the Stormwater Quality Design Manual developed by the Sacramento Stormwater Quality Partnership (2009).

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 U.S. 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 for 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 WDRs under the State Water Code (Porter-Cologne Act) that specify actions, 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.

2.9.1.3 Regional Requirements

Sacramento County General Plan

Relevant objectives and policies pertaining to water quality are listed in the Conservation Element of the Sacramento County General Plan.

> **Objective:** Manage the quality and quantity of urban runoff to protect the beneficial uses of surface water and groundwater
>
> **Policies:**
>
> CO-24. Comply with the Sacramento Areawide National Pollutant Discharge Elimination System Municipal Stormwater Permit (NPDES Municipal Permit) or subsequent permits, issued by the Central Valley Regional Water Quality Control Board (Regional Board) to the County, and the Cities of Sacramento, Elk Grove, Citrus Heights, Folsom, Rancho Cordova, and Galt (collectively known as the Sacramento Stormwater Quality Partnership [SSQP]).

CO-26. Protect areas susceptible to erosion, natural water bodies, and natural drainage systems.

CO-27. Support surface water quality monitoring programs that identify and address causes of water quality degradation.

CO-28. Comply with other water quality regulations and NPDES permits as they apply to County projects or activities, such as the State's Construction General Permit and Aquatic Pesticides Permit.

CO-29. Continue to support the County's participation in regional NPDES Municipal Permit compliance activities through collaborative efforts such as the Sacramento Stormwater Quality Partnership.

CO-30. Require development projects to comply with the County's stormwater development/design standards, including hydromodification management and low impact development standards, established pursuant to the NPDES Municipal Permit. Low impact development design and associated landscaping may serve multiple purposes including reduction of water demand, retention of runoff, reduced flooding and enhanced groundwater recharge. **(Modified 2016)**

CO-31. Require property owners to maintain all required stormwater measures to ensure proper performance for the life of the project.

CO-32. Support programs and activities conducted by watershed groups and citizen volunteers that help to ensure compliance with the NPDES Municipal Permit by increasing public awareness and encouraging stewardship of water resources.

City of Rancho Cordova General Plan

Relevant policies pertaining to water quality are listed in the Natural Resources Element of the City of Rancho Cordova General Plan.

Policies:

NR.5.7. Continue to cooperate and participate with the County, other cities, and the Regional Water Quality Control Board regarding compliance with the joint National Pollutant Discharge Elimination System Permit (NPDES No. CAS082597) or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.

NR.5.5. Minimize erosion to stream channels resulting from new development in urban areas consistent with State law.

Sacramento Stormwater Quality Improvement Plan

The Sacramento Stormwater Management Program is a comprehensive program consisting of various program elements and activities designed to reduce stormwater pollution to the maximum extent practicable and eliminate prohibited non-stormwater discharges in accordance with Federal and State laws and regulations. These laws and regulations are implemented through NPDES municipal stormwater discharge permits. In 1990, Sacramento County and the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova, collectively known as the Sacramento Stormwater Quality Partnership, applied for and received one of the first areawide NPDES MS4 stormwater permits in the country and began development of core stormwater management program elements and activities to address local urban runoff water quality problems. As part of the program, a *Stormwater Quality Improvement Plan* (Sacramento Stormwater Quality Partnership 2009) was prepared in compliance with the MS4 permit as a comprehensive plan that describes the Partnership's Stormwater Management Program.

Grading Permit

Both Sacramento County and the City of Rancho Cordova require a grading and erosion control permit for projects that grade, fill, excavate, store or dispose of 350 cubic yards or more of soil or earthen material or that clear and grub 1 acre or more of land (Sacramento County Code 16.44.050; City of Rancho Cordova 16.44.050).

2.9.2 Affected Environment

This section is a summary of the analysis documented in the *Water Quality Assessment Report* prepared for this project (California Department of Transportation 2016b; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and the *Aquatic Resources Delineation. Hazel Avenue/U.S. 50 Interchange Project* also prepared for the project (ICF 2018; provided in Volume 3, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

Surface Hydrology

The project area is within the Lower American River Watershed, which originates in Folsom Lake. The Nimbus Dam is 7 miles downstream from Folsom Dam, where Lake Natoma is formed. Alder Creek is the only surface water feature that crosses the project area underneath US 50 (ICF 2018; provided in Volume 3). Alder Creek and areas east of the Hazel Avenue interchange drain north towards Lake Natoma. The Nimbus Dam manages flows from Lake Natoma and discharges water into the American River and Folsom South Canal. The project area is less than 0.25 mile south of both the American River and Lake Natoma. Runoff from the project area located west of the Hazel Avenue interchange drains northerly towards the canal. The canal crosses US 50 outside the limits of the project area through a reinforced concrete box.

Runoff from the roadway either sheet flows off the roadway over vegetated surfaces and into roadside ditches or is collected by drainage inlets within the median. Runoff from the ramps

sheet flows off the roadway onto vegetated surfaces, while runoff along Hazel Avenue is collected by a network of drainage inlets and culverts. Seasonal wetlands in the project area consist of constructed features that occur in swales created to carry runoff within the cloverleaf loops of the Hazel Avenue/US 50 interchange. There are four ditches in the project area which convey runoff. One is a constructed roadside ditch which extends from the east end of the project area to Alder Creek and receives runoff from US 50 and the interchange loop at Folsom Boulevard (ICF 2018).

Surface Water Quality Objectives/Standards and Beneficial Uses

Water quality in a typical surface waterbody is influenced by past and current land uses that take place within the watershed, and by the composition of local geologic materials. The project area is relatively developed, with primarily commercial and recreational land uses in the surrounding area. Water quality is affected primarily by discharges from both point and nonpoint sources, including winter storms, overland flow, roadside ditches, and roads.

Water quality in surface water and groundwater bodies is regulated by the SWRCB and the RWQCBs. The project site is within the jurisdiction of the Central Valley RWQCB, which is responsible for implementing State and Federal water quality protection statutes, regulations, and policies in the vicinity of the project site. The Central Valley RWQCB implements the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan), a master policy document for managing water quality in the region. The Basin Plan specifies the beneficial uses that apply to the project area. Once beneficial uses are designated, appropriate water quality objectives can be established, and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. For waterbodies that do not have specific beneficial uses or water quality objectives designated in the Basin Plan, the tributary rule[3] applies.

Alder Creek is not specifically listed in the Central Valley Region Basin Plan, but it describes the American River (Folsom Dam to Sacramento River), to which Alder Creek is a tributary, as providing the following beneficial uses (Central Valley Regional Water Quality Control Board 2016):

- Municipal and domestic supply
- Agriculture supply (Irrigation only)
- Industrial service supply
- Industrial power supply
- Water contact, canoeing and rafting, and non-contact recreation
- Warm and cold freshwater habitat
- Warm and cold migration

[3] The "tributary rule" refers to any waterbody or stream not specifically listed in the Basin Plan that is deemed to have the same beneficial uses and water quality objectives of the listed stream, river, or lake to which they are a tributary.

- Warm and cold spawning
- Wildlife habitat

Alder Creek is not on the CWA 303(d) list as impaired. However, the creek flows to Lake Natoma which is 303(d) listed as impaired for mercury. The 303(d)-listed impairments are based on the 2014/2016 California Integrated Report (State Water Resources Control Board 2018a). The EPA estimates a TMDL for mercury in Lake Natoma in 2019. Water from Lake Natoma drains to the Lower American River (Nimbus Dam to the confluence with the Sacramento River), which is also impaired for mercury, as well as polychlorinated biphenyls (PCBs), bifenthrin, pyrethroids, and toxicity. The EPA estimates a TMDL for PCBs and toxicity in the Lower American River in 2021, and bifenthrin and pyrethroids in 2027.

Groundwater Quality

Groundwater quality may be a concern in the project area. Groundwater has been contaminated by past operating and disposal practices from industrial chemical manufacturing, pesticide manufacturing, and testing operations from the Aerojet Facility located on the south side of Folsom Boulevard. The Aerojet site is an 8,500 acre superfund site undergoing cleanup. Although numerous types of chemicals have been used at the Aerojet site, tricholorethene (TCE), tetrachloroethene, perchlorate and N-nitrosodimethylamine are most commonly encountered in groundwater. The Aerojet site is undergoing groundwater treatment for a variety of chlorinated solvents and the groundwater appears to have been affected in the project area (Parikh Consultants 2017). According to GeoTracker, several open cleanup sites within 500 feet of the project site along Folsom Boulevard are present, resulting from past Aerojet practices. Other potential contaminants of concern include but are not limited to metals, solvents or non-petroleum hydrocarbons, mercury, diesel, dioxin/furans, freon, chlorinated hydrocarbons, PCBs, and polynuclear aromatic hydrocarbons. Potential media of concern include groundwater and the underlying aquifer used for drinking water supply (State Water Resources Control Board 2018b).

Historical mining and dredging activities at the Aerojet site has resulted in the site becoming a significant groundwater recharge zone. Six individual layers (A–F) have been defined beneath the Aerojet site with Layer A being the shallowest and Layer F being the deepest. Depth to groundwater for the project area is approximately 15–55 feet for Layer A, and 45–120 feet for Layer B. The groundwater in layers B–F below the project area are affected by TCE and perchlorate (Parikh Consultants 2017).

In addition, a Chevron fuel filling station is located at the northwest corner of Folsom Boulevard and Hazel Avenue and would be acquired for the ROW. There are underground storage tanks (USTs) on the facility that would be removed, and a potential for leaks associated with the tanks or fuel dispenser areas. However, groundwater monitoring reports are not available for the property. A 30,000-gallon heating oil UST was removed from the Nimbus Winery parcel. However, residual soil and groundwater impacts remain. Groundwater was also affected by total petroleum hydrocarbons and volatile organic compounds below the action levels designated by the RWQCB (Mark Thomas and Company 2014). See Section 2.12, *Hazardous Waste/Materials,* for more information.

2.9.3 Environmental Consequences

2.9.3.1 Methods for Analysis

Evaluation of the stormwater and water quality impacts in this section is based on information from published maps, reports, and other documents that describe the water quality conditions of the county. The analysis assumes that the project alternatives would conform to the latest RWQCB and SWRCB standards, the stormwater standards of the county and city general plans, and NPDES requirements.

2.9.3.2 Build Alternatives

There are two build alternatives, with one sub-alternative, for the project. The project would result in new impervious surfaces as listed in Table 2.9-1. Due to potentially contaminated groundwater, Alternative 1A would require special consideration and potential "water proofing". Waterproofing would prevent contaminated groundwater from being released to the surface, or potentially intrude into the undercrossing. With the exception of the amount of new impervious surface area and DSA, the alternatives would generally have similar construction (short-term or temporary) and operations/maintenance (long-term or permanent) impacts on water quality. Therefore, the impacts of alternatives are not discussed separately in this section.

Table 2.9-1. Existing and New Impervious Surface by Alternative

Alternative	Impervious Area (acre)		Disturbed Soil Area (acre)
	Existing	New	
1	26.6	8.4	44.7
1A		8.6	45.2
2		9.6	54.6

Source: Caltrans 2016b:12.

Construction

Construction of the project would involve land-disturbing activities, stockpiling, equipment use and storage, and potential spills that could result in temporary impacts on water resources within the project site or nearby. These activities have the potential to violate water quality standards if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. Sources of sediment include earthwork, excavation, embankment/fill construction, grading, in-water work, uncovered or improperly covered stockpiles, unstabilized slopes, and construction equipment not properly cleaned or maintained. As a result, soil may be eroded or suspended solids may become temporarily introduced into waterways.

Potential impacts of the proposed project on existing water quality conditions in Alder Creek could consist of short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek generated during construction. Runoff from impervious surfaces could contain nonpoint pollution sources associated with automobiles and landscaped areas. Turbidity, pollutants associated with sediments, and potential accidental discharge of

pollutants associated with construction equipment and materials may be introduced into storm drains or other waterbodies.

Due to known groundwater contamination, groundwater would be tested in the event the project involves installation of piles. Groundwater extracted due to dewatering during construction would be stored in tanks, characterized for chlorinated solvents, and either sent off-site for recycling or treated at the existing groundwater treatment system at the Aerojet facilities (Mark Thomas and Company 2014). Removal of the Chevron service station would involve removal of the USTs, and the potential for discovery of groundwater contamination at the site due to usual vehicular usage. Any groundwater encountered in the service station area during project construction activities would be tested for gasoline and diesel fuel constituents to assess potential impacts on the project (Parikh Consultants 2017) and, if necessary, treated and handled according to the requirements of applicable Federal, State, and local laws and regulations.

Currents, Circulation, or Drainage Patterns

Project construction activities would alter existing drainage patterns and could result in local (on-site) and temporary erosion and siltation. Although drainage patterns on the project site would be altered, drainage would ultimately be improved. The proposed roadway improvements would modify, remove and replace, and/or propose new drainage facilities. Where feasible, the proposed drainage facilities would be designed to connect to existing outfalls; however, it is anticipated that modified or new outfalls would be necessary. Drainage facilities would not divert flows from the project area to discharge to different waterbodies. Although the watershed for each receiving water would not change, the proposed interchange improvements and modifications to US 50 would result in the removal and replacement of local drainage facilities and installation of new drainage facilities, which would affect local drainage patterns. The widening and roadway modifications would likely require the need for dikes and curbs, resulting in more inlets and culverts to convey concentrated runoff flows.

In-water work within Alder Creek would be required for the new bridge structure and supports. The bridge improvements have the potential to result in changes to creek characteristics at the crossing and upstream and downstream of the crossing depending on the geometry of the proposed bridge. Implementation of temporary diversion systems and dewatering operations, as appropriate, would be used to minimize short-term impacts associated with increased turbidity due to disturbed and excavated soils. Once construction is completed, water flows would be restored.

Impacts on Aquatic Life

Work within or near the Alder Creek may affect the beneficial uses of surface waters within the project area, which are identified as having the beneficial uses of freshwater fish habitat, migration, and spawning. Disturbed surface areas from grading, equipment mobilization, and other construction activities could result in increases in sediment and pollutant load, degrading water quality resulting in damage to the aquatic habitat and affecting the species present within the creek, river, or lake.

Short-term impacts on aquatic habitats would likely result from fill or removal of jurisdictional wetlands or aquatic features, sediment and construction debris entering biologically sensitive areas, and impacts on other identified environmentally sensitive areas from construction activities. Compliance with general and project-specific permits would address short-term impacts on the biological characteristics of the aquatic environment.

Operations and Maintenance

Long-term impacts on water quality could occur from increased impervious area, operation and maintenance activities, such as bridge construction maintenance and inspections, and discharges of sediments and other pollutants collected in stormwater runoff. An increase in impervious surface (pavement) would result in the potential for additional roadway contaminants or pollutant loading to affect water quality. Potential sources of pollutants from the roadway include total suspended sediments, nutrients, volatile and semivolatile organics, hydrocarbons, pesticides, particulate metals, dissolved metals, pathogens, litter, biochemical oxygen demand, total dissolved solids, and targeted design constituents. In addition, the Chevron located at the northwest corner of Hazel Avenue and Folsom Boulevard has USTs that would need to be removed. There is potential for leaks associated with USTs or fuel dispenser areas. Further, the additional impervious area created by the project could result in impacts on the existing hydrograph, including increases in low flow and peak flow velocity and volume to project waterbodies. Long-term impacts on the physical and chemical characteristics of the aquatic environment would most likely occur due to potential increases in runoff containing sediment or roadway pollutants and hydromodification impacts. Hydromodification impacts can result in localized or downstream alterations to waterbody characteristics including erosion and loss of habitat due to increased velocities and volumes. Stormwater impacts would be minimized through proper implementation of permanent design pollution prevention and post-construction stormwater treatment BMPs. To address potential increases in pollutant-laden runoff, the proposed roadway and drainage design would incorporate low-impact development concepts that promote infiltration and protect water quality. Projects resulting in an increase in impervious surface area are subject to the Caltrans SWMP. As a result, measures would be taken to ensure treatment detention, and infiltration of the increased quantity of runoff from the added impervious area. In addition, the project would comply with the Sacramento Stormwater Management Program's SQIP, to reduce the discharge of pollutants to the MS4. The project would be required to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan. Compliance with the provisions of the Construction General Permit would be required.

2.9.3.3 No Build Alternative

Under the No Build Alternative, there would be no modification to the Hazel Avenue/US 50 interchange, and the existing configuration, ramps, and lanes would be retained. Because this alternative does not alter existing conditions, there would be no associated impacts on water quality.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following avoidance and minimization measures and BMPs would be implemented as part of the project.

Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and the Stormwater Quality Design Manual

As part of the final design process prior to project construction, the project engineers will develop and incorporate design features or BMPs into the project design. The features selected will comply with the Sacramento County SQIP and the Sacramento Region SQDM for project areas outside of Caltrans ROW, and Caltrans SWMP and Standard Specifications for project areas within Caltrans ROW. The features will be designed to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan.

For project areas outside of Caltrans ROW, the project engineers will follow the guidance in the SQDM including selecting measures from SQDM Table 3-3, Stormwater Quality Control Measure Selection Matrix, for street/road projects with new impervious areas larger than 5 acres. Measures that could be selected and implemented include source control, hydromodification control, treatment control, and low impact development measures such as vegetated swales, water quality detention basins, and bioretention planters.

The project engineers and construction contractor will ensure compliance with the requirements of Caltrans and County NPDES MS4 permits to control stormwater and non-stormwater discharges associated with project construction activities and discharges within the jurisdiction of each permit. Temporary diversion systems and dewatering operations will be implemented, as appropriate. The controls required by all applicable permits will be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate.

The project engineers and the construction contractor will also ensure that the requirements of the County SQIP will be followed to reduce the discharge of pollutants to the MS4. The project engineers and construction contractor will also ensure construction activities and project implementation complies with Section 401 (Water Quality Certification) from the Central Valley Regional Water Quality Control Board and the Section 404 Permit from the Sacramento District USACE.

2.9.5 References Cited

California Department of Transportation. 2016a. Statewide Stormwater Management Plan. CTSW-RT-15-316.05.1. July 20.

California Department of Transportation. 2016b. Water Quality Assessment Report. U.S. 50/Hazel Avenue Interchange Project. Sacramento County, California *03-SAC-50-PM 15.1/17.5*. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. August. Walnut Creek, California. Prepared by WRECO.

Central Valley Regional Water Quality Control Board. 2016. Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan). Available: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/2016july_1994_sacsjr_bpas.pdf. Visited May 16, 2017.

ICF. 2018. *Aquatic Resources Delineation. Hazel Avenue/U.S. 50 Interchange Project*. October. Sacramento, CA. Prepared for Sacramento County Office of Planning and Environmental Review, Sacramento, CA.

Mark Thomas and Company, Inc. 2014. U.S. 50/Hazel Avenue Interchange Project Study Report June.

Parikh Consultants, Inc. 2017. Phase I Initial Site Assessment Hazel Avenue/U.S. 50 Interchange Project. October 25.

Sacramento Stormwater Quality Partnership. 2009. *Stormwater Quality Improvement Plan for the County of Sacramento and the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova*. November. Submitted to State of California Regional Water Quality Control Board, Central Valley Region. Available: http://www.beriverfriendly.net/docs/files/File/2009_SQIP/SQIP-(Nov09)-MainDocument.pdf. Accessed: January 24, 2018.

State Water Resources Control Board. 2018a. *2014/2016 Integrated Report* (Clean Water Act Section 303(d) List/305(b) Report). Last updated 2018. Available: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml. Visited March 21, 2018.

State Water Resources Control Board. 2018b. GeoTracker Search for Hazel Avenue Sacramento (Project Site). Available: http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Hazel+Avenue+Sacramento. Accessed: March 21, 2018.

2.10 Geology/Soils/Seismic/Topography

2.10.1 Regulatory Setting

For geologic and topographic features, the key Federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using Caltrans' Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see Caltrans Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.10.1.1 Regional Requirements

Sacramento County General Plan

The following goal and policies from the Safety Element of the Sacramento County General Plan apply to the proposed project (County of Sacramento 2017).

> **GOAL:** Minimize the loss of life, injury, and property damage due to seismic and geological hazards.
>
> **Policies:**
>
> SA-1. The County shall require geotechnical reports and impose the appropriate mitigation measures for new development located in seismic and geologically sensitive areas.
>
> SA-2. The County shall protect citizens from the hazards of old architecture affected by seismic activity.
>
> SA-3. The County shall support efforts by Federal, State, and other local jurisdictions to investigate local seismic and geological hazards and support those programs that effectively mitigate these hazards.

City of Rancho Cordova General Plan

The following goal, policies, and actions from the Safety Element of the Rancho Cordova General Plan apply to the proposed project (City of Rancho Cordova 2006).

Goal S.3: Reduce the risk of adverse effects to residents or businesses as a result of geologic or seismic instability.

Policy S.3.1. Support efforts by federal, State, and local jurisdictions to investigate local seismic and geologic hazards and support those programs that effectively mitigate these hazards.

Action S.3.1.1. Continue to implement the Uniform Building Code to ensure that structures meet all applicable seismic standards.

Policy S.3.2. Ensure that new structures are protected from damage caused by geologic and/or soil conditions to the greatest extent feasible.

Action S.3.2.1. Continue to require that all new construction projects complete a geotechnical report or conduct other appropriate analysis to determine the soils characteristics and associated development constraints and impose appropriate measures for geologically sensitive areas. This would include necessary measures to address expansive soil conditions.

Grading Permits

Both Sacramento County and the City of Rancho Cordova require a grading permit for projects that grade, fill, excavate, store or dispose of 350 cubic yards or more of soil or earthen material or that clear and grub 1 acre or more of land (Sacramento County Code 16.44.050; City of Rancho Cordova 16.44.050).

2.10.2 Affected Environment

This section is a summary of the analysis documented in the *Preliminary Geotechnical Report* prepared for this project (Parikh 2013; provided in Volume 3, Technical Studies, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

2.10.2.1 Topography

The topography of the project vicinity is characterized by low, rolling hills and incised river beds. In the project area, the terrain is relatively flat, though embankments have been constructed for the interchange and dredge tailings are present. Much of the topography in the area has been altered by dredging (Parikh 2013).

2.10.2.2 Regional Geologic Setting

The project area is in the Sacramento Valley, which forms the northern portion of California's Great Valley geomorphic province (Norris and Webb 1990:412; California Geological Survey 2002).

The Great Valley, also called the Central Valley, is a nearly flat alluvial plain that lies between the Sierra Nevada on the east and the Coast Ranges on the west. Its south end is defined by the Tehachapi Mountains north of Los Angeles, and its north end is defined by the Klamath Mountains. Subdivided into the Sacramento Valley to the north and the San Joaquin Valley to the south, the valley has an average width of about 50 miles and is about 400 miles long overall (Norris and Webb 1990:412–417; Bartow 1991:1).

The Great Valley is floored by a thick sequence of sedimentary deposits that range in age from Jurassic through Quaternary. Under the eastern and central portions of the valley, the base of the sequence likely rests on Mesozoic crystalline rock allied to the plutons of the Sierra Nevada; to the west, basement rocks are believed to be Franciscan metasediments and/or mélange similar to exposures in the Coast Ranges. Mesozoic sedimentary rocks that are now in the subsurface record marine deposition. These sedimentary rocks are overlain by Tertiary strata reflecting marine, estuarine, and terrestrial conditions, which are in turn overlain by Quaternary fluvial and alluvial strata, recording uplift and erosion of the Sierra Nevada and Coast Ranges to approximately their present shape (Norris and Webb 1990:412–419; Bartow 1991:1).

The Sierra Nevada geomorphic province is just east of the project area. The Sierra Nevada geomorphic province is a linear, tilted fault block almost 400 miles long that extends from northern Butte County to the Mojave Desert. Its western slope is gentle (approximately 2°), in contrast to its steep eastern slope. This western slope is deeply incised by rivers and disappears beneath the sediments of the Great Valley. Massive granites make up the upper elevation Sierra, which has been shaped by glaciation, such as seen in Yosemite National Park. Lower in the Sierra is the northwest-trending Mother Lode, which is made up of metamorphic rock containing gold-bearing veins. The Sierra Nevada disappears to the north beneath the Cenozoic volcanic rock of the Cascade Range (California Geological Survey 2002).

2.10.2.3 Local Geologic Setting

The project area is part of a stepped braided floodplain that formed during the Pleistocene to Holocene migration of the American River. During the Pleistocene, as the ancestral American River flowed down from the Sierra Nevada and past what is now Folsom, it formed a complex of alluvial fan and channel deposits and created river terraces. During this time, as the river migrated north, it created several channels and formed the distinct channel deposits present in the project area today (Shelmon 1972). The two Pleistocene alluvial deposits underlying the project area are the Riverbank and Modesto Formations.

The area on the south side of the American River from Folsom south to Mather was dredge mined for gold from the 1880s to the 1950s by several companies that eventually merged to become the Natomas Company (Clark 1998). This mining left behind dredge tailings, which are mounds of gravel and cobble with fine sediments between the mounds.

Geologic mapping by the California Geological Survey (2011) shows that most of the interchange, which is in the southcentral portion of the project area, is underlain by the Riverbank Formation, as is the eastern end of the Aerojet Road connector. The eastbound approach to the off-ramp is underlain by the Pleistocene Modesto Formation. The jughandle and western approach to the interchange are underlain by dredge tailings.

Much of the area, however, is developed and the surface is disturbed by road and building construction. In addition, artificial fill has been placed for road base and to elevate on-ramps and off-ramps.

Dredge or Mine Tailings

Dredge tailings occur in the western portion of the project area and underlie the jughandle and the approach to the interchange (California Geological Survey 2011). These areas of gravel and cobble appear to be less than 5 feet thick (Appendix A in Parikh 2013) and are highly disturbed.

Riverbank Formation

The central portion of the interchange is underlain by the Pleistocene Riverbank Formation. The Riverbank Formation is an alluvial deposit made up of weathered arkosic gravels, sand, silt, and clay. The unit forms alluvial terraces and dissected alluvial fans on the southeast side of the Sacramento Valley. It is divided into two informal members in the Sacramento Valley, the upper and lower members, based largely on the more eroded character of the lower member by comparison with exposures of the upper member (California Geological Survey 2011; Helley and Harwood 1985).

Modesto Formation

Like the Riverbank Formation, the Modesto Formation is an alluvial deposit. The two formations are lithologically very similar because both units were deposited by streams originating in the same rock of the Sierra Nevada and were deposited in similar alluvial fan environments. The primary differences between the Modesto and Riverbank Formations are age-related; they include the degree of consolidation/cementation, the amount of deformation (tilting and/or folding), and soil development. Where Modesto alluvium overlies the Riverbank Formation, the contact between the two units is frequently marked by a deeply developed paleosol with a pronounced clay horizon (Atwater 1982).

2.10.2.4 Seismicity

The project area is in a region of California characterized by relatively low seismic activity.

Primary Seismic Hazards

The State of California considers two aspects of earthquake events to be primary seismic hazards: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic groundshaking.

Surface Fault Rupture

The risk of surface fault rupture in the project area is low. The project area is not in an Alquist-Priolo Earthquake Fault Zone, and no known active or potentially active faults occur in the project area (California Geological Survey 2010). In addition, the Caltrans Fault Map does not show any fault systems within 15 miles of the project area (Parikh 2013).

Groundshaking

Unlike surface rupture, groundshaking is not confined to the trace of a fault, but rather propagates into the surrounding areas during an earthquake. The intensity of groundshaking typically diminishes with distance from the fault, but groundshaking may be locally amplified and/or prolonged by some types of substrate materials.

The project area is in a region of California characterized by a generally low to moderate groundshaking hazard (Parikh 2013). Based on a probabilistic seismic hazard map that depicts the peak horizontal ground acceleration values with a 10% probability in 50 years for exceedance, the peak horizontal ground acceleration values for the project area is 0.15g, where 1g equals the acceleration speed of gravity (California Geological Survey 2008a). As a point of comparison, probabilistic peak horizontal ground acceleration values for the San Francisco Bay Area range from 0.4g to more than 0.8g.

Secondary Seismic Hazards

Secondary seismic hazards refers to seismically-induced landsliding, liquefaction, and related types of ground failure. No part of the project area is on a Seismic Hazard Zone Map (California Geological Survey 2006). Secondary seismic hazards are discussed briefly in the following subsections.

Liquefaction

Liquefaction is a phenomenon in which the strength and stiffness of unconsolidated sediments are reduced by earthquake shaking or other rapid loading. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater. The sediments most susceptible to liquefaction are saturated, unconsolidated sand and silt soils with low plasticity within 50 feet of the ground surface (California Geological Survey 2008b:35–36).

Liquefaction is likely not a concern in the project area. According to the geotechnical report, materials underlying the site generally consist of gravel, cobbles, and boulders at shallow depths, underlain by stiff to very stiff clay, hard silt and dense to very dense silty sand. The submerged clean sand layers do not meet the criteria for potentially liquefiable soil. Therefore, the liquefaction potential for the submerged alluvial soils is considered to be low. In addition, the depth to groundwater is greater than 50 feet (i.e., 105–118 feet) (Parikh 2013).

2.10.2.5 Slope Stability

The slopes in the project area are constructed embankment slopes at the bridge abutments of the interchanges, and no other major slopes are present. The constructed slopes typically have a gradient of 2:1 (horizontal to vertical) or flatter and are covered with vegetation, and appear in stable condition (Parikh 2013).

2.10.2.6 Soils

The soils in the project area are generally well-drained, silty, sandy, or gravelly soils (Parikh 2013) that developed over alluvium (Natural Resources Conservation Service 2017). As described in Section 2.10.2.3, *Local Geologic Setting*, much of the area has been modified by gold dredging, resulting in extensive mounds of dredge tailings. Soil characteristics are summarized in Table 2.10-1.

Table 2.10-1. Erosion Hazard for Soils in the Project Area

Map Unit Symbol	Map Unit Name	Slope (%)	Erosion Hazard (Off-Road, Off-Trail)
181	Natomas loam	0 to 2	Slight
182	Natomas, Xerorthents, dredge tailings complex	0 to 50	Not rated
227	Urban land	–	Not rated
228	Urban land-Natomas complex	0 to 2	Not rated
245	Xerorthents, dredge tailings	2 to 50	Severe

Source: Natural Resources Conservation Service 2017.

The soils of concern for road construction-related erosion are the soils with unknown erosion hazard and the Xerorthents, dredge tailings. Many of the soils in the project area are not rated for erosion hazard. The Xerorthents, dredge tailings, have a severe rating for erosion hazard. This soil map unit occurs on the southwestern edges of US 50 and the western edge of Hazel Avenue (Natural Resources Conservation Service 2017).

Soils with a moderate to high shrink-swell potential, also known as expansive soils, expand and contract with changes in moisture content and therefore do not provide a suitable substrate for construction without modification. Based on the as-built log of test borings (Parikh 2013) and the Natural Resources Conservation Service soils report data (2017), the soils in the project area are not known to be expansive.

2.10.3 Environmental Consequences

2.10.3.1 Methods for Analysis

Evaluation of the geology, soils, seismicity and topography impacts in this section is based on information from published maps, reports, and other documents that describe the geologic, soil, and seismic conditions of the county, and on professional judgment. The project alternatives would conform to the latest CBSC standards, the seismic safety standards of the county and city general plans, and NPDES requirements. The project would also be designed in accordance with Caltrans' HDM (California Department of Transportation 2018), including Caltrans seismic standards, as provided in the HDM, minimizing the risk to construction workers or the traveling public from slope instability, strong seismic groundshaking, and seismic-related ground failure.

Build Alternatives

The project area is not located in an Alquist-Priolo Earthquake Fault Zone, and no known active or potentially active faults cross the project area. For all build alternatives, the project area would not likely be affected by surface fault rupture.

The project area is located in a region of California characterized by a generally low to moderate groundshaking hazard compared to other regions of the State. As recommended in the preliminary geotechnical report (Parikh 2013), a geotechnical investigation would be conducted for the build alternatives to evaluate the engineering properties of the subsurface soil materials. A report would be prepared that recommends geotechnical parameters to address geotechnical hazards associated with design elements (e.g., slope stability and settlement) and hazards associated with strong ground motion (e.g., strong groundshaking and liquefaction).

Ground disturbance caused by construction activities under all build alternatives has the potential to increase erosion and sedimentation rates above existing conditions. The soils of concern for road construction–related erosion are the soils with unknown erosion hazard and the Xerorthents, dredge tailings, which have a severe rating for soil erosion hazard. Measures implemented in compliance with NPDES permit requirements would address erosion, stormwater runoff, sedimentation, and other construction-related pollutants during construction until all areas disturbed have been permanently stabilized. After completion of construction activities, temporary facilities would be removed and disturbed areas would be restored and reclaimed as appropriate. BMPs to be implemented for the build alternatives described in further detail in Section 2.8, *Hydrology and Floodplain*, and Section 2.9, would reduce the potential for erosion and sedimentation associated with construction activities.

The constructed slopes in the project area could become unstable during excavation if the project were not designed and constructed properly. In addition, deep excavation in native material could also cause instability. All build alternatives would require extensive and deep excavation for road widening, retaining walls, and the railroad overhead. This excavation could range in depth from approximately 5 to 30 feet. Alternative 1A would require the greatest amount of excavation because of the extensive deep excavation required for the ramp tunnel. Alternative 1 would require excavation for the footings of the viaduct structure, and Alternative 2 would require excavation for footings of the flyover ramp. Prior to the preparation of the final engineering design, the specific subsurface soil conditions at the proposed excavation locations would be confirmed to define the appropriate engineering design parameters needed.

The soils in the project area are not known to be expansive. Prior to construction, site-specific geotechnical testing would be performed to provide detail for the final engineering design. Design parameters would be prepared in accordance with Caltrans' HDM (California Department of Transportation 2018), and the project would be designed according to Caltrans standards, as provided in the HDM, and County standards.

No septic systems or alternative wastewater disposal systems are proposed as part of any build alternative. There would be no impact.

No Build Alternative

Under the No Build Alternative, impacts related to fault rupture would be the same as under the build alternatives because the project location is the same. However, there would be no impact related to groundshaking and secondary seismic hazards because the existing facility meets Caltrans seismic construction standards and would not be modified. Because no construction would occur under the No Build Alternative, there would be no impacts related to soil erosion, loss of topsoil, slope or soil instability, or expansive soils.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.10.5 References Cited

Atwater, B. F. 1982. *Geological Maps of the Sacramento-San Joaquin Delta, California, Scale 1:24,000*. (Miscellaneous Field Studies Map MF-1401). U.S. Geological Survey. Reston, VA.

Bartow, J. A. 1991. The Cenozoic Evolution of the San Joaquin Valley, California. U.S. Geological Survey Professional Paper 1501. Washington, DC: United States Printing Office. http://pubs.er.usgs.gov/publication/pp1501. Accessed: February 8, 2017.

Bryant, W. and E. Hart. 2007. Special Publication 42 Fault-Rupture Hazard Zones in California, Interim Revision. California Geological Survey. August 2007. Available: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf.

California Department of Transportation. 2018. *Caltrans Highway Design Manual*. Available: http://www.dot.ca.gov/design/manuals/hdm.html. Last updated: July 2, 2018.

California Geological Survey. 2002. California Geomorphic Provinces. Available: http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf. Accessed: April 7, 2016.

California Geological Survey. 2006. *Welcome to the CGS Seismic Hazard Zonation Program (SHZP) Data Access Page.* Last revised: Unknown. Available: http://gmw.consrv.ca.gov/shmp/MapProcessor.asp?Action=SHMP&Location=All&Version=9&Browser=IE&Platform=Win. Accessed: February 9, 2017.

California Geological Survey. 2008a. *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. CDMG Special Publication 117a: Sacramento, CA. Available: http://www.conservation.ca.gov/cgs/shzp/webdocs/Documents/sp117.pdf. Accessed: March 9, 2015.

California Geological Survey. 2008b. *Probabilistic Seismic Hazards Ground Motion Interpolator*. Available: http:// http://www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html. Accessed: February 9, 2017.

California Geological Survey. 2010. *2010 Fault Activity Map of California*. California Geological Survey, Geologic Data Map No. 6. Compilation and Interpretation by: Charles W. Jennings and William A. Bryant. Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca. Available: http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html. Accessed: February 9, 2017.

California Geological Survey. 2011. Preliminary Geologic Map of the Sacramento 30' X 60' Quadrangle, California (and pamphlet). Available: http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/preliminary_geologic_maps.aspx. Accessed: February 9, 2017.

City of Rancho Cordova. 2006. *Rancho Cordova General Plan.* Adopted June 26, 2006. Rancho Cordova, CA.

Clark, W. B. 1998. Gold Districts of California. Bulletin 193. Sacramento, CA. Department of Conservation, Division of Mines and Geology. Available: http://digitalcommons.law.ggu.edu/cgi/viewcontent.cgi?article=1257&context=caldocs_agencies. Accessed: April 7, 2016.

County of Sacramento. 2017. *General Plan.* Safety Element. Office of Planning and Environmental Review. Amended September 26.

Helley, E. J., and D. S. Harwood. 1985. Geologic map of late Cenozoic deposits of the Sacramento Valley and northern Sierran foothills, California. (Miscellaneous Field Studies Map MF-1790.) Available: http://pubs.usgs.gov/mf/1985/1790/. Reston, VA: U.S. Geological Survey.

Natural Resources Conservation Service. 2017. *Websoil Survey.* Last revised: August 10, 2016. Available: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed: February 13, 2017.

Norris, R. M., and R. W. Webb. 1990. Geology of California, second edition. New York, NY: John Wiley & Sons.

Parikh Consultants. 2013. Preliminary Geotechnical Report Hazel Avenue/US-50 Interchange Sacramento County, California 03-SAC-050 PM 15.4/16.9. January. Job No. 2011-135-PGR. Sacramento, CA. Prepared for Mark Thomas & Company, Folsom, CA.

Shelmon, R. 1972. The Lower American River Area, California: A Model of Pleistocene Landscape Evolution. Association of Pacific Coast Geographers Yearbook 34:61–86.

2.11 Paleontology

2.11.1 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. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

16 United States Code (USC) 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

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

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 CEQA. The Conservation Element of the Sacramento County General Plan (County of Sacramento 2016) contains the following goals, objectives, and policies regarding paleontological resources.

> **GOAL:** Promote the inventory, protection and interpretation of the cultural heritage of Sacramento County, including historical and archaeological settings, sites, buildings, features, artifacts and/or areas of ethnic historical, religious or socio-economical importance.
>
> **Archaeological Site Protection During Development**
>
> Objective: Attention and care during project review and construction to ensure that cultural resource sites, either previously known or discovered on the project site, are properly protected with sensitivity to cultural and ethnic values of all affected.
>
> **Policies:**
>
> CO-160. County Planning staff shall take historical and cultural resources into consideration when conducting planning studies and documents in preparation of, including but not limited to, areas plans, corridor plans, community plans, and specific plans.

CO-161. As a condition of approval for discretionary projects, require appropriate mitigation to reduce potential impacts where development could adversely affect paleontological resources.

CO-162. Projects located within areas known to be sensitive for paleontological resources, should be monitored to ensure proper treatment of resources and to ensure crews follow proper reporting, safeguards and procedures.

CO-163. Require that a certified geologist or paleo resources consultant determine appropriate protection measures when resources are discovered during the course of development and land altering activities.

Implementation Measures:

C. Establish procedures to:

- Conduct periodic training programs for County Municipal Services Agency and County Airports construction and maintenance personnel to facilitate their awareness of archeological site indicators and proper procedures. (DERA)
- Utilize mitigation monitoring and reporting programs to provide for on-site monitoring during construction adjacent to known sites. (DERA)

The Cultural and Historic Resources Element of the Rancho Cordova General Plan (City of Rancho Cordova 2006) contains the following goal, policies, and actions regarding paleontological resources.

Goal CHR.1: Identify and preserve the history of Rancho Cordova for future generations.

Policy CHR.1.2 – Establish and promote programs that identify, maintain, and protect buildings, sites, or other features of the landscape possessing historic or cultural significance.

Action CHR.1.2.1 – Develop and regularly update a comprehensive historic resources inventory, coordinating with other agencies as necessary. The inventory will contain a list of all locally historically significant properties, as well as historic archaeological and paleontological resources in the Planning Area and a map depicting their locations.

Policy CHR.1.3 – Establish review procedures for development projects that recognize the history of the area in conjunction with State and federal laws.

Action CHR.1.3.1 – Require historic resources and paleontological studies (e.g., archaeological and historical investigations) for all applicable discretionary projects, in accordance with CEQA regulations. The studies should identify paleontological, historic, or cultural resources in the project area, determine their eligibility for inclusion in the California Register of Historical Resources, and

provide mitigation measures for any resources in the project area that cannot be avoided.

Action CHR.1.3.2 – Incorporate the following two conditions in applicable permits for all discretionary projects.

The Planning Department shall be notified immediately if any cultural resources (e.g., prehistoric or historic artifacts) or paleontological resources (e.g., fossils) are uncovered during construction. All construction must stop in vicinity of the find and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology or a paleontologist shall be retained to evaluate the finds and recommend appropriate action.

The Planning Department shall be notified immediately if any human remains are uncovered and all construction must stop in vicinity of the find. The Planning Division shall notify the County Coroner according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5 (d) and (e) shall be followed.

2.11.2 Affected Environment

The regional and local geology of the project area are described in Section 2.10, *Geology/Soils/Seismic/Topography*. The affected environment and subsequent analysis for paleontological resources is based on the *Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan* prepared for the proposed project in February 2017 (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and Caltrans' Standard Environmental Reference procedures (Chapter 8, *Paleontology*).

The geologic units immediately underlying the project area are Pleistocene Riverbank and Modesto Formations and disturbed areas underlain by dredge tailings. Geologic mapping by the California Geological Survey (2011) shows that most of the interchange, which is located in the southcentral portion of the project area, is underlain by the Riverbank Formation, as is the eastern end of the Aerojet Road connecter. The eastbound approach to the offramp is underlain by the Pleistocene Modesto Formation (Figure 2.11-1). The jughandle and western approach to the interchange is underlain by dredge tailings. Much of the area, however, is developed and the surface is disturbed by road and building construction. In addition, artificial fill has been placed for road base and to elevate on-ramps and off-ramps.

2.11.2.1 Paleontological Sensitivity

The assessment of paleontological sensitivity (i.e., the potential to contain scientifically important paleontological resources) followed standard Caltrans criteria (California Department of Transportation 2014). Caltrans uses three categories to describe the likelihood that a geologic

unit contains significant fossil materials—high potential, low potential, and no potential—defined in Table 2.11-1.

The paleontological sensitivity of the units immediately underlying the project area is described below. Additionally, the University of California Museum of Paleontology (UCMP) database contains 126 records of vertebrate fossils in Sacramento County (University of California Museum of Paleontology 2016a).

Table 2.11-1. California Department of Transportation Paleontological Sensitivity Terminology

Caltrans Sensitivity Designation	Characteristics of Geologic Units in This Category
High Potential (High Sensitivity) Riverbank Formation Modesto Formation	This category consists of rock units known to contain important vertebrate, invertebrate, or plant fossils anywhere within their geographic extent, including sedimentary rock units that are suitable for the preservation of fossils, as well as some volcanic and low-grade metamorphic rock units. This category includes rock units with the potential to contain • abundant vertebrate fossils • a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data • areas that may contain datable organic remains older than Recent, including *Neotoma* (sp.) middens • areas that may contain unique new vertebrate deposits, traces, and/or trackways Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive.
Low Potential (Low Sensitivity) Dredge or mining tailings	This category includes sedimentary rock units that • are potentially fossiliferous, but have not yielded significant fossils in the past • have not yet yielded fossils, but possess a potential for containing fossil remains • contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood *Note that sedimentary rocks expected to contain vertebrate fossils are considered highly sensitive, because vertebrates are generally rare and found in more localized strata.*
No Potential (No Sensitivity)	This category includes rock units and deposits either too young to contain fossils or are of intrusive igneous origin, most extrusive igneous rocks, and moderate- to high-grade metamorphic rocks.

Source: California Department of Transportation 2014.

Dredge or Mine Tailings

The dredge or mine tailings have low potential to contain fossils because they are primarily reworked gravels and cobbles.

Riverbank Formation

California's Pleistocene sedimentary units—especially those that, like the Riverbank and Modesto Formations, record deposition in continental settings—are typically considered highly sensitive for paleontological resources because of the large number of recorded fossil finds in such units throughout the State. The Pleistocene age of the Riverbank Formation is well represented by important fossils recovered from excavations at the Arco Arena (now Sleep Train Arena) site in 1989 (Hilton et al. 2000) and other localities. Fossil finds in the Riverbank Formation include mammoth, bison, camel, horse, ground sloth, dire wolf, rodents, moles, birds, and bony fish (University of California Museum of Paleontology 2016b).

The UCMP database contains 120 records of vertebrate fossils from the Riverbank Formation in Sacramento County. Most of these fossils were found in the Teichert gravel pit near Perkins, approximately 10 miles west of the project area. A significant number of small vertebrate fossils were excavated at this site, including Pleistocene ground squirrels, voles, pocket gophers, packrats, shrews, and a bird (University of California Museum of Paleontology 2016b).

Due to its vertebrate fossil content, the Riverbank Formation is considered highly sensitive for paleontological resources.

Modesto Formation

As described for the Riverbank Formation, Pleistocene sedimentary units are typically considered highly sensitive for paleontological resources. Although there are no records of fossils in the Modesto Formation in Sacramento County, the UCMP database contains numerous records of vertebrate fossils in this unit. These records include mammoth, ground sloth, camel, and bison (University of California Museum of Paleontology 2016c).

Due to its vertebrate fossil content, the Modesto Formation is considered highly sensitive for paleontological resources.

2.11.3 Environmental Consequences

Build Alternatives

If fossils are present in the project area, they could be damaged by earth-disturbing activities (i.e., excavation and grading) during construction. The Riverbank Formation and the Modesto Formation, which underlie the project area, have a high sensitivity for paleontological resources; therefore, fossils could be present. Substantial damage to or destruction of significant paleontological resources, as defined by the Society of Vertebrate Paleontology (2010), would be an adverse effect.

The primary difference between the alternatives with regard to potential effects on paleontological resources is the amount of excavation required for implementation. This excavation would be in the Modesto and Riverbank Formations, which are sensitive for paleontological resources.

Construction of the various elements of Alternative 1 would require a range of excavation depths, including depths of up to 15 feet below ground surface for construction of retaining walls, and the driving of piles up to 80 feet in depth for support of new structures. Alternative 1 would have the least potential for effects compared to the other build alternatives.

Alternative 1A has the greatest potential to affect paleontological resources because of the amount of excavation required for the tunnel ramp under Hazel Avenue at depths up to 20 feet below ground surface, in addition to the excavation required for the common features of all alternatives.

The potential for effects would be greater for Alternative 2 than for Alternative 1 due to construction of the proposed eastbound off-ramp modifications and flyover ramp in addition to the excavation required for the common features of all alternatives.

No Build Alternative

No ground disturbance would occur under the No Build Alternative; therefore, there would be no impact on paleontological resources.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

Caltrans Standard Specification 14-7.03 mandates that within their ROW if unanticipated paleontological resources are discovered at the job site, the resources will not be disturbed, and the following actions will occur immediately:

1. All work will stop within a 60-foot radius of the discovery
2. The area will be secured
3. The project Engineer will be notified

Caltrans Standard Specification 14-7.03 also mandates that "if paleontological resources are discovered during construction, the project proponent will investigate the discovery and modify the dimensions of the secured area, if needed. Paleontological resources will not be moved or taken from the job site. Work will not resume within the radius of discovery until authorized."

In addition to the Standard Specification, the following mitigation measure would be implemented.

Prepare and Implement a Paleontological Mitigation Plan

A non-standard special provision for paleontology mitigation will be included in the construction contract special provisions section to advise the construction contractor of the requirement to cooperate with paleontological salvage. The following items will be part of the provisions:

- A qualified principal paleontologist, as defined by the Caltrans Standard Environmental Reference, will be retained to prepare and implement a final Paleontological Mitigation Plan (PMP) prior to construction. If the qualified paleontologist is not a licensed professional geologist in the State of California, then a licensed professional geologist will need to be retained to review and approve the PMP prior to construction. The preliminary PMP prepared for the project (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) will be updated based on final engineering design and geotechnical information.
- The geotechnical investigation conducted to support final engineering design will identify the depth and location of sensitives areas and will be used by the qualified principal paleontologist to identify locations that warrant monitoring during construction.
- The final PMP will list the proposed staff and professional qualifications.
- The qualified principal paleontologist will attend a task order meeting and conduct a site visit to review task order requirements; review plans, maps, initial site reports, and mitigation requirements; review geotechnical data, site geology and paleontological sensitivity; prepare a mitigation work plan; and prepare a Code of Safe Practices.
- The qualified principal paleontologist will schedule coordination and supervision for paleontological monitors of any salvage. Monthly progress reports will be prepared for lead agency review and comment.
- The qualified principal paleontologist may designate a paleontological monitor to be present during earthmoving activities.
- The paleontological monitor will have a college degree in paleontology or geology and at least 2 years of paleontological monitoring experience or other qualifications described by the Society of Vertebrate Paleontology (2010).
- The qualified principal paleontologist and paleontological monitor will be notified by the resident engineer or lead agency in advance of starting construction activity and will attend any safety training programs for the proposed project. Paleontological monitoring may be full-time during excavation for undercrossings, in-ground structural elements such as bridge substructures and culverts, and any other project elements requiring deep excavation. If, after 50% of the grading/excavation is completed at a particular location for the proposed project, it can be demonstrated that the level of monitoring should be reduced for that site, the qualified principal paleontologist will amend the mitigation program (Society of Vertebrate Paleontology 2010). If pieces of heavy equipment are in use simultaneously at different locations, each location may be individually monitored.
- The qualified principal paleontologist will meet with the resident engineer and construction contractor at a preconstruction conference to develop an agreed-upon communication plan and to discuss provisions for worker safety. All project

personnel will receive paleontological awareness training prior to commencement of work by the qualified principal paleontologist.

- If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work within a 60-foot radius of the find and notify the resident engineer and the Sacramento County Office of Planning and Environmental Review. In the event paleontological resources are discovered, fossil specimens will be properly collected and sufficiently documented to be of scientific value.
- The collection and treatment actions described in the PMP will occur during the grading and construction process and after recovery of specimens if fossils are found, including sampling for microfossils, conducting paleomagnetic analysis, identifying and preparing fossils, arranging for a repository, and preparing a final report.

2.11.5 References Cited

California Department of Transportation. 2014. Standard Environmental Reference, Volume 1: Guidance for Compliance. Chapter 8, Paleontology. Last updated: August 11, 2014. Available: http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm. Accessed: April 7, 2016.

California Department of Transportation. 2017. *Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan, Hazel Avenue/U.S. Route 50 Interchange Project, City of Rancho Cordova, Sacramento County*. February. 03-SAC-50/ PM 15.1-17.5, Federal Project No.: EA 03-3E380/E-FIS 0300020439. Sacramento, CA. Prepared by ICF.

California Geological Survey. 2011. Preliminary Geologic Map of the Sacramento 30' X 60' Quadrangle, California (and pamphlet). Available: ftp://ftp.consrv.ca.gov/pub/dmg/rgmp/Prelim_geo_pdf/Sacramento100k_preliminary_map.pdf and ftp://ftp.consrv.ca.gov/pub/dmg/rgmp/Prelim_geo_pdf/Sacramento100k_preliminary_pamphlet.pdf. Accessed: April 7, 2016.

City of Rancho Cordova. 2006. Rancho Cordova General Plan. Adopted June 26, 2006. Rancho Cordova, CA.

County of Sacramento. 2016. General Plan, Conservation Element. Adopted December 15, 1993, amended November 9, 2011, and amended December 13, 2016. County of Sacramento, Community Planning and Development Department. Sacramento, CA.

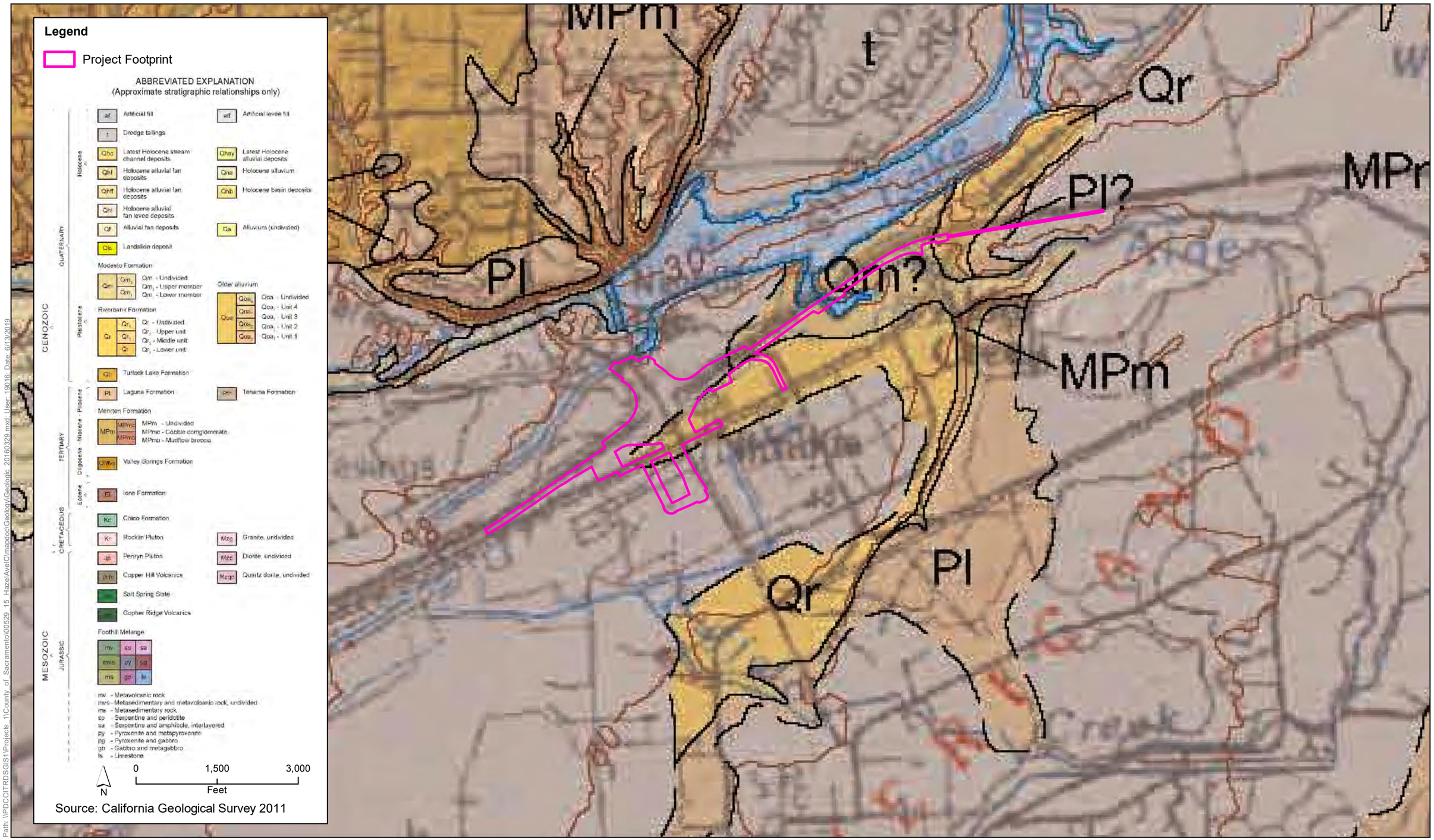
Hilton, R. P., D. C. Dailey, and H. G. McDonald. 2000. A Late Pleistocene biota from the ARCO Arena site, Sacramento, California. Paleobios 20(1):7–12.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Last revised 2010. Available: http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx

University of California Museum of Paleontology. 2016a. UCMP specimen search. Last revised: unknown. Available: http://ucmpdb.berkeley.edu/. Search of Sacramento County. Accessed: April 7, 2016.

University of California Museum of Paleontology. 2016b. UCMP Advanced Specimen Search. Last revised: unknown. Available: http://ucmpdb.berkeley.edu/advanced.html. Search of the Riverbank Formation. Accessed: April 7, 2016.

University of California Museum of Paleontology. 2016c. UCMP Advanced Specimen Search. Last revised: unknown. Available: http://ucmpdb.berkeley.edu/advanced.html. Search of the Modesto Formation. Accessed: April 7, 2016.



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Figure 2.11-1
Geologic Map

2.12 Hazardous Waste/Materials

2.12.1 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 (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as "Superfund," is to identify and cleanup 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
- CWA
- Federal Clean Air Act (FCAA)
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, 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 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 cleanup of 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.

2.12.1.1 Regional Requirements

Sacramento County General Plan

Relevant objectives and policies pertaining to hazards and hazardous materials are listed in the Hazardous Materials Element of the Sacramento County General Plan.

> **Objective:** Protect the residents of Sacramento County from the effects of a hazardous material incident via the implementation of various public health and safety programs.
>
> **Policies:**
>
> HM-8. Continue the effort to prevent ground water and soil contamination.
>
> HM-9. Continue the effort to prevent surface water contamination.
>
> HM-11. Protect residents and sensitive facilities from incidents which may occur during the transport of hazardous materials in the County.

Sacramento County Environmental Management Department

The Sacramento County Environmental Management Department (EMD) is the Certified Unified Program Agency (CUPA)—the agency certified by the California Secretary of Environmental Protection to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11—for Sacramento County. As such, EMD administers several programs including the Hazardous Waste Generator, Hazardous Waste Onsite Treatment (Tiered Permitting), Spill Prevention Control and Countermeasure Plan, and the Underground Storage Tank programs.

Sacramento County Standard Construction Specifications

The Standard Construction Specifications (County of Sacramento 2017) are intended, in part, as guidelines for construction contractors and detail the County's minimum requirements for materials and construction methods for the construction of public and private improvements within County ROWs or easements. Section 12-1.01.C, Task Specific Safety Plan (TSSP), outlines the minimum requirements for high-hazard activities to comply with all applicable California Division of Occupational Safety and Health (Cal/OSHA), Title 8 Regulations. Title 8 Regulations establish the minimum worker safety and health standards for all industries in California. Section 13-2.09, Removal of Traffic Stripes and Pavement Markings, details includes safety requirements during traffic stripe removal such as shielding sandblasting equipment and using a vacuum to ensure grindings are contained.

City of Rancho Cordova General Plan

Relevant policies pertaining to water quality are listed in the Safety Element of the City of Rancho Cordova General Plan.

> Policy S.1.5. The City shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation will specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future land uses.
>
> Policy S.5.5. Separate hazardous or toxic materials from the public.
>
> Policy S.5.6. Ensure that procedures are in place to reduce the chance of accidents in the transport of hazardous materials.

2.12.2 Affected Environment

This section is a summary of the analysis documented in the *Phase I Initial Site Assessment* (ISA) (Parikh Consultants 2017) and the *Aerially Deposited Lead Assessment* (Blackburn 2016) prepared for the project. Both studies are provided in Volume 3, *Technical Studies*, and are available on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx. Table 2.12-1 contains a list of technical reports related to hazardous waste and contamination that were prepared for the project.

Table 2.12-1. Hazardous Waste/Contamination Reports Prepared for the Proposed Project

Report	Author	Date	Type & Coverage
Phase I Initial Site Assessment	Parikh Consultants, Inc.	October 2017	Comprehensive; project footprint
Radius Map with GeoCheck	Environmental Data Resources, Inc.	April 2016	Agency database search, historical aerial maps, Sanborn maps and topographic maps; project footprint
Aerially Deposited Lead Assessment	Blackburn Consulting, Inc.	October 2016	Aerially deposited lead survey and testing

Consultation with Aerojet was initiated by the County to review property records identifying areas of hazardous waste including the location of contaminated soil and groundwater. Prior to property acquisition and construction of the project, consultation with DTSC and the Sacramento County EMD would occur, as needed, regarding the handling and disposal of contaminated soil.

The existing conditions for hazardous waste/materials presented below are potentially present at the project location, as discussed in the ISA and the other reports prepared for the project (Table 2.12-1). See Figure 2.12-1 for locations of known and potential hazardous waste/materials in the project area.

2.12.2.1 Records Review

A search of Federal, State, and county databases for the project footprint and the surrounding area was conducted by Environmental Data Resources for the ISA (Parikh Consultants 2017; provided in Volume 3). The search area consisted of the project area and the lands within a 1-mile radius. The records review identified two sites with potentially hazardous material conditions within the project area.

Other relevant agency databases, such as the California Regional Water Quality Control Board's Geotracker database and the California Department of Toxic Substances Control's Envirostor database, were also reviewed. This includes databases in the Cortese List per Government Code § 65962.5. Sites listed on these databases were checked to determine their status and were compared to the findings of the Environmental Data Resources report. The identified sites and their potential hazards are described below.

Nimbus Winery (APN: 069-0050-013)

Review of Geotracker files indicate that a 30,000 gallon (heating oil) UST was removed from the Nimbus Winery parcel (APN: 069-0050-013). The UST was removed in 2000 and the site was issued a closure letter in 2009. Review of site investigation reports however, indicate that residual soil and groundwater impacts remain. Groundwater was affected with total petroleum hydrocarbons as gasoline and volatile organic compounds below the action levels designated by the RWQCB. Soil was impacted with total petroleum hydrocarbons (as diesel and motor oil) at levels above regulatory thresholds (as high as 15,000 parts per million at 25 feet).

Aerojet Facility (APN: 072-0231-125)

The Aerojet facility is a 8,500-acre superfund site undergoing cleanup located on the south side of Folsom Boulevard and is identified in several hazardous materials databases. Historically, the site consisted of gold mining tailings converted to a manufacturing facility in 1953. Soil and groundwater have been contaminated by past operating and disposal practices from industrial chemical manufacturing, pesticide manufacturing, and testing operations. Although numerous types of chemicals have been used at the Aerojet site, tricholorethene, tetrachloroethene, perchlorate and N-nitrosodimethylamine are most commonly encountered in the groundwater. Figure 2.12-2, Groundwater Contamination, shows the extent of groundwater contamination at the Aerojet site. Groundwater treatment for a variety of chlorinated solvents is ongoing.

As a consequence of historic mining and dredging activities, the Aerojet site has become a significant groundwater recharge zone for underlying groundwater bearing zones. Six individual layers (A-F) have been defined beneath the Aerojet site with Layer A being the shallowest and Layer F being the deepest. Depth to groundwater for the project area is approximately 15-55 feet for Layer A, and 45-120 feet for Layer B (Figures 2.12-3a and 2.12-3b). A review of 2015 groundwater contour maps indicated that groundwater is impacted with tricholorethene and perchlorate. The maps also illustrated some areas with tricholorethene impacts located in the southwestern portion of the intersection of Folsom Boulevard and Hazel Avenue on the Aerojet parcel.

Historic mining methods included the use of mercury at hydraulic mines to expedite gold recovery. As a result, residual amounts of mercury can occur in concentrations large enough to generate risks associated with human health exposure. The risk to human health is limited to exposure by inhalation. However, previous soil testing of Aerojet property conducted for the Easton Project revealed that mercury concentrations in levels considered hazardous to human health do not occur in the Easton Project area and that mercury levels in the historic tailings are considered low (County of Sacramento 2008:17-9).

2.12.2.2 Site Reconnaissance

A reconnaissance-level site visit was conducted on April 9, 2016. The site visit was conducted to note current land uses and potential indicators of hazardous waste/contamination within the existing and potentially expanded Caltrans ROW. A Chevron service station was noted at the northwest intersection of Hazel Avenue and Folsom Boulevard (12399 Folsom Boulevard). This property is within the Caltrans ROW. The Aerojet facility is located on the south side of the interchange. To the southeast, a groundwater treatment system was visible as well as several warehouses. Railroad tracks travel parallel and to the south side of Folsom Boulevard.

Chevron Service Station (APN: 069-0160-012)

All build alternatives involve removal of the Chevron service station at the northwest corner of Hazel Avenue and Folsom Boulevard. Removal of the service station would involve removal of the USTs and possible contamination associated with the surface soils and the USTs. Even though the station is relatively new and the tanks were constructed according to the new EPA guidelines, there is potential for soil and groundwater contamination at the site due to usual vehicular usage.

2.12.2.3 Hazardous Materials

The ISA and aerially deposited lead (ADL) assessment reports identified the following potentially hazardous materials/waste conditions in the project area (Parikh Consultants 2017; Blackburn 2016).

- Contamination associated with vehicular traffic and railroad operations
  - Results of testing indicated that soils along US 50 have elevated levels of lead
  - Heavy metals and total petroleum hydrocarbons due to historic use of UPRR tracks
  - Lead or chromium associated with removal of existing yellow traffic striping
- Potential contamination associated with removal or modification of structures
  - ACM and LBP may be encountered during demolition.
- Contamination associated with identified potentially hazardous waste facilities
  - Past soil and groundwater contamination due to leaking UST on Nimbus Winery parcel
  - Possible soil contamination during UST removal from the Chevron site

- Soil and groundwater contamination of chlorinated solvents due to past operating and disposal practices at the Aerojet facility
- Tricholorethene and perchlorate groundwater contamination due to historic mining and dredging activities

Aerially Deposited Lead

ADL can be found in the surface and near-surface soils along nearly all roadways because of the historical use of tetraethyl lead in motor vehicle fuels. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in shoulder areas and has high solubility when subjected to the low pH conditions of waste characterization tests. Shoulder soils along urban and heavily travelled rural highways are commonly above the Soluble Threshold Limit Concentration criteria. Based on a review of aerial photos and historical topographic maps, Hazel Avenue and Folsom Boulevard have been traffic bearing roads since the 1960s. As a result, it is likely that soils along these roadways contain elevated lead levels. Due to the elevated risk, an ADL assessment was conducted.

Investigations of ADL for the proposed project included collecting 61 soil samples from 30 locations along unpaved shoulders of the proposed alignments including on- and off-ramps at the US 50/Hazel Avenue Interchange, the northbound shoulder of Folsom Boulevard, and the off-ramp from US 50 to Aerojet Road.

The results of the sampling indicated that total lead concentrations range from below the detection limit of 3.0 milligrams per kilograms (mg/kg) to 452 mg/kg with an average detected concentration of 26.54 mg/kg. Although none of the samples exceeded the total threshold limit concentration (TTLC) of 1,000 mg/kg, 11 of the samples exceeded total lead in excess of 50 mg/kg (i.e., 10 times higher than the STLC of 5.0 milligrams/liter [mg/l]) and were therefore further tested for soluble lead by the waste extraction test (WET) method. WET method results ranged from 2.61 mg/l to 44.9 mg/l, with 7 samples exceeding the individual STLC for lead of 5 mg/l.

Waste containing lead is classified as California Hazardous when: 1) the total lead content exceeds the TTLC (1,000 mg/kg); or 2) the soluble lead content exceeds the STLC (5.0 mg/l) based on the standard WET.

The near-surface soil zero to thirty (0–30 inches) below ground surface (bgs) within the project limits generally exhibited low levels of ADL. The results also indicated that higher concentrations of ADL were associated with the samples obtained from the shoulders of US 50, while lower concentrations and/or non-detect results were associated with Hazel Avenue, Folsom Boulevard, and the on- and off-ramp connections to US 50.

Yellow Traffic Striping

Yellow traffic striping and markings are located along the entire length of the project corridor. Caltrans studies have determined that yellow thermoplastic striping and painted markings may

contain elevated concentrations of lead and chromium, depending on the age of the striping (manufactured before 2005) and painted markings (manufactured before 1997). Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead and/or chromium.

Asbestos-Containing Materials and Lead-Based Paint

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61[M]) and Federal Occupational Safety and Health Administration (OSHA) classify ACMs as any materials or products that contain more than 1 percent asbestos. Nonfriable ACMs are classified by the NESHAPs as either Category I or II material, including materials sometimes found in bridges, rail shims, pipes, pipe coverings, expansion joint facings, and certain cement products.

Regulated ACMs, which are a hazardous waste when friable, are classified as any materials that contain more than 1% asbestos by dry weight and are any of the following.

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure);
- A Category I material that has become friable;
- A Category I material that has been subjected to sanding, grinding, cutting, or abrading; or
- A Category II nonfriable material with a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing any amount of asbestos are subject to certain requirements of the Cal/OSHA asbestos standard found in 8 CCR 1529. Typically, removal or disturbance of more than 100 square feet of materials containing more than 1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the materials contain 1% or less asbestos. When the asbestos content of materials exceeds 1%, virtually all requirements of the standard become effective.

Materials containing more than 1% asbestos are also subject to NESHAPs. Regulated ACMs (friable ACMs and nonfriable ACMs that will become friable during demolition operations) must be removed from structures before they are demolished. Certain nonfriable ACMs and materials containing 1% or less asbestos may remain in highway structures, such as guardrail and bridges, during demolition; however, waste handling/disposal issues and Cal/OSHA work requirements may make this cost-prohibitive. With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines ACMs as construction materials that contain more than 1% asbestos (8 CCR 341.6).

Construction activities, including demolition, that disturb materials or paints containing any amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in 8 CCR 1532.1. Deteriorated paint is defined by 17 CCR 35022 as a surface coating that is crackling, chalking, flaking, chipping, peeling, not intact, failed, or otherwise separating from a component. Demolition of a deteriorating LBP component would require waste characterization and appropriate disposal. Intact LBP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams before disposal.

Potential hazards exist to workers who remove or cut through LBP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LBP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring or respiratory protection may be required during the demolition of materials coated with LBP.

Due to their age, Cattlemens Restaurant (APN: 069-0060-085) and Nimbus Winery (APN: 069-0050-013), are the only buildings likely to be included within the proposed ROW that may contain ACM and LBP in their construction materials. The building at the Chevron service station (APN: 069-0160-012) was built in 2005-2006 and is therefore unlikely to contain ACM or LBP.

Union Pacific Railroad

UPRR tracks and SacRT tracks run adjacent to Folsom Boulevard. These tracks were formerly occupied by Southern Pacific and Sacramento Placerville Railroad and have been present since the early twentieth century. Soils adjacent to railroad tracks are typically contaminated by heavy metals, total petroleum hydrocarbons as diesel, fuel oil, and PCBs. Soils along railroad tracks may also be affected by locomotives in the form of total petroleum hydrocarbons as diesel (TPH-D), railroad ties (polynuclear aromatics) or slag ballast used to set the ties (heavy metals). It is therefore recommended that the surface soils in the areas adjacent to the former tracks be sampled and analyzed for TPH-D, heavy metals, and polynuclear aromatic hydrocarbons.

2.12.3 Environmental Consequences

Build Alternatives

Under Alternative 1, the viaduct structure is proposed to cross over the northern portion of the Nimbus Winery parking lot (APN: 069-0050-013) on an aerial easement, to allow parking below the structure and to minimize impacts to the business. ROW acquisition is anticipated from parcels in the southwest quadrant of the interchange and would require demolition of structures at the Chevron gas station and Cattlemens restaurant.

Under Alternative 1A, ROW acquisitions and excavation work would be similar to Alternative 1. The construction of a tunnel ramp, however, would require a greater amount of excavation, thereby increasing the potential to encounter contaminated soil and groundwater. To prevent the possibility of contaminated groundwater from reaching the ground surface at the direct tunnel ramp, the ramp would be designed to include water proofing within the proposed soldier pile wall and a thicker concrete roadway section.

Under Alternative 2, the ROW acquisition at the Nimbus Winery property (APN: 069-0050-013) would be greater because acquisition is required as opposed to an aerial easement under Alternative 1. The Nimbus Winery property is on the Cortese List for having a UST that was removed but residual soil and groundwater impacts remain. This alternative would require the demolition of the Nimbus Winery and Cattlemens restaurant structures, both of which have the potential to contain ACM and LBP, and demolition of the structures at the Chevron gas station.

Overall, the same potential for exposure to specific types of hazards and hazardous materials exists under all build alternatives because the viaduct structure would require installation of piles which could expose construction workers to potential soil and/or groundwater contamination. Therefore, the recommendations below apply to all build alternatives.

One of the primary reasons for the proposed project is to help relieve forecasted traffic operations and to accommodate projected and planned growth in the immediate area. Any proposed alternative location for the project would not serve the same purpose. Parcels with known or possible hazardous conditions within the project area cannot be avoided due to the constricting nature of the interchange. Clean up at the Aerojet facility, in particular, is an ongoing, long-term effort with complete remediation expected to occur far beyond the completion of projected and planned development in the immediate vicinity for which the proposed project is needed.

Soil and/or Groundwater Contamination

Humans and the environment could be exposed to soil and/or groundwater contamination as a result of construction activities. The parcels for which ROW acquisition would occur and the potential to contain soil/groundwater contamination are discussed below.

Union Pacific Railroad

If, during grading or excavation activities, contaminated soils within the UPRR ROW are encountered, construction workers' health could be adversely affected. The project proposes to relocate UPRR tracks. Soil and groundwater below the tracks may be contaminated from past railroad operations (heavy metals, TPH-D, fuel oil, and PCBs).

Chevron Service Station (APN: 069-0160-012)

There is potential for soil and groundwater contamination at the site due to possible leaking of USTs and vehicular usage. All build alternatives propose construction on the parcel and excavation and grading activities have the potential to encounter contaminated soils or groundwater, which could result in worker and public health and safety impacts.

Nimbus Winery (APN: 069-0050-013)

Residual soil and groundwater impacts remain from the removal of a 30,000-gallon UST. During construction of the project, the potential for human exposure (i.e., construction workers) to existing contaminated soils would occur mainly during soil-disturbing activities nearby. All build alternatives propose construction on the parcel. Alternative 2 would require the greatest ground disturbance within the parcel and had the greatest potential to encounter contamination remaining since the removal of the UST.

Aerojet Parcel (APN: 072-0231-125)

Alternative 1A proposes viaduct construction that may require drilled piles from 50–80 feet in depth and construction of a tunnel ramp. This alternative would likely encounter groundwater.

There has been soil and groundwater contamination due to past operating and disposal practices at the Aerojet facility, a property on the Cortese List and a superfund site undergoing cleanup. Also, historic mining and dredging activities have been impacted with tricholorethene and perchlorate. If contaminated soils and/or groundwater within the ROW is encountered, construction workers' health could be adversely affected.

Other Known Hazardous Materials

The project area generally has the potential for hazardous materials in the form of ADL along roadways within the project area; lead or chromium in yellow pavement striping; ACM in various bridge components; PCBs in pole-mounted transformers; LBP in utility openings or on steel structures; and gasoline-contaminated soil that could be encountered or released during construction of any of the build alternatives unless measures are taken to avoid that release. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances.

Unknown Hazardous Materials

The potential exists under all build alternatives for exposure of construction workers or nearby sensitive land uses to previously unknown hazardous materials during construction activities. The project area generally has a moderate risk of previously unreported hazardous materials that could be discovered during construction of any of the build alternatives. During construction of the project, the potential for human exposure (i.e., construction workers) to potentially hazardous materials would occur mainly during demolition of existing structures and/or soil-disturbing activities.

Release of Hazardous Materials

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction would entail the use of heavy equipment, which would involve small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area. These hazards are applicable to any of the build alternatives.

Cattlemens Restaurant (APN: 069-0060-085) and Nimbus Winery (APN: 069-0050-013) buildings may contain ACM and LBP in their construction materials. If during demolition, ACM or LBP are encountered, construction workers' health could be adversely affected.

No Build Alternative

No construction would take place under the No Build Alternative; therefore, there would be no potential to expose workers or nearby land uses to soil contamination or hazardous materials from construction activities. The No Build Alternative would not result in ROW acquisition or construction disturbance. Therefore, this alternative would not result in any direct effect regarding hazardous sites.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. Implementation of the following measures would avoid or minimize potential impacts related to release or exposure of construction workers to hazardous materials in the soil, groundwater, building materials, and traffic stripping.

Develop and Implement Plans to Address Worker Health and Safety

As required by Caltrans, and Federal, State, and local regulations, prior to construction, the County will employ a Certified Industrial Hygienist who will prepare a Health and Safety Plan, Lead Compliance Plan, BMP and/or injury and illness prevention plan to address worker safety when working with potentially hazardous materials (e.g., levels of protective personal equipment, emergency action plan, procedures for encountering hazardous materials) including potential ACMs, LBPs, lead or chromium in traffic stripes, ADL, and other construction-related materials within the ROW during any soil-disturbing activity. The plan will be implemented during construction. The preparation of such a plan is estimated to cost approximately $3,500 and take three weeks to prepare.

Conduct Site-specific Assessments and Prepare and Implement a Work Plan

Prior to construction, the County will conduct additional assessments of soil, groundwater, and building materials within the proposed acquisition area of the parcels described below. In addition, prior to soil and groundwater testing, the County will prepare a work plan that detail testing locations and analytical methods. Testing locations will be similar to proposed excavation locations in order to characterize potentially excavated soils. The plan will incorporate the soil and groundwater data to ensure that soil and groundwater are stored, managed, and disposed of appropriately and in accordance with applicable laws and regulations.

Soil and Groundwater

Assess the Chevron Service Station (APN: 069-0160-012), Nimbus Winery (APN: 069-0050-013), Aerojet Facility (APN: 072-0231-125), and UPRR ROW for possible soil and groundwater contamination. The sampling and testing of surface soils and groundwater at these sites will be analyzed for total petroleum hydrocarbons as diesel, heavy metals, petroleum hydrocarbons, polynuclear aromatic hydrocarbons, and chlorinated solvents. Drilling for soil and groundwater will be performed by OSHA-trained personnel with appropriate license (CFR 1910.120).

If soil and/or groundwater contamination is identified, the County will comply with Federal and State regulations and the Sacramento County CUPA regulatory requirements regarding the handling and disposal of hazardous wastes. These requirements include consultation with the DTSC and SWRQCB and adherence to the SWPPP. The SWPPP requirement of BMPs designed to minimize the release of hazardous materials would help reduce potential impacts. Contaminated soils not reused onsite will be disposed of at a Class I landfill facility.

If groundwater is extracted as part of dewatering, the extracted groundwater will be stored in tanks, and tested for chlorinated solvents, and either sent offsite for recycling or directed to the existing groundwater treatment system at the Aerojet facilities for disposal and treatment. This will be in addition to the pre-characterization of groundwater quality during preconstruction testing.

The estimated cost of collection and testing soil and groundwater within these parcels totals approximately $26,000 and could take up to six weeks. It should be noted that obtaining access to the UPRR parcel could take up to six months.

Asbestos-Containing Materials and Lead-Based Paint

The Cattlemens Restaurant (APN: 069-0060-085) and Nimbus Winery (APN: 069-0050-013) buildings are likely to contain ACM and LBP in their construction materials. Various bridge components, such as the overpass, could also contain ACM. The County will conduct a hazardous materials survey prior to demolition or significant renovation of Cattlemens Restaurant, Nimbus Winery, and bridge structures. If lead or asbestos is found in these buildings or structures, prior to removal or renovation the County will prepare an abatement plan as part of the TSSP required under Section 12-1.01.C of the County Standard Construction Specifications. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare hazardous materials specifications for abatement of the ACM and LBP. This specification will be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. The County will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and LBP deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

The estimated costs for ACM testing of the Cattlemens Restaurant, Nimbus Winery, and the bridge overpass ranges from $10,000 to $12,000 and would take approximately three weeks to complete. Preparation of the abatement plan is estimated to cost $7,000. Abatement by a certified contractor and oversight by certified inspector is estimated at $12,000 per building if ACM/LBP is present and would take approximately 2-3 weeks per structure.

Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Traffic Striping along Existing Roadways

The County will sample and test yellow traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be conducted in strict accordance with appropriate regulations of the California Health and Safety Code Section 1532.1, and Section 13-2.09, *Removal of Traffic Stripes and Pavement Markings* of the County's Standard Construction Specifications (2017). Section 13-2.09 includes safety requirements such as shielding sandblasting equipment and using a vacuum to ensure grindings are contained. Traffic striping will be disposed of at a Class I disposal facility.

The responsibility of implementing this measure will be outlined in the contract between the County and the construction contractor.

Testing traffic striping would take approximately 2-3 weeks and cost approximately $2,500. Removal, storage, transport and disposal of traffic striping is estimated to be between $4,000 and $10,000 if hazardous levels of lead and/or chromium are present and would occur as needed during construction.

Appropriately Dispose of Soils Contaminated with ADL

Soils in the project limits along the US 50 corridor identified as having hazardous levels of ADL will be handled and disposed of in accordance with applicable CalOSHA requirements including a project specific worker Health and Safety Plan and Lead Compliance Plan. CalOSHA standards regarding lead apply to all construction work where an employee may be exposed to lead and include notification of lead testing results; providing protective clothing and equipment; hazardous materials training; and control measures to contain lead.

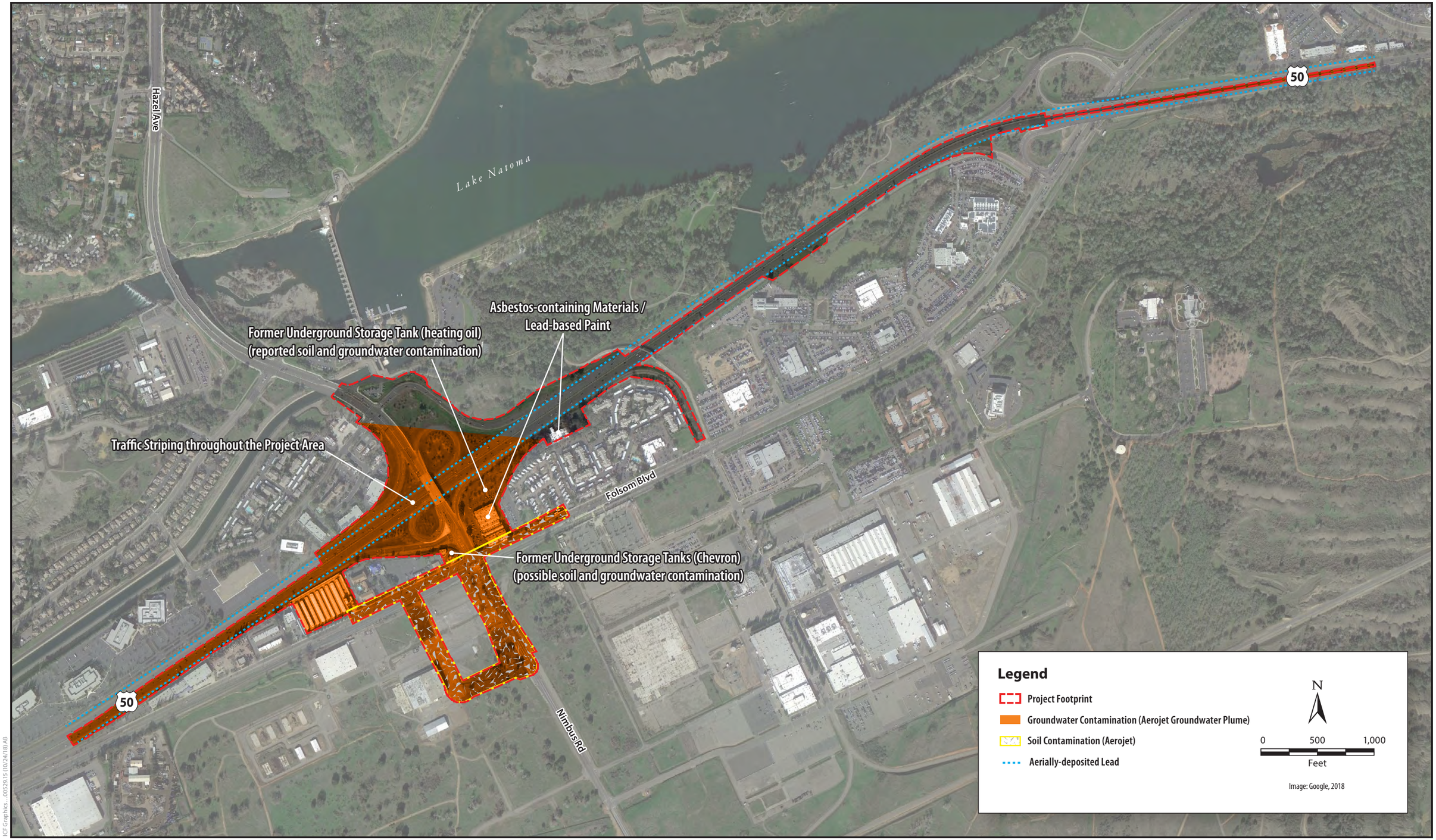
2.12.5 References Cited

Parikh Consultants, Inc. 2017. *Phase I Initial Site Assessment. Hazel Avenue/U.S. 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. October. Sacramento, CA. Prepared for ICF International on behalf of California Department of Transportation.

Blackburn Consulting. 2016. *Aerially Deposited Lead Assessment – US 50/Hazel Avenue Interchange*. Prepared for ICF International. October. West Sacramento, CA.

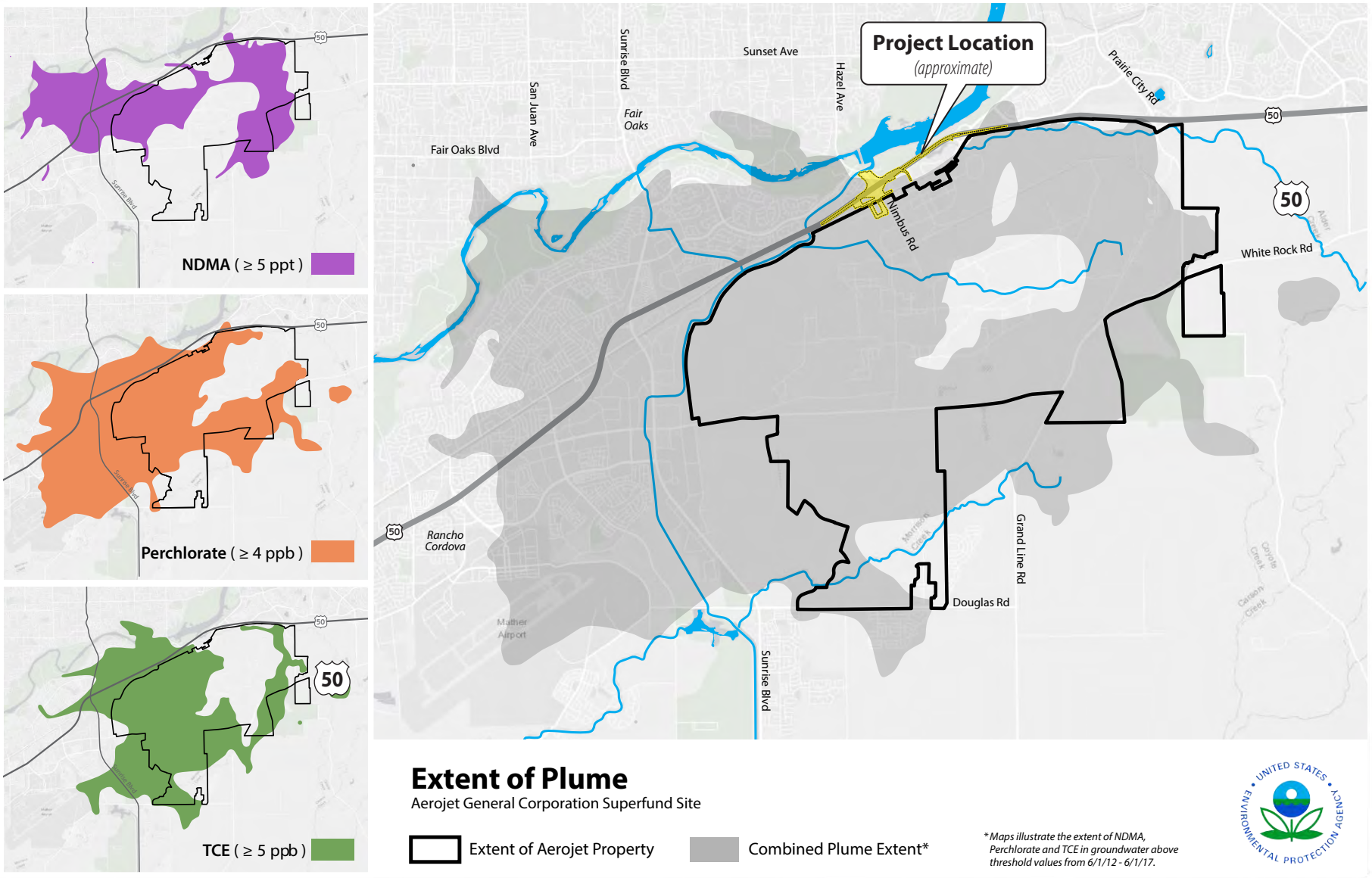
County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128.

County of Sacramento. 2017. *Standard Construction Specifications*. Municipal Services. Revised February 1, 2017.



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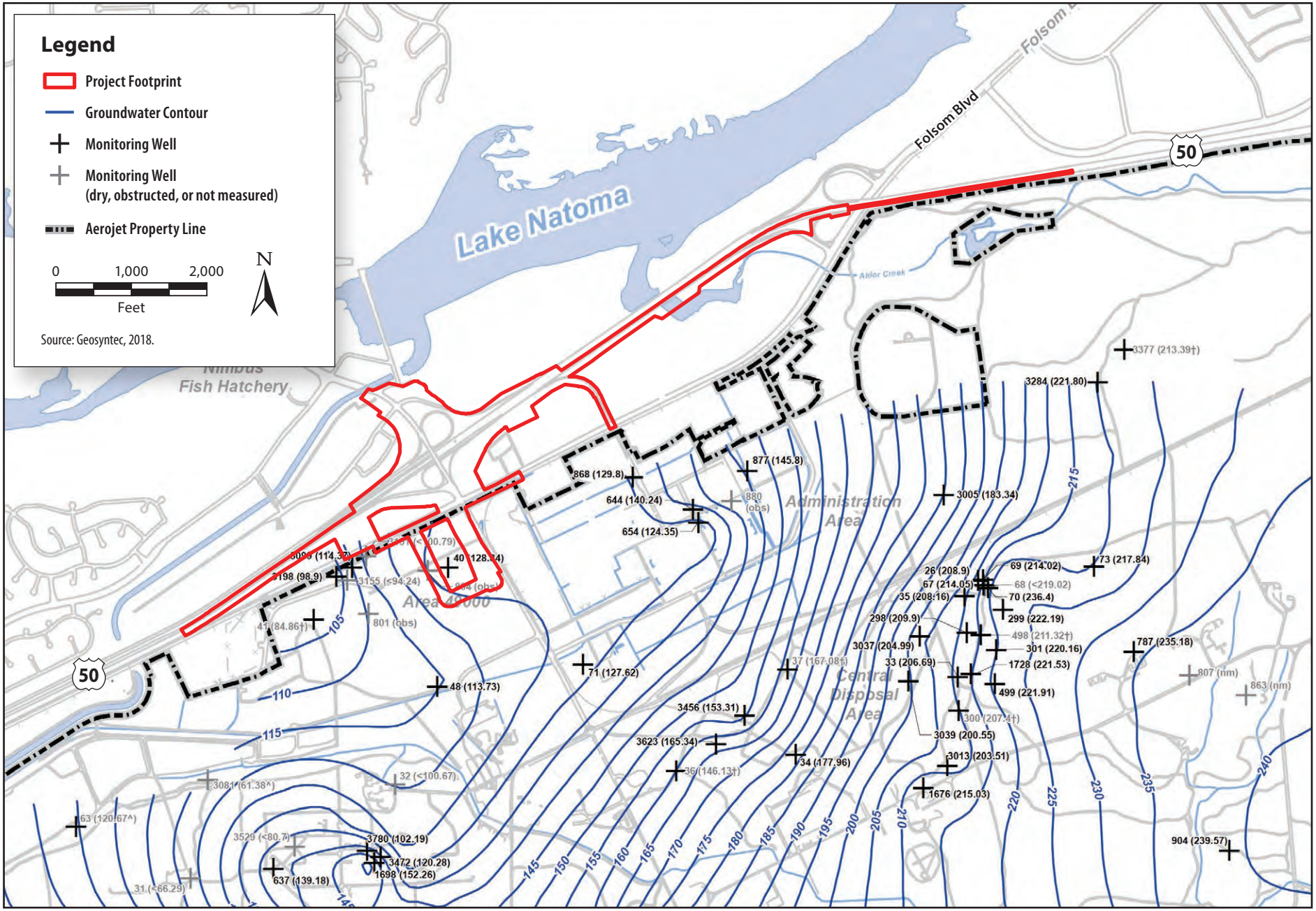
Figure 2.12-1
Potential Hazardous Conditions in the Project Area



Source: Environmental Protection Agency. 2018. *Extent of Plume, Aerojet General Corporation Superfund Site*. Available: https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/7142014026/Aerojet%20Plume%20Extent%20Map_20180115.pdf. Accessed: September 17, 2018.

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Figure 2.12-2
Groundwater Contamination



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Figure 2.12-3a
Layer A Groundwater Elevation Contours

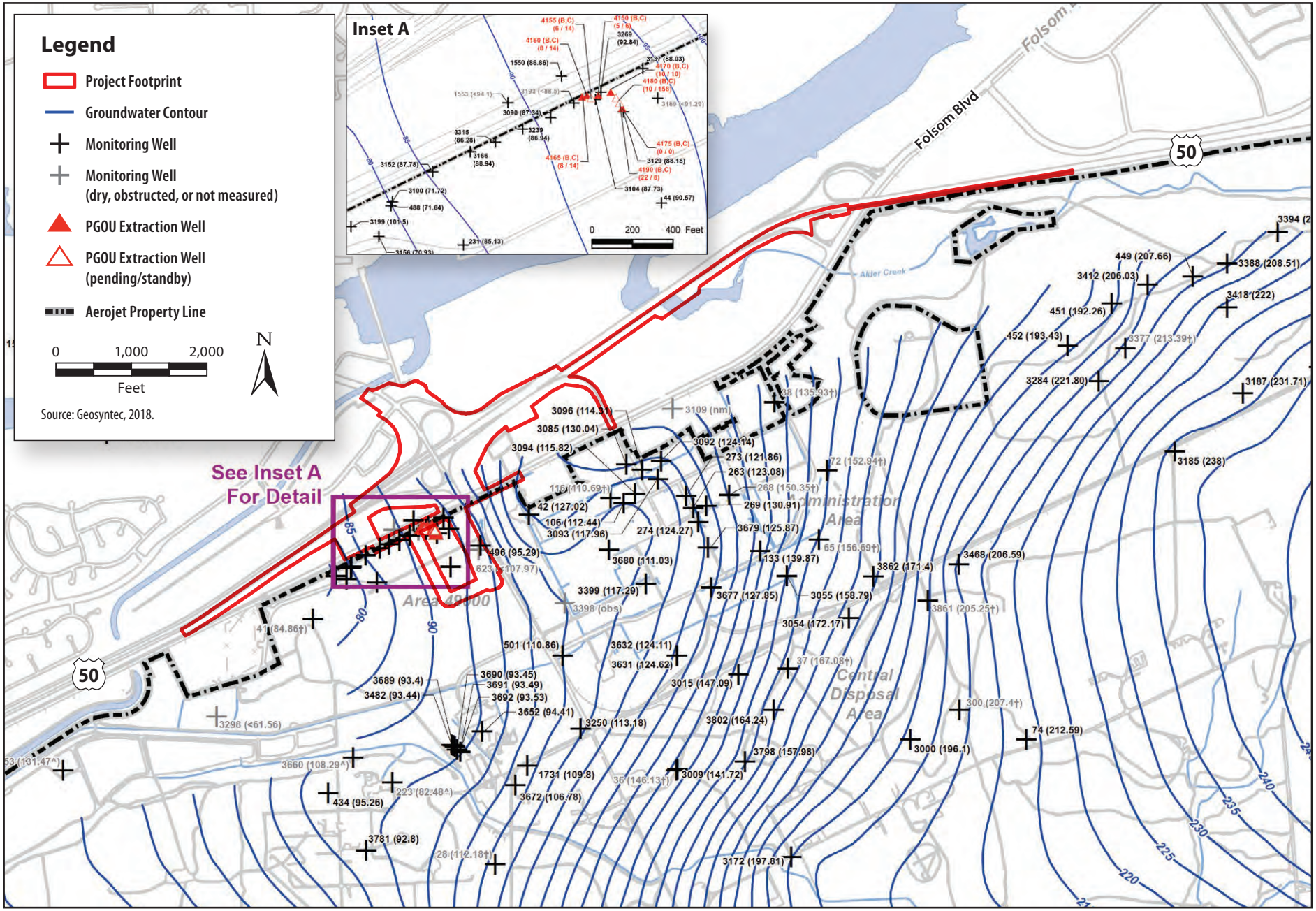


Figure 2.12-3b
Layer B Groundwater Elevation Contours

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2.13 Air Quality

2.13.1 Regulatory Setting

The FCAA, as amended, is the primary Federal law that governs air quality while the California Clean Air Act (CCAA) is its companion State law. These laws, and related regulations by the EPA and the California Air Resources Board (CARB), 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 (PM10) and particles of 2.5 micrometers and smaller (PM2.5)—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.

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

2.13.1.1 Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the USDOT and other Federal agencies from funding, authorizing, or approving plans, programs or projects that do not conform to the State Implementation Plan (SIP) for attaining 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. EPA regulations at 40 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 CO, NO_2, O_3, PM (PM10 and PM2.5), and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for Pb; however, Pb is not currently required by the FCAA to be covered in transportation

conformity analysis. Regional conformity is based on emission analysis of 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 FTIP). 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 FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization, FHWA, and Federal Transit Administration (FTA) make the 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 the FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and Transportation Improvement Program (TIP); the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.13.2 Affected Environment

The affected environment and subsequent analysis for air quality resources is based on the *Air Quality Study Report* prepared for the proposed project in August 2017 (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and Caltrans' Standard Environmental Reference procedures (Chapter 11, *Air Quality*).

2.13.2.1 Topography and Climate

The project is located in Sacramento County, California, within the Sacramento Valley Air Basin (SVAB). The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada Range. The San Joaquin Valley Air Basin lies to the south.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During winter, the north Pacific storm track intermittently dominates Sacramento Valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Periods of dense and persistent low-level fog, which is most prevalent between storms, are also characteristic of winter weather in the valley. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is 20°F to 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

In general, the prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow that can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions (warm air over cool air), which trap pollutants near the ground.

The O_3 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. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the Schultz eddy prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out, the Schultz eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento Valley. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of violating Federal or State standards. The eddy normally dissipates around noon when the Delta sea breeze arrives.

2.13.2.2 Existing Air Quality

Existing air quality conditions in the project area can be characterized in terms of the Ambient Air Quality Standards (AAQS) that the State of California and the Federal government have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. Some other pollutant standards have been based upon values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). Table 2.13-1 illustrates the State and Federal standards for a variety of pollutants, as well as the attainment status of the project area in Sacramento County.

Table 2.13-1. State and Federal Criteria Pollutant Standards, Effects, Sources and Attainment Status for the Project Area in Sacramento County

Pollutant	Average Time	California Standard	National Standard	Principal Health and Atmospheric Effects	Typical Sources	California Attainment Status	Federal Attainment Status
Ozone (O_3)	• 1 hour • 8 hours	• 0.09 ppm • 0.070 ppm	• NA • 0.070 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	• NA • Nonattainment	• NA • Nonattainment (Moderate)
Carbon monoxide (CO) (Lake Tahoe only)	• 8 hours • 1 hour • 8 hours	• 9.0 ppm • 20 ppm • 6 ppm	• 9 ppm • 35 ppm • NA	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment
Nitrogen dioxide (N_2O)	• Annual • 1 hour	• 0.030 ppm • 0.18 ppm	• 0.053 ppm • 0.100 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the “NOx” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Attainment
Sulfur dioxide (SO_2)	• Annual • 24 hours • 1 hour	• NA • 0.04 ppm • 0.25 ppm	• 0.030 ppm • 0.14 ppm • 75 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Attainment

Pollutant	Average Time	California Standard	National Standard	Principal Health and Atmospheric Effects	Typical Sources	California Attainment Status	Federal Attainment Status
Hydrogen sulfide (H_2S)	• 1 hour	• 0.03 ppm	• NA	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Unclassified	NA
Vinyl chloride	• 24 hours	• 0.01 ppm	• NA	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes.	NA	NA
Respirable Particulate Matter (PM_{10})	• Annual • 24 hours	• 20 µg/m^3 • 50 µg/m^3	• NA • 150 µg/m^3	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic & other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Maintenance (Moderate)
Fine Particulate Matter ($PM_{2.5}$)	• Annual • 24 hours	• 12 µg/m^3 • NA	• 12.0 µg/m^3 • 35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.	Attainment	• Attainment • Nonattainment (Moderate)
Sulfates	• 24 hours	• 25 µg/m^3	• NA	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	NA

Pollutant	Average Time	California Standard	National Standard	Principal Health and Atmospheric Effects	Typical Sources	California Attainment Status	Federal Attainment Status
Visibility Reducing Particles (VRP)	• 8 hours	• Visibility of 10 miles or more	• NA	Reduces visibility. Produces haze.	See particulate matter above. May be related more to aerosols than to solid particles.	Unclassified	NA
Lead (Pb)	• Calendar quarter • 30-day average • Rolling 3-month average	• NA • 1.5 µg/m^3 • NA	• 1.5 µg/m^3 • NA • 0.15 µg/m^3	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	Attainment

Source: California Air Resources Board 2016, 2019; U.S. Environmental Protection Agency 2016, 2018.

Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; ppm = parts per million; µg/m3 = micrograms per cubic meter; NA = not applicable

The nearest air quality monitoring station, as shown in Figure 2.13-1 in the vicinity of the project area that reported pollutant concentrations between 2016 and 2018 is the Folsom-Natoma Street monitoring station, located at 50 Natoma Street, approximately 5 miles northeast of the project. Data for CO and PM10 was unavailable from the Folsom-Natoma Street monitoring station so PM10 data from the next nearest monitoring station was taken from the Sacramento-Del Paso Manor monitoring station, located at 2701 Alton Avenue, approximately 9 miles west of the project. Air quality monitoring data from the Folsom-Natoma Street and Sacramento-Del Paso Manor monitoring station are summarized in Table 2.13-2. These data represent air quality monitoring data for the last 3 years (2016 through 2018) in which complete data are available. As shown in Table 2.13-2, the Folsom-Natoma Street and Sacramento-Del Paso Manor monitoring stations have experienced violations of the O_3 and PM standards over the last 3 years. No violations of the CO or NO_2 CAAQS were reported.

EPA has classified Sacramento County as nonattainment for the Federal 8-hour O_3 and PM2.5 standards and maintenance for the Federal PM10 standard (U.S. Environmental Protection Agency 2019). CARB has classified Sacramento County as a nonattainment area for the State 8-hour O_3 and PM10 standards, and an attainment area for the State PM2.5 and CO standards (California Air Resources Board 2018). Federal and State attainment status information for the project area is summarized in Table 2.13-1.

2.13.2.3 Sensitive Receptors

Sensitive receptors are facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include schools, hospitals, residential areas, and parks. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. In the case of schools, State law requires that siting decisions consider the potential for toxic or harmful air emissions in the surrounding area. Primary pollutants of concern to sensitive receptors are CO, diesel particulate matter (DPM), and, to a lesser extent, odors or odorous compounds such as ammonia and SO_2. Sensitive receptors would not be directly affected by emissions of regional pollutants, such as O_3 precursors (reactive organic gases [ROG] and nitrogen oxides [NO_X]).

The project is located in an urban environment along the US 50 corridor. Commercial uses are adjacent to westbound on-ramps from southbound Hazel Avenue and eastbound off- and on-ramps. Sensitive receptors near the project site include single- and multi-family homes and recreational land uses. Single-family homes are located northwest of the project site along Gold Country Boulevard and multi-family homes, including the Cobble Oak Apartments, Oak Brook Apartments, and Twilight RV and Mobile Home Park, are located immediately adjacent to the project site. Sensitive receptors near the project area are shown on Figure 2.13-2. Please refer to the *Air Quality Study Report* for a detailed description of sensitive receptors near the project area (California Department of Transportation 2017).

Table 2.13-2. Ambient Air Quality Monitoring Data Measured at the Folsom-Natoma Street Sacramento-Del Paso Manor Monitoring Stations

Pollutant Standards	2016	2017	2018
O_3			
Maximum 1-hour concentration (ppm)	0.111	0.107	0.105
Maximum 8-hour concentration (ppm)	0.095	0.087	0.094
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	6	4	5
CAAQS 8-hour (>0.070 ppm)	24	19	19
Nitrogen Dioxide (NO_2)			
State maximum 1-hour concentration (ppm)	0.024	0.026	0.029
State second-highest 1-hour concentration (ppm)	0.024	0.025	0.026
Annual average concentration (ppm)	0.003	0.002	0.003
Number of days standard exceeded[a]			
CAAQS 1-hour (0.18 ppm)	0	0	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	2.1	1.8	3.8
Maximum 1-hour concentration (ppm)	2.4	1.9	3.9
Number of days standard exceeded[a]			
NAAQS 8-hour ($\geq$9 ppm)	0	0	0
CAAQS 8-hour ($\geq$9.0 ppm)	0	0	0
NAAQS 1-hour ($\geq$35 ppm)[c]	0	0	0
Particulate Matter (PM10)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	31.0	59.0	212.0
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	31.0	56.0	166.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	42.2	65.8	224.0
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	39.6	61.5	176.0
National annual average concentration ($\mu g/m^3$)	16.4	18.8	23.4
State annual average concentration ($\mu g/m^3$)[d]	17.6	20.5	24.5
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[e]	0	0	2
CAAQS 24-hour (>50 $\mu g/m^3$)[e]	0	6	3
Particulate Matter (PM2.5)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	25.7	33.2	104.5
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	23.4	30.4	87.0
State[c] maximum 24-hour concentration ($\mu g/m^3$)	25.7	36.7	104.5
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	23.4	33.2	87.0
National annual average concentration ($\mu g/m^3$)	6.8	7.6	9.5
State annual average concentration ($\mu g/m^3$)[d]	*	7.6	10.2
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	0	0	9

Sources: California Air Resources Board 2016, 2019; U.S. Environmental Protection Agency 2016, 2018.

CAAQS = California ambient air quality standards
NAAQS = national ambient air quality standards
* = insufficient data available to determine the value
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

[a] An exceedance is not necessarily a violation.
[b] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using Federal reference or equivalent methods.
[c] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.
[d] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
[e] Mathematical estimate of how many days' concentrations would have been measured as higher than the level of the standard had each day been monitored.

2.13.3 Environmental Consequences

2.13.3.1 Build Alternatives

From a traffic operations perspective, the build alternatives differ only in terms of how traffic is routed through the interchange area. Traffic volumes, speeds, and other operational conditions under the alternatives are therefore identical (Shew pers. comm. C). Accordingly, the air quality impact assessment is based on a single set of traffic conditions, which is representative of all three of the build alternatives.

Regional Conformity

The proposed project is listed in the 2016 MTP/SCS financially constrained Metropolitan Transportation Plan which was found to conform by SACOG on February 18, 2016, and FHWA and FTA made a regional conformity determination finding on December 16, 2016. The project is also included in SACOG's financially constrained 2019/22 Metropolitan Transportation Improvement Program Amendment #2, pages 41 and 157. The SACOG MTIP was determined to conform by FHWA and FTA on December 7, 2018. The design concept and scope of the proposed project is consistent with the project description in the 2016 MTP, 2019/22 MTIP, and the "open to traffic assumptions of the SACOG's regional emissions analysis.

Project Level Conformity

Carbon Monoxide

This project is located in an area that is designated attainment for CO. Therefore, no project-level conformity analysis is necessary for CO.

PM2.5 and PM10

The project would be within a nonattainment area for the Federal PM2.5 standard and maintenance area for the Federal PM10 standard. Therefore, per 40 CFR Part 93, a project-level PM2.5 and PM10 analysis is required for conformity purposes.

A quantitative hot-spot analysis is only required for projects identified as a Project of Air Quality Concern (POAQC), as defined in 40 CFR 93.123(b)(1). As described below, the project does not meet any of the project types considered to be POAQCs by EPA's final rule. Accordingly, the project is not considered to be a POAQC, and project-level PM conformity determination requirements are thus satisfied. The proposed project would not be anticipated to result in an exceedance of the CAAQS nor NAAQS for PM2.5 or PM10.

The project underwent interagency consultation through SACOG's Project Level Conformity Group (PLCG). EPA and FHWA issued concurrence that the project is not a POAQC on June 19, 2017. Appendix G contains the documentation submitted to SACOG and used to support its concurrence, as well as concurrence letters from EPA and FHWA.

Additional Environmental Analysis

Roadway Vehicle Emissions

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly in the project vicinity. Emission of ROG, NO_X, CO, PM10, and PM2.5 for existing (2015), opening (2022), and design (2042) year conditions were evaluated through modeling conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by DKS (California Department of Transportation 2017).

Table 2.13-3 summarizes the modeled emissions by scenario and presents a comparison of Build Alternative emissions to No Build and existing conditions. The modeled emissions are based on a single set of traffic conditions, which is representative of all three of the build alternatives. The differences in emissions between the Build and No Build conditions represent emissions generated directly as a result of project implementation. The opening (2022) and design (2042) year analyses account for reductions in vehicular emission rates as a result of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 2.13-3. Estimated Criteria Pollutant Emissions from Project Operation (pounds per day)

Condition	Daily VMT	ROG	NO_X	CO	PM10	PM2.5
2015 Existing	61,985,819	374,575	65,326	231,039	7,740	3,542
2015 Build	61,996,499	374,637	65,332	231,049	7,741	3,542
2022 No Build	67,848,968	260,126	34,159	124,862	7,889	3,349
2022 Build	67,840,557	260,093	34,153	124,835	7,888	3,349
2042 No Build	82,208,326	134,334	13,692	70,743	9,185	3,733
2042 Build	82,228,698	134,366	13,687	70,755	9,187	3,734
Comparison to Existing						
2015 Build	10,680	62	7	10	1	0
% change between 2015 Build and Existing	0.02%	0.02%	0.01%	0.004%	0.01%	0%
2022 Build	5,854,738	-114,482	-31,173	-106,204	147	-193
% change between 2022 Build and Existing	9%	-31%	-48%	-46%	2%	-5%
2042 Build	20,242,879	-240,209	-51,639	-160,284	1,447	192
% change between 2042 Build and Existing	33%	-64%	-79%	-69%	19%	5%
Comparison to No Build						
2015 Build	10,680	62	7	10	1	0
% change between 2015 Build and 2015 No Build	0.02%	0.02%	0.01%	0.004%	0.01%	0%
2022 Build	-8,410	-33	-6	-28	-1	<0
% change between 2022 Build and 2022 No Build	-0.01%	-0.01%	-0.02%	-0.02%	-0.01%	--
2042 Build	20,372	32	-5	12	2	1
% change between 2042 Build and 2042 No Build	0.02%	0.02%	-0.04%	0.02%	0.02%	0.03%
SMAQMD Threshold	–	*65*	*65*	–	*80*	*82*

Source: California Department of Transportation 2017.

SMAQMD = Sacramento Metropolitan Air Quality Management District
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
VMT = vehicle miles traveled

Since Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the State, and because most air district thresholds have not been established by regulation or by delegation from a Federal or State agency with regulatory authority over Caltrans, Caltrans is not required to adopt those thresholds in its documents. However, the County is required to follow SMAQMD thresholds. Project-level operational emissions relative to SMAQMD thresholds are presented in Table 2.13-3 for informational purposes. The SMAQMD thresholds are addressed further in Chapter 3, *California Environmental Quality Act Evaluation*.

The emissions analysis presented in Table 2.13-3 indicates that operation of the build alternatives under opening (2022) and design (2042) year conditions would increase PM10 and PM2.5 (design year only) emissions compared to existing conditions and decrease ROG, NO_X, and CO emissions. These results are primarily due to factors external to the project. The increase in PM is due to background growth in vehicle miles traveled (VMT) (per Table 2.13-3, 5 million daily VMT between 2015 and 2022 and 20 million daily VMT between 2015 and 2042), as PM emissions are primarily a function of VMT. The decreases in other pollutants are due to expected improvements in vehicle engine technology and fuel efficiency, which reduces exhaust emissions.

Emissions effects resulting from implementation of the build alternatives under opening (2022) and design (2042) year conditions are obtained through a comparison of with-project emissions to without-project emissions. As discussed above and shown in Table 2.13-3, VMT under the build and no build conditions is nearly the same, with the build alternatives resulting in a slight (0.01%) reduction in VMT under opening (2022) year conditions and a slight (0.02%) increase in VMT under design (2042) year conditions. The criteria pollutant results under opening (2022) year conditions mirror the VMT trend, with the build alternatives projected to decrease emissions, relative to the No Build Alternative.

Under design (2042) year conditions, the build alternatives would result in minor increases of all pollutants, except NO_X. The minor increase in ROG, CO, and PM emissions by approximately 0.02% to 0.03% is primarily a result of VMT growth. The decrease in NO_X by approximately 0.04% is attributed to the relationship between vehicle speeds and emissions rates. Similar to Mobile Source Air Toxics (MSATs) (discussed below), decreasing NO_X emissions are observed with increasing speeds. The changes in the speed profile, coupled with the speed-based emission factor trend, are sufficient to offset the minor increase in VMT, resulting in a slight NO_X reduction, relative to the No Build Alternative.

Construction Impacts

Implementation of the project would construct modifications to the existing interchange, and grade-separate and extend Hazel Avenue to the south to a future intersection with Atlanta Street. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge and wall erection, and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The SMAQMD's Road Construction Emissions Model (Version 8.1.0) was used to estimate ROG, NO_X, CO, PM10, and PM2.5 emissions from construction based on activity data provided

by the project engineers (Eden pers. comm.). As shown in Appendix C of the *Air Quality Study Report*, several construction activities would likely occur concurrently. To ensure a conservative analysis, maximum daily emissions during these periods of overlap were estimated assuming all equipment would operate at the same time. This assumption identifies the maximum total project-related air quality impact during construction.

Tables 2.13-4 and 2.13-5 summarize maximum daily emissions levels for construction of Alternatives 1, 1A, and 2, respectively. Since Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the State, and because most air district thresholds have not been established by regulation or by delegation from a Federal or State agency with regulatory authority over Caltrans, Caltrans is not required to adopt those thresholds in its documents. However, the County, as the project-proponent, is required to follow SMAQMD thresholds. SMAQMD's thresholds of significance are provided here for informational purposes and mitigation to control and reduce fugitive dust is provided to ensure the project's effect is not adverse. The SMAQMD thresholds are addressed further in Chapter 3.

Table 2.13-4. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 1 and 1A (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	18	195	126	76	9	83	16	8	22
2021	11	113	79	58	5	62	12	5	16
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80*[a]	*BMPs*	–	*82*[a]

Source: California Department of Transportation 2017.
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District
[a] SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of Best Management Practices (BMPs) (Sacramento Metropolitan Air Quality Management District 2015).

Table 2.13-5. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 2 (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	18	193	124	44	9	52	9	8	17
2021	11	115	77	67	5	73	14	5	19
2022	2	26	19	<1	1	1	<1	1	1
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80*[a]	*BMPs*	–	*82*[a]

Source: California Department of Transportation 2017.
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District
[a] SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of BMPs (Sacramento Metropolitan Air Quality Management District 2015).

Asbestos and Lead-Based Paint

According to the California Department of Conservation's *A General Location Guide for Ultramafic Rocks in California*, there are no geologic features normally associated with naturally occurring asbestos (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to naturally occurring asbestos emissions during construction activities.

Removal of the Cattlemens restaurant and Nimbus Winery buildings may expose workers to asbestos and LBP if the materials were used during original building construction. Standard Specification Section 14-9.02 requires compliance with SMAQMD rules and regulations, including Rule 902, which requires preconstruction surveys for asbestos. Testing for LBP will also be conducted during the asbestos survey. Compliance with SMAQMD Rule 902 and testing for asbestos containing materials and LBP prior to construction will avoid adverse effects related to asbestos and LBP during demolition activities.

Mobile Source Air Toxics

The ADT on US 50 between Rancho Cordova Parkway and Hazel Avenue under design year (2042) build conditions is projected to be 209,940 (California Department of Transportation 2017). Consequently, based on FHWA's 2016 MSAT guidance, the build alternatives are considered a project with high potential MSAT effects (Level 3). Therefore, a quantitative analysis of potential MSAT emissions was performed consistent with FHWA requirements for MSAT Level 3 analyses.

MSAT emissions for existing (2015), opening (2022), and design (2042) year conditions were evaluated through modeling conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by DKS (DKS 2016; provided in Volume 3). Table 2.13-6 summarizes the modeled emissions by scenario and presents a comparison of Build Alternative emissions to No Build and existing conditions. Emissions were modeled based on a single set of traffic conditions, which is representative of all three of the build alternatives. The differences in emissions between the build alternatives, No Build Alternative, and existing conditions represent emissions generated directly as a result of implementation of the project. The opening (2022) and design (2042) year analyses account for reductions in vehicular emission rates as a result of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 2.13-6. Estimated MSAT Emissions from Project Operation (pounds per day)

Condition	Acetaldehyde	Acrolein	Benzene	Butadiene	Formaldehyde	Diesel PM
2015 Existing	205	15	3,973	69	514	591
2015 Build	205	15	3,973	69	514	591
2022 No Build	110	7	2,713	34	273	155
2022 Build	110	7	2,713	34	273	155
2042 No Build	82	5	1,420	23	198	50
2042 Build	82	5	1,420	23	198	50
Comparison to Existing						
2015 Build	0	0	<1	0	0	0
2022 Build	-95	-8	-1,260	-35	-241	-436
2042 Build	-123	-10	-2,552	-46	-316	-541
Comparison to No Build						
2015 Build	<0	<0	<0	<0	<0	<0
2022 Build	<0	<0	<0	<0	<0	<0
2042 Build	<0	<0	<1	<0	<0	<1

The emissions analysis presented in Table 2.13-6 indicates that operation of the build alternatives under opening (2022) and design (2042) year conditions would decrease all MSAT emissions compared to existing conditions. The decreases are due to expected improvements in vehicle engine technology, fuel efficiency, and turnover in older, more heavily polluting vehicles, which reduces exhaust emissions.

Emissions effects resulting from implementation of the build alternatives are obtained through a comparison of with-project emissions to without-project emissions. As shown in Table 2.13-5, VMT under the Build and No Build conditions is nearly the same, with the build alternatives resulting in a slight (0.01%) reduction in VMT under opening (2022) year conditions and a slight (0.02%) increase in VMT under design (2042) year conditions. The MSAT results under opening (2022) year conditions mirror the VMT trend, with the build alternatives projected to decrease all MSAT emissions, relative to the No Build Alternative.

Under design (2042) year conditions, the build alternatives would result in minor increases of benzene and DPM, and decreases of all other MSATs. These emissions trends are explained by the relationship between vehicle speeds and emissions rates. Virtually all MSAT emission rates decrease rapidly with increasing speeds between 0 and 15 mph, hold fairly steady between 15 mph and 60 mph, and then begin to slightly increase at speeds greater than 60 mph. The operational enhancements (e.g., grade separation of Hazel Avenue over Folsom Boulevard, widening/lengthening of the on- and off-ramps and Hazel Avenue, removal of the Aerojet Road off-ramp) associated with the project will change the speed distribution of VMT, as shown in Table 2.13-6. The changes in the speed profile, coupled with the speed-based emission factor trends, yield minor decreases in all MSATs except benzene and DPM, despite an overall increase in daily VMT. While benzene and DPM are forecasted to increase compared to the No Build Alternative, the predicted increase (less than 0 pounds per day in 2022 and less than 1 pound per day in 2042 for both benzene and DPM) under the build alternatives would be minor.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an

analysis of national trends with the EPA's MOVES2014 model forecasts a combined reduction of over 90% in the total annual emission rate for MSAT emissions from 2010 to 2050, while VMT is projected to increase by over 45%. The over 90% reduction of the total annual emission rate for MSAT emissions will reduce the background level of MSAT emissions and could potentially reduce the extent of the minor MSAT emission increases associated with VMT increases resulting from the project.

2.13.3.2 No Build Alternative

Under the No Build Alternative, higher demand volume under opening (2022) and design year (2042) conditions would cause increased congestion and delay on the traffic network surrounding the existing US 50/Hazel Avenue Interchange, likely resulting in worsened air quality.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following standard specifications and BMPs would be implemented as part of the project to avoid and minimize effects.

Implement California Department of Transportation Standard Specification Section 14

Construction activities within areas under Caltrans control are subject to requirements found in the *Standard Specifications* (California Department of Transportation 2018). To control the generation of construction-related PM10 emissions, the project proponent will follow the following applicable policies and procedures outlined in Caltrans Standard Specifications. Standard Specification Section 14-9.02, Air Pollution Control, requires compliance with air district rules, regulations, ordinances, and statutes that apply to work performed under the contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code 10231). Standard Specification Section 10-5 addresses dust control requirements by preventing and alleviating dust by means of Standard Specification Section 18 (applying dust palliatives), Standard Specification Section 13-5 (applying temporary soil stabilization), and Standard Specification Section 13-4.03C(3) (managing material stockpiles). In addition, Standard Specification Section 14-11.04 addresses dust control associated with material containing hazardous waste or contamination.

Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices)

Measures to control and reduce fugitive dust from SMAQMD's Basic Construction Emission Control Practices (Sacramento Metropolitan Air Quality Management District 2017) will be implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of Caltrans' Standard Specifications, Special Provisions, the National Pollutant Discharge Elimination System permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water

Act Section 401 Certification, and other permits issued for the project. The project-proponent will implement SMAQMD's basic construction emission control practices, including but not limited to the following measures.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- Pave all roadways, driveways, sidewalks, and parking lots as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by 13 CCR 2449(d)(3) and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

2.13.5 Climate Change

Climate change is analyzed in Chapter 3. Neither the EPA 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 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 human life.

Due to more requirements set forth in California legislation and executive orders on climate change, the topic is addressed in the CEQA chapter of this environmental document (Chapter 3) 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 and is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

2.13.6 References Cited

2.13.6.1 Printed References

California Department of Conservation. 2000. A General Location Guide for Ultramafic Rock in California. Division of Mines and Geology. OPEN-FILE REPORT 2000-19. August.

California Air Resources Board. 2016. Ambient Air Quality Standards. Last Revised: May 4, 2016. Available: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed: August 7, 2019.

California Air Resources Board. 2018. Area Designations Maps/State and National. Last Revised: December 28, 2018. Available: https://ww3.arb.ca.gov/desig/adm/adm.htm. Accessed: August 7, 2019.

California Air Resources Board. 2019. Aerometric Data Analysis and Management System (ADAM): Top 4 Summary. Available: http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed: August 7, 2019

California Department of Transportation. 2018. Standard Specifications. Available: https://dot.ca.gov/-/media/dot-media/programs/design/documents/2018_stdspecs.pdf. Accessed August 7, 2019.

California Department of Transportation. 2017. *Air Quality Study Report. U.S. 50 / Hazel Avenue Interchange Project. Sacramento County.* 03-SAC-50/PM 15.1-17.4. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

DKS Associates. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company.

Sacramento Metropolitan Air Quality Management District. 2015. SMAQMD thresholds of Significance Table. Available: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable5-2015.pdf.

Sacramento Metropolitan Air Quality Management District. 2017. *Guide to Air Quality Assessment in Sacramento County*. Chapter 3, Appendix: Basic Construction Emission Control Practices (Best Management Practices). May. Available: http://www.airquality.org/LandUseTransportation/Documents/Ch3BasicEmissionControlPracticesBMPS%20FINAL5-2017.pdf.

Shew, Cameron. (C) Associate Transportation Engineer. DKS Associates, Sacramento, CA. March 9, 2016—email message to Laura Yoon regarding alternatives analysis for Hazel Ave.

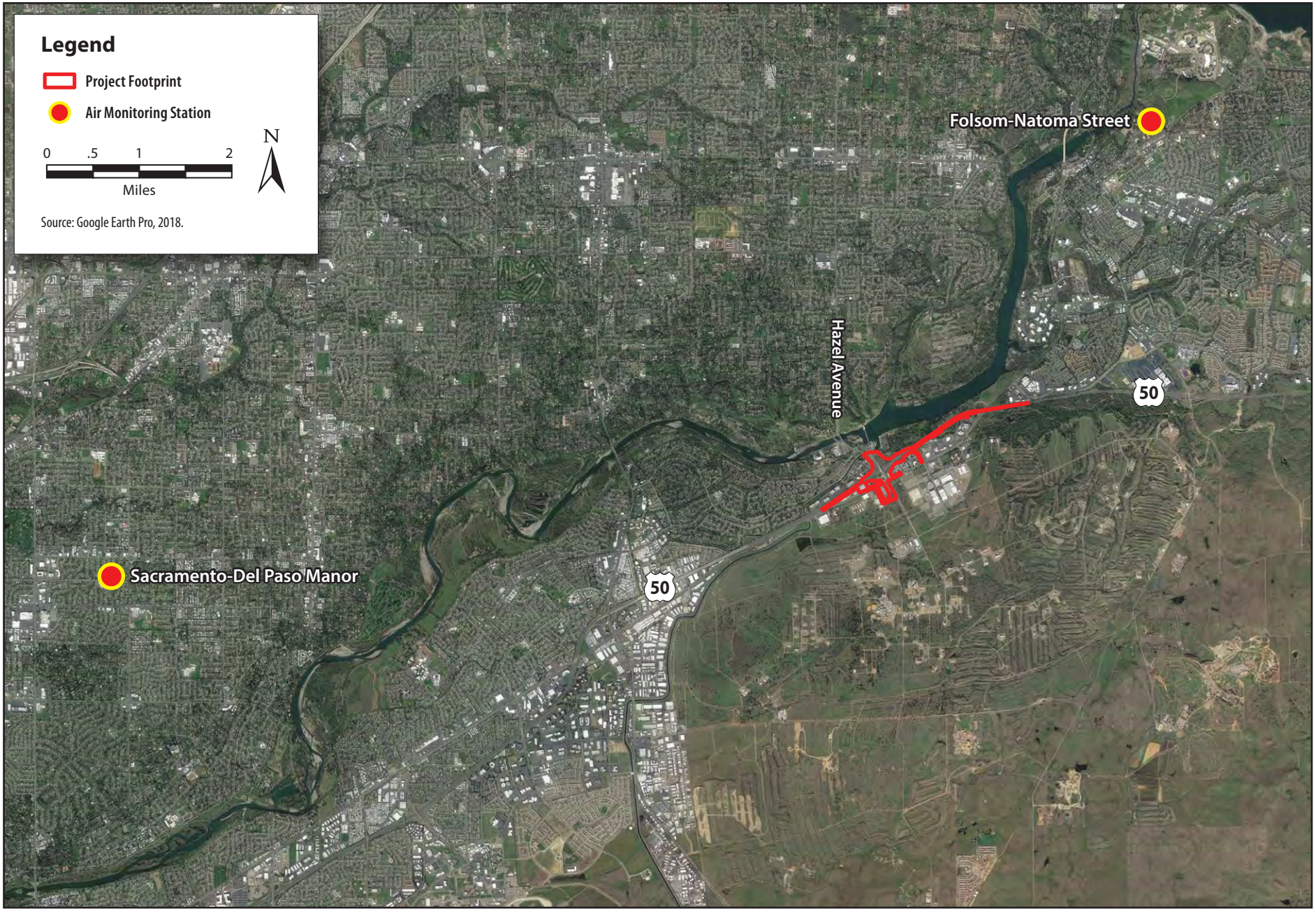
U.S. Environmental Protection Agency. 2016. NAAQS Table. Last updated: December 20, 2016. Available: https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed: August 7, 2019.

U.S. Environmental Protection Agency. 2018. Monitor Values Report. Last Revised: July 31, 2018. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed: August 7, 2019.

U.S. Environmental Protection Agency. 2019. The Green Book Nonattainment Areas for Criteria Pollutants. Last Revised: July 31, 2019. Available: https://www.epa.gov/green-book. Accessed: August 7, 2019

2.13.6.2 Personal Communications

Eden, Jonathan. Design Engineer. Mark Thomas & Company, Sacramento, CA. June 1, 2016—email message to Laura Yoon of ICF regarding Hazel construction data.



Graphics \ 0052915 \EIR-EA (10/18/18) AB

Figure 2.13-1
Air Monitoring Stations



Figure 2.13-2
Air Quality Sensitive Receptors
Hazel Avenue/U.S. 50 Interchange Project

2.14 Noise

2.14.1 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.

2.14.1.1 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 rest of this section will focus on the NEPA 23 CFR Section 772 noise analysis; please see Chapter 3, *California Environmental Quality Act Evaluation*, of this document for further information on noise analysis under CEQA.

2.14.1.2 National Environmental Policy Act and 23 CFR Section 772

For highway transportation projects with the FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and associated 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 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.14-1 lists the NAC for use in the NEPA 23 CFR Section 772 analysis.

Table 2.14-1. Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, $L_{eq}(h)$	Description of Activity Category
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[a]	67 (Exterior)	Residential.
C[a]	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	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

$L_{eq}(h)$ = A-weighted decibels hourly equivalent sound level

[a] Includes undeveloped lands permitted for this activity category.

Figure 2.14-1 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.

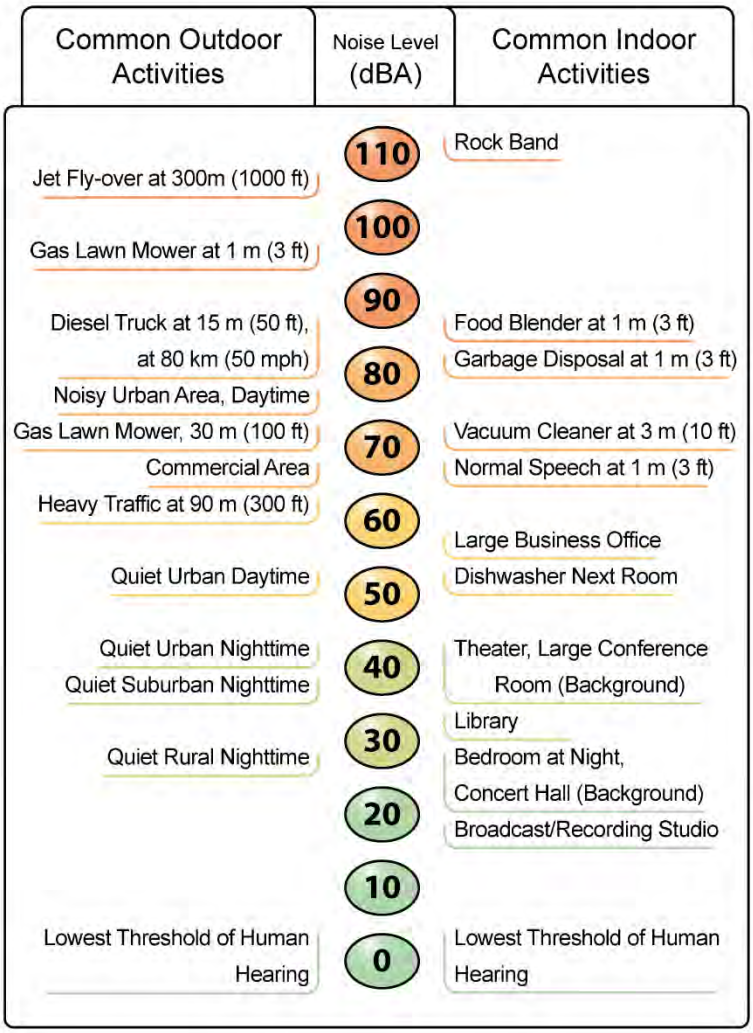


Figure 2.14-1. Noise Levels of Common Activities

According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects* (Traffic Noise Analysis Protocol) 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 (California Department of Transportation 2011).

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 section 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 for all impacted receptors in the future noise levels must be achieved for an abatement to be considered feasible. Other considerations include

topography, access requirements, other noise sources, and safety considerations. Additionally, a noise reduction of at least 7 dBA must be achieved at one or more benefited receptors for an abatement measure to be considered reasonable. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance and the cost per benefited residence.

2.14.2 Affected Environment

A Noise Study Technical Report was prepared for this project and submitted for Caltrans review in January 2017 (California Department of Transportation 2017a; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). The technical report discusses potential noise impacts and related noise abatement measures associated with the construction and operation of improvements at the Hazel Avenue/US 50 interchange. The report was prepared to comply with 23 CFR Section 772, "Procedures for Abatement of Highway Traffic Noise," and Caltrans noise analysis policies as described in the Traffic Noise Analysis Protocol.

2.14.2.1 Land Uses

Land uses in the proposed project area consist of a mobile home park (Activity Category B), multi-family apartment buildings (Activity Category B), parks (Activity Category C), recreational use (Activity Category C), hotels (Activity Category E), and several commercial uses that include no apparent outdoor areas of frequent human use (Activity Category F). The locations of receptors are shown in Figure 2.14-2.

2.14.2.2 Noise Monitoring

The existing noise environment in the project area was characterized by short- and long-term noise monitoring. Short-term noise monitoring was conducted on March 15, 2016. Short-term noise monitoring was conducted over 15-minute intervals at or near Activity Category B land uses within the project area. The short-term measurements were attended by field staff to count traffic and record observations concurrent with each measurement. Dominant noise sources, which was generally traffic noise, and other relevant measurement conditions were identified and logged on field data sheets. During the short-term measurements, skies were clear and sunny, with wind speeds varying from 1 to 4 miles per hour, and temperatures ranging from 58°F to 71°F.

Short-term measurements are used during the modeling stage of the analysis to "calibrate" the noise model, as traffic counts are conducted simultaneously with noise measurements and input into the model to confirm the model is working correctly, or to calibrate the model. The short-term measurement positions are identified in Figure 2.14-2.

Table 2.14-2 summarizes the results of the short-term noise monitoring conducted in the project area. Ambient noise levels near residential land uses in the project area are generally in the range of 67 to 73 dBA L_{eq}.

Table 2.14-2. Summary of Short-Term Noise Monitoring

Site	Location	Primary Source	Time	Duration of Measurement (minutes)	Measured L_{eq} (dBA)
ST-1	Oak Brook Apartment Homes, Aerojet Road	US 50	12:51 p.m.	15	73.0
ST-2	Twilight Mobile Park, Folsom Boulevard	US 50	2:44 p.m.	15	68.9
ST-3	Comfort Inn & Suites, Folsom Boulevard	US 50	10:43 a.m.	15	72.2
ST-4	Tributary Lane	US 50	9:55 a.m.	15	67.1
ST-5	Nimbus Dam Recreation Area	US 50	2:02 p.m.	15	71.4

dBA = A-weighted decibels
L_{eq} = equivalent sound level

Long-term noise monitoring was conducted at one site in the project area. The purpose of collecting the long-term noise measurements was to determine the changes in noise levels within the project area throughout a typical day and to identify the worst noise hour. The data is presented in Table 2.14-3 for documentation purposes and is not used in the prediction analysis.

The meter at site LT-1 (shown on Figure 2.14-2) was mounted on a tree just outside the northern fence at Twilight RV and Mobile Home Park. There was a clear line of sight to US 50 at this location. Long-term sound level data was collected from Tuesday, March 15 to Friday, March 18, 2016. The worst-hour noise level measured was 73.6 dBA hourly equivalent sound level (L_{eq}[h]) during the 7:00 a.m. hour. Hourly noise levels and offsets between the worst-hour noise and each of the 24 hours of the measurements period are shown in Table 2.14-3.

Table 2.14-3. Summary of Long-Term Measurements at Location LT-1

Date	Time (hour beginning)	1-Hour L_{eq} (dBA)	Difference from Worst-Hour Noise (dB)
March 17, 2016	0:00:00	63.2	-10.4
	1:00:00	61.1	-12.5
	2:00:00	60.4	-13.2
	3:00:00	63.2	-10.4
	4:00:00	67.2	-6.4
	5:00:00	71.0	-2.6
	6:00:00	72.8	-0.8
	7:00:00	**73.6**	**0.0**
	8:00:00	72.5	-1.1
	9:00:00	71.2	-2.4
	10:00:00	71.2	-2.4
	11:00:00	70.9	-2.7
	12:00:00	70.7	-2.9
	13:00:00	70.8	-2.8
	14:00:00	71.1	-2.5
	15:00:00	71.6	-2.0
	16:00:00	71.1	-2.5
	17:00:00	70.1	-3.5
	18:00:00	69.9	-3.7
	19:00:00	70.4	-3.2
	20:00:00	69.7	-3.9
	21:00:00	69.0	-4.6
	22:00:00	67.7	-5.9
	23:00:00	65.7	-7.9
Maximum		73.6	
Minimum		60.4	

Note: Worst-hour noise is shown in **bold**.
1-hour L_{eq}(dBA) = 1-hour A-weighted equivalent sound level
dB = decibels

2.14.3 Environmental Consequences

FHWA defines a Type I project as a proposed Federal or Federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment of the highway. The proposed project is considered to be a Type I project because the three build alternatives involve addition of through lanes, which are capacity-increasing improvements.

Build Alternatives

The following discussion applies to all build alternatives.

Traffic Noise Modeling

A noise impact analysis was conducted for the proposed project. Three-dimensional modeling objects were developed using CAD drawings, aerials, and topographic contours provided by Mark Thomas. These objects were digitized into the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). Loudest-hour traffic volumes, classification percentages, and speeds used to model traffic noise under existing (2015) and design year (2042) conditions were provided by DKS (2016; provided in Volume 3). Tables 2.14-4, 2.14-5 and 2.14-6 summarize the traffic noise modeling results under existing and design-year conditions for each of the project alternatives.

For Alternative 1 under the design year scenario, 41 dwelling units may be exposed to traffic noise levels that would approach or exceed the NAC for residential use. For Alternative 1A in the design year, 47 dwelling units may be exposed to traffic noise levels that would approach or exceed the NAC for residential use. For Alternative 2 in the design year, 49 dwelling units may be exposed to traffic noise levels that would approach or exceed the NAC for residential use.

For all three build alternatives, two Activity Category C receptors were modeled to be affected, both located within the Nimbus Dam Recreation Area. The features of the park along US 50 frontage include segments of the American River Bike Trail and open space areas. Use of the trail is generally transitory, and the trail is not considered an area of frequent human use. There are no areas of frequent human use as defined in the Traffic Noise Analysis Protocol within 500 feet of edge-of-pavement of US 50 in the recreation area. Therefore, a noise barrier is not evaluated as a result of the NAC category being approached or exceeded in this area.

Based on the above analysis, traffic noise levels are predicted to exceed the NAC at Activity Category B and Activity Category C land uses in the project area under design year conditions. This is considered to result in an adverse effect due to increased traffic noise, and noise abatement must be considered.

Table 2.14-4. Impact Assessment and Predicted Noise Levels—Alternative 1

Receptor #	Land Use/Activity Category	Location	Existing Noise Level, dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R01	Park / C	Nimbus Dam Recreation Area	76	77	77	A/E
R02	Park / C	Nimbus Dam Recreation Area	77	78	78	A/E
R03	Park / C	Nimbus Dam Recreation Area	61	63	62	None
R04	Recreation / C	Sacramento State Aquatic Center	58	60	60	None
R05	Commercial / F	Tributary Point Drive	67	68	68	None
R06	Hotel / C	Tributary Point Drive	66	67	67	None
R07	Commercial / F	Tributary Point Drive	66	67	67	None
R08	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	61	63	63	None
R09	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	64	65	65	None
R10	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	57	58	58	None
R11	Commercial / F	Folsom Boulevard	77	79	79	None
R12	Hotel / C	Folsom Boulevard	66	67	63	None
R13	Commercial / F	Folsom Boulevard	71	72	70	None
R14	Commercial / F	Folsom Boulevard	70	71	70	None
R15	Residential / B	Twilight Mobile Park, Folsom Boulevard	64	65	62	None
R16	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	66	A/E
R17	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	67	A/E
R18	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	69	A/E
R19	Residential / B	Twilight Mobile Park, Folsom Boulevard	63	65	62	None
R20	Residential / B	Twilight Mobile Park, Folsom Boulevard	58	59	60	None
R21	Residential / B	Twilight Mobile Park, Folsom Boulevard	61	62	62	None
R22	Residential / B	Twilight Mobile Park, Folsom Boulevard	60	60	61	None
R23	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	71	72	69	A/E
R24	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	70	72	69	A/E
R25	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	78	80	80	A/E
R26	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	75	77	76	A/E
R27	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	66	67	65	None
R28	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	65	66	64	None
R29	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	61	61	61	None
R30	Commercial / F	Folsom Boulevard	78	80	80	None

Table 2.14-4. Continued

Receptor #	Land Use/Activity Category	Location	Existing Noise Level, dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R31	Commercial / F	Folsom Boulevard	77	79	79	None
R32	Commercial / F	Folsom Boulevard	76	78	78	None
ST-1	Commercial / F	Folsom Boulevard	79	80	81	None
ST-2	Commercial / F	Folsom Boulevard	74	76	68	None
ST-3	Hotel / C	Folsom Boulevard	77	78	73	None
ST-4	Commercial / F	Tributary Point Drive	76	76	76	None
ST-5	Park / C	Nimbus Dam Recreation Area	78	79	79	None

A/E = Future noise conditions approach or exceed the noise abatement criteria
dBA = A-weighted decibels
$L_{eq}(h)$ = A-weighted decibels hourly equivalent sound level
ST-# = Short term monitoring location number

Table 2.14-5. Impact Assessment and Predicted Noise Levels—Alternative 1A

Receptor #	Land Use/Activity Category	Location	Existing Noise Level dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R01	Park / C	Nimbus Dam Recreation Area	76	77	77	A/E
R02	Park / C	Nimbus Dam Recreation Area	77	78	78	A/E
R03	Park / C	Nimbus Dam Recreation Area	61	63	62	None
R04	Recreation / C	Sacramento State Aquatic Center	58	60	60	None
R05	Commercial / F	Tributary Point Drive	67	68	68	None
R06	Hotel / C	Tributary Point Drive	66	67	67	None
R07	Commercial / F	Tributary Point Drive	66	67	67	None
R08	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	61	63	63	None
R09	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	64	65	65	None
R10	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	57	58	58	None
R11	Commercial / F	Folsom Boulevard	77	79	79	None
R12	Hotel / C	Folsom Boulevard	66	67	65	None
R13	Commercial / F	Folsom Boulevard	71	72	70	None
R14	Commercial / F	Folsom Boulevard	70	71	71	None
R15	Residential / B	Twilight Mobile Park, Folsom Boulevard	64	65	66	A/E
R16	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	76	A/E
R17	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	76	A/E
R18	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	76	A/E
R19	Residential / B	Twilight Mobile Park, Folsom Boulevard	63	65	65	None
R20	Residential / B	Twilight Mobile Park, Folsom Boulevard	58	59	60	None
R21	Residential / B	Twilight Mobile Park, Folsom Boulevard	61	62	64	None
R22	Residential / B	Twilight Mobile Park, Folsom Boulevard	60	60	62	None
R23	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	71	72	70	A/E
R24	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	70	72	69	A/E
R25	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	78	80	80	A/E
R26	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	75	77	75	A/E
R27	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	66	67	66	A/E
R28	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	65	66	64	None
R29	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	61	61	61	None
R30	Commercial / F	Folsom Boulevard	78	80	80	None

Table 2.14-5. Continued

Receptor #	Land Use/Activity Category	Location	Existing Noise Level dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R31	Commercial / F	Folsom Boulevard	77	79	79	None
R32	Commercial / F	Folsom Boulevard	76	78	78	None
ST-1	Commercial / F	Folsom Boulevard	79	80	81	None
ST-2	Commercial / F	Folsom Boulevard	74	76	77	None
ST-3	Hotel / C	Folsom Boulevard	77	78	74	None
ST-4	Commercial / F	Tributary Point Drive	76	76	77	None
ST-5	Park / C	Nimbus Dam Recreation Area	78	79	79	None

A/E = Future noise conditions approach or exceed the noise abatement criteria
dBA = A-weighted decibels
$L_{eq}(h)$ = A-weighted decibels hourly equivalent sound level
ST-# = Short term monitoring location number

Table 2.14-6. Impact Assessment and Predicted Noise Levels—Alternative 2

Receptor #	Land Use/Activity Category	Location	Existing Noise Level dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R01	Park / C	Nimbus Dam Recreation Area	76	77	77	A/E
R02	Park / C	Nimbus Dam Recreation Area	77	78	78	A/E
R03	Park / C	Nimbus Dam Recreation Area	61	63	62	None
R04	Recreation / C	Sacramento State Aquatic Center	58	60	59	None
R05	Commercial / F	Tributary Point Drive	67	68	68	None
R06	Hotel / C	Tributary Point Drive	66	67	67	None
R07	Commercial / F	Tributary Point Drive	66	67	66	None
R08	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	61	63	62	None
R09	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	64	65	65	None
R10	Residential / B	Cobble Oaks Apartments, Tributary Point Drive	57	58	58	None
R11	Commercial / F	Folsom Boulevard	77	79	79	None
R12	Hotel / C	Folsom Boulevard	66	67	65	None
R13	Commercial / F	Folsom Boulevard	71	72	72	None
R14	Commercial / F	Folsom Boulevard	70	71	70	None
R15	Residential / B	Twilight Mobile Park, Folsom Boulevard	64	65	63	None
R16	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	70	A/E
R17	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	72	A/E
R18	Residential / B	Twilight Mobile Park, Folsom Boulevard	74	76	74	A/E
R19	Residential / B	Twilight Mobile Park, Folsom Boulevard	63	65	64	None
R20	Residential / B	Twilight Mobile Park, Folsom Boulevard	58	59	61	None
R21	Residential / B	Twilight Mobile Park, Folsom Boulevard	61	62	62	None
R22	Residential / B	Twilight Mobile Park, Folsom Boulevard	60	60	61	None
R23	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	71	72	72	A/E
R24	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	70	72	71	A/E
R25	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	78	80	80	A/E
R26	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	75	77	78	A/E
R27	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	66	67	70	A/E
R28	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	65	66	66	A/E
R29	Residential / B	Oak Brook Apt Homes, Folsom Boulevard	61	61	60	None
R30	Commercial / F	Folsom Boulevard	78	80	80	None

Table 2.14-6. Continued

Receptor #	Land Use/Activity Category	Location	Existing Noise Level dBA $L_{eq}(h)$	Design Year Noise Level without Project, dBA $L_{eq}(h)$	Design Year Noise Level with Project, dBA $L_{eq}(h)$	Type of Noise Impact that would Require Abatement Consideration
R31	Commercial / F	Folsom Boulevard	77	79	79	None
R32	Commercial / F	Folsom Boulevard	76	78	78	None
ST-1	Commercial / F	Folsom Boulevard	79	80	81	None
ST-2	Commercial / F	Folsom Boulevard	74	76	n/a	None
ST-3	Hotel / C	Folsom Boulevard	77	78	73	None
ST-4	Commercial / F	Tributary Point Drive	76	76	77	None
ST-5	Park / C	Nimbus Dam Recreation Area	78	79	79	None

A/E = Future noise conditions approach or exceed the noise abatement criteria
dBA = A-weighted decibels
$L_{eq}(h)$ = A-weighted decibels hourly equivalent sound level
ST-# = Short term monitoring location number

Exposure of Noise-Sensitive Land Uses to Construction Noise

Construction noise is regulated by Caltrans' Standard Specifications Section 14-8, "Sound Control Requirements," which states that noise levels generated during construction will comply with applicable local, State, and Federal regulations and that all equipment will be fitted with adequate mufflers according to the manufacturers' specifications.

Table 2.14-7 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 80 to 90 decibels (dBA) at a distance of 50 feet for heavy equipment, and up to 101 dBA for pile drivers. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance (e.g., noise at a distance of 100 feet away is 6 dB quieter than noise at a distance of 50 feet away).

Table 2.14-7. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Pile driving (impact)	101
Pile driving (vibratory)	96
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82

Source: Federal Transit Administration 2018.
dBA = A-weighted decibels

Construction noise would be short-term, intermittent, and overshadowed by local traffic noise. Intermittent nighttime work is anticipated for certain construction activities, such as the erection of falsework over US 50. No pile driving would be done during nighttime hours. Nighttime construction is anticipated to be intermittent over the course of 6 months. No adverse noise impacts from construction are anticipated because construction would be conducted in compliance with provisions in Section 14-8.02, "Noise Control," of the Caltrans Standard Specifications, and applicable local noise standards.

No Build Alternative

Exposure of Noise-Sensitive Land Uses to Increased Traffic Noise

Under the No Build Alternative, noise levels associated with traffic would increase in the future, as traffic congestion associated with growth increases. There would be no adverse effect due to increased traffic noise from the interchange improvements, because the project would not be built in the design year.

Under the No Build Alternative, the project would not be built, and no new noise effects associated with project construction would occur.

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are necessary. The following avoidance and minimization measures would be implemented as part of the project.

2.14.4.1 Construction

Minimize Noise Effects from Construction

Standard Caltrans procedures include implementation of the following measures to minimize the temporary noise effects from construction.

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- The construction contractor will implement appropriate additional noise measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

2.14.4.2 Noise Abatement Evaluation under 23 CFR 772

Noise Abatement Evaluation under 23 CFR 772

According to 23 CFR 772.13(c), abatement measures must be considered when a noise impact is identified. The following abatement measures listed in 23 CFR 772.15(c) are eligible for Federal funding.

> (1) Construction of noise barriers, including acquisition of property rights, either within or outside the highway ROW. Landscaping is not a viable noise abatement measure.
>
> (2) Traffic management measures including, but not limited to, traffic control devices and signage for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
>
> (3) Alteration of horizontal and vertical alignments.
>
> (4) Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely affected by traffic noise.
>
> (5) Noise insulation of Activity Category D land use facilities. Post-installation maintenance and operational costs for noise insulation are not eligible for Federal-aid funding.

Each potential noise barrier was evaluated for feasibility based on its achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were

calculated. The unit cost allowance for a 2016 reasonable/feasible analysis is $80,000 per benefited residence. Total allowances are calculated by multiplying the cost allowance per residence by the number of benefited residences. More detail is provided in the Noise Study Technical Report (California Department of Transportation 2017a; provided in Volume 3).

For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, and retaining walls.

The design of noise barriers is preliminary and has been conducted at a level appropriate for environmental review, not for final design of the project. Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of noise abatement will be made upon completion of the project design.

The following is a discussion of noise barriers evaluated in the TNM 2.5 for the areas of the project where abatement must be considered. The barrier discussions apply to all build alternatives. Any differences in results between build alternatives for a given barrier design are described where applicable.

Aerojet Road Off-Ramp Barrier, Alternative 1

Traffic noise levels are predicted to approach or exceed the NAC of 67 dBA $L_{eq}(h)$ for Activity Category B land uses along the frontage of the proposed Aerojet Road off-ramp. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

Detailed modeling analysis was conducted for a noise barrier along the proposed Aerojet Road off-ramp under Alternative 1, located along the edge-of-shoulder of the off-ramp. Barrier heights in the range of 8 to 14 feet were evaluated in 2-foot increments, as shown in the Noise Abatement Decision Report (NADR) (California Department of Transportation 2017b; provided in Volume 3, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). The total length of the evaluated barrier would be 1,520 feet. At a minimum height of 8 feet, the barrier would provide at least 5 dB of noise reduction to one or more receivers. Therefore, the barrier is considered feasible. The barrier would meet the noise reduction design goal of 7 dB at a minimum height of 10 feet. At a maximum height of 14 feet, the barrier would provide up to 13 dB of noise reduction at affected receiver locations. The barrier is shown in Figure 2.14-3. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-8.

Table 2.14-8. Summary of Reasonableness Determination Data—Barrier 1 for Alternative 1

Location: Aerojet Road Off-ramp, Alternative 1				
Predicted Sound Level without Barrier				
Design receptor:	R25			
Design year noise level, dBA L_{eq}(h):	81 dBA			
Design year noise level minus existing noise level:	2 dBA			
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**
Barrier noise reduction, dB	6	9	11	13
Barrier design goal met?	No	Yes	Yes	Yes
Number of benefited receivers[a]	5	12	28	33
Reasonable allowance per benefited receiver	$80,000	$80,000	$80,000	$80,000
Total reasonable allowance	$400,000	$960,000	$2,240,000	$2,640,000

dBA = A-weighted decibels
dBA L_{eq}(h) = A-weighted decibels hourly equivalent sound level.
[a] Based on noise barrier analysis results in the NADR (California Department of Transportation 2017b).

Aerojet Road Off-Ramp Barrier, Alternative 1A

Traffic noise levels are predicted to approach or exceed the NAC of 67 dBA L_{eq}(h) for Activity Category B land uses along the frontage of the proposed Aerojet Road off-ramp. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

Detailed modeling analysis was conducted for a noise barrier along the proposed Aerojet Road off-ramp under Alternative 1A, located along the edge-of-shoulder of the off-ramp. Barrier heights in the range of 8 to 14 feet were evaluated in 2-foot increments, as shown in the NADR (California Department of Transportation 2017b). The total length of the evaluated barrier would be 1,900 feet. Note that this wall would need to be longer than the wall proposed for Alternative 1 to achieve sufficient noise reduction, and would therefore result in a different cost estimate. At a minimum height of 8 feet, the barrier would provide at least 5 dB of noise reduction to one or more receivers. Therefore, the barrier is considered feasible. The barrier would meet the noise reduction design goal of 7 dB at a minimum height of 10 feet. At a maximum height of 14 feet, the barrier would provide up to 13 dB of noise reduction at affected receiver locations. The barrier is shown in Figure 2.14-4. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-9.

Table 2.14-9. Summary of Reasonableness Determination Data—Barrier 1 for Alternative 1A

Location: Aerojet Road Off-ramp, Alternative 1A				
Predicted Sound Level without Barrier				
Design receptor:	R25			
Design year noise level, dBA L_{eq}(h):	81 dBA			
Design year noise level minus existing noise level:	3 dBA			
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**
Barrier noise reduction, dB	6	10	11	13
Barrier design goal met?	No	Yes	Yes	Yes
Number of benefited receivers[a]	3	23	37	41
Reasonable allowance per benefited receiver	$80,000	$80,000	$80,000	$80,000
Total reasonable allowance	$240,000	$1,840,000	$2,960,000	$3,290,000

dBA = A-weighted decibels
dBA L_{eq}(h) = A-weighted decibels hourly equivalent sound level
[a] Based on noise barrier analysis results in the NADR (California Department of Transportation 2017b).

Aerojet Road Off-Ramp Barrier, Alternative 2

Traffic noise levels are predicted to approach or exceed the NAC of 67 dBA L_{eq}(h) for Activity Category B land uses along the frontage of the proposed Aerojet Road off-ramp. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

Detailed modeling analysis was conducted for a noise barrier along the proposed Aerojet Road off-ramp under Alternative 2, located along the edge-of-shoulder of the off-ramp. Barrier heights in the range of 8 to 14 feet were evaluated in 2-foot increments, as shown in the NADR (California Department of Transportation 2017b). The total length of the evaluated barrier would be 1,960 feet. At a minimum height of 10 feet, the barrier would provide at least 5 dB of noise reduction to one or more receivers. Therefore, the barrier is considered feasible. The barrier would meet the noise reduction design goal of 7 dB at a minimum height of 12 feet. At a maximum height of 14 feet, the barrier would provide up to 12 dB of noise reduction at affected receiver locations. The barrier is shown in Figure 2.14-5. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-10.

Table 2.14-10. Summary of Reasonableness Determination Data—Barrier 1 for Alternative 2

Location: Aerojet Road Off-ramp, Alternative 2				
Predicted Sound Level without Barrier				
Design receptor:	R25			
Design year noise level, dBA L_{eq}(h):	81 dBA			
Design year noise level minus existing noise level:	3 dBA			
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**
Barrier noise reduction, dB	4	6	10	12
Barrier design goal met?	No	No	Yes	Yes
Number of benefited receivers[a]	0	15	28	38
Reasonable allowance per benefited receiver	$80,000	$80,000	$80,000	$80,000
Total reasonable allowance	$0	$1,200,000	$2,240,000	$3,040,000

dBA = A-weighted decibels
dBA L_{eq}(h) = A-weighted decibels hourly equivalent sound level
[a] Based on noise barrier analysis results in the NADR (California Department of Transportation 2017b).

Noise Abatement Decision Report

The NADR (California Department of Transportation 2017b; provided in Volume 3) was prepared to include noise abatement construction cost estimates that were prepared by the project engineer based upon site-specific conditions. These cost estimates were compared to the total reasonableness allowances for noise barriers.

As shown in Table 2.14-11, estimated construction costs for barrier heights of 10 to 14 feet for the Aerojet Road off-ramp barrier under Alternatives 1 and 1A are projected to be within cost-reasonableness allowances. The same is true for the barrier under Alternative 2, at heights of 12 to 14 feet. Accordingly, these barrier designs are considered to be reasonable from a cost perspective.

The recommended height of the barrier is 14 feet for all build alternatives. A barrier at this height would benefit the greatest number of affected receptors for all build alternatives.

At a height of 14 feet, the barrier under Alternative 1 would benefit 33 residences at a reasonable allowance of $80,000 per residence, yielding a total reasonable allowance of $2,640,000. The estimated construction cost to build the 14-foot barrier is $713,288, which is lower than the barrier cost allowance.

At a height of 14 feet, the barrier under Alternative 1A would benefit 41 residences at a reasonable allowance of $80,000 per residence, yielding a total reasonable allowance of $3,280,000. The estimated construction cost to build the 14-foot barrier is $891,413, which is lower than the barrier cost allowance.

At a height of 14 feet, the barrier under Alternative 2 would benefit 38 residences at a reasonable allowance of $80,000 per residence, yielding a total reasonable allowance of $3,040,000. The estimated construction cost to build the 14-foot barrier is $919,538, which is lower than the barrier cost allowance.

Based on the studies completed to date, the County and Caltrans intend to incorporate noise abatement in the form of a barrier at the Aerojet Road off-ramp (see Figures 2.14-3, 2.14-4 and 2.14-5, depending on the alternative selected). Each build alternative has a corresponding barrier design with differing levels of noise reduction. All barriers would meet the design goal of 7 dB at a height of 14 feet.

The barrier for Alternative 1 would have a maximum height of 14 feet and a length of 1520 feet. Calculations based on preliminary design data show that the barrier will reduce noise levels by 5 to 13 dBA for 33 residences at a cost of $713,288.

The barrier for Alternative 1A would have a maximum height of 14 feet and a length of 1900 feet. Calculations based on preliminary design data show that the barrier will reduce noise levels by 5 to 13 dBA for 41 residences at a cost of $891,413.

The barrier for Alternative 2 would have a maximum height of 14 feet and a length of 1960 feet. Calculations based on preliminary design data show that the barrier will reduce noise levels by 5 to 12 dBA for 38 residences at a cost of $919,538.

These measures may change based on input received from the public. If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the project design.

Table 2.14-11. Summary of Cost Reasonableness of Evaluated Barriers

Noise Barrier	Barrier Height (feet)[a]	Total Noise-Sensitive Receptors Benefited	Barrier Length (feet)	Barrier Surface Area (square feet)[b]	Barrier Cost Allowance (dollars per benefited receptor)	Barrier Cost Allowance (total dollars)	Engineer's Cost Estimate (total dollars)	Design Goal Met	Is Barrier Cost-Reasonable?
Aerojet Road Off-ramp Barrier, Alternative 1	8	5	1,520	7,600	$80,000	$400,000	n/a[c]	No	n/a[c]
	10	12	1,520	10,640	$80,000	$960,000	$544,075	Yes	Yes
	12	28	1,520	13,680	$80,000	$2,240,000	$625,813	Yes	Yes
	14	33	1,520	16,720	$80,000	$2,640,000	$713,288	Yes	Yes
Aerojet Road Off-ramp Barrier, Alternative 1A	8	3	1,900	9,500	$80,000	$240,000	n/a[c]	No	n/a[c]
	10	23	1,900	13,300	$80,000	$1,840,000	$679,925	Yes	Yes
	12	37	1,900	17,100	$80,000	$2,960,000	$782,088	Yes	Yes
	14	41	1,900	20,900	$80,000	$3,280,000	$891,413	Yes	Yes
Aerojet Road Off-ramp Barrier, Alternative 2	10	15	1,960	9,800	$80,000	$1,200,000	n/a[c]	No	n/a[c]
	12	28	1,960	17,640	$80,000	$2,240,000	$806,763	Yes	Yes
	14	38	1,960	21,560	$80,000	$3,040,000	$919,538	Yes	Yes

[a] Barrier height consists of sound wall mounted on 3-foot concrete safety barrier.

[b] Barrier surface area accounts for the portion of wall mounted atop the 3-foot safety barrier.

[c] Design goal is met for greater heights, so cost reasonableness is not considered at this height.

2.14.5 References Cited

California Department of Transportation. 2011. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. August. Sacramento, CA.

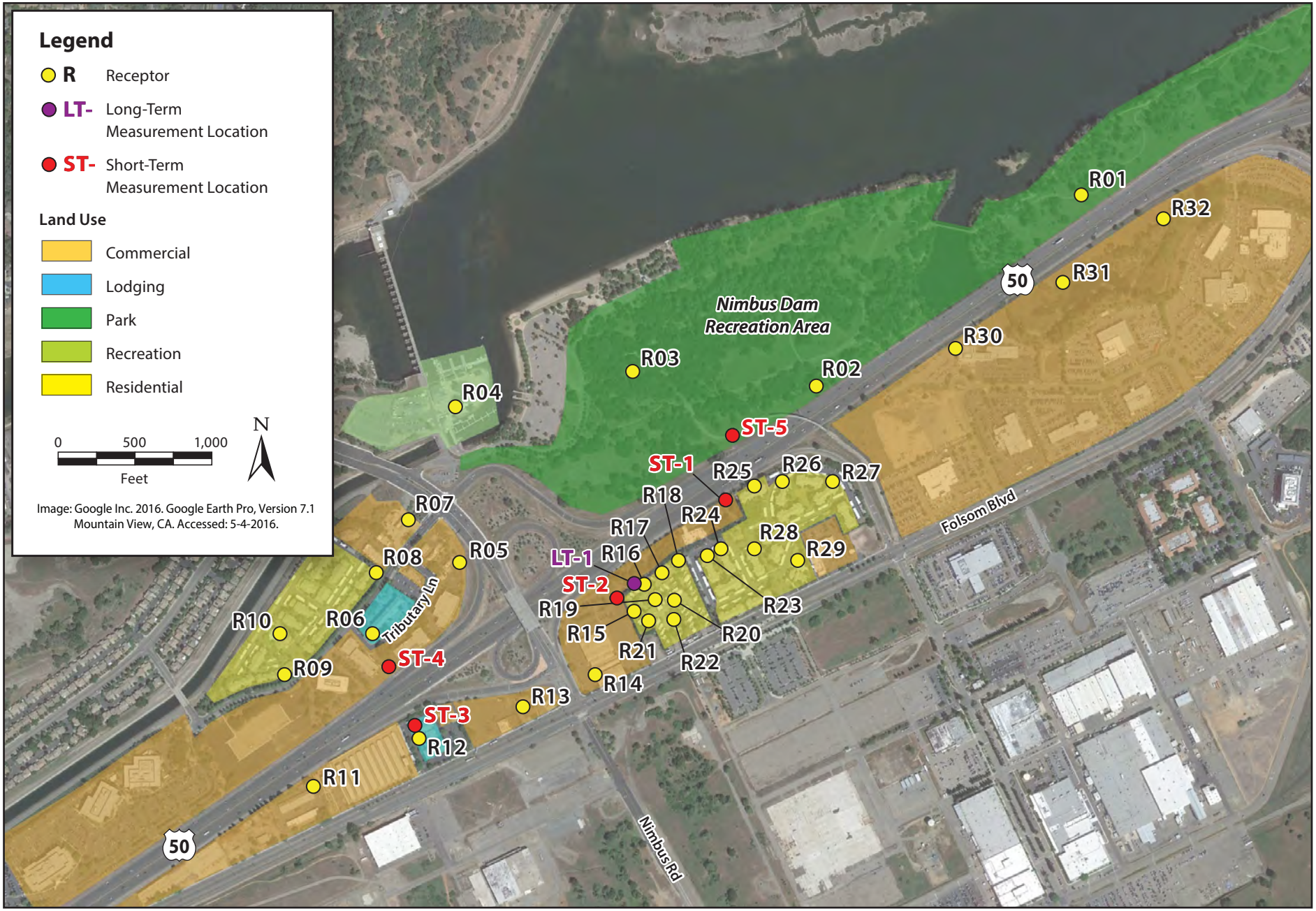
California Department of Transportation. 2013. *Transportation and Construction Vibration Guidance Manual*. September.

California Department of Transportation. 2017a. *Noise Study Report. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

California Department of Transportation. 2017b. *Noise Abatement Decision Report. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. April. Sacramento, CA. Prepared by ICF.

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company.

Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. September.



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Figure 2.14-2
Noise Prediction Locations



Figure 2.14-3
Noise Barrier, Alternative 1



Figure 2.14-4
Noise Barrier, Alternative 1A

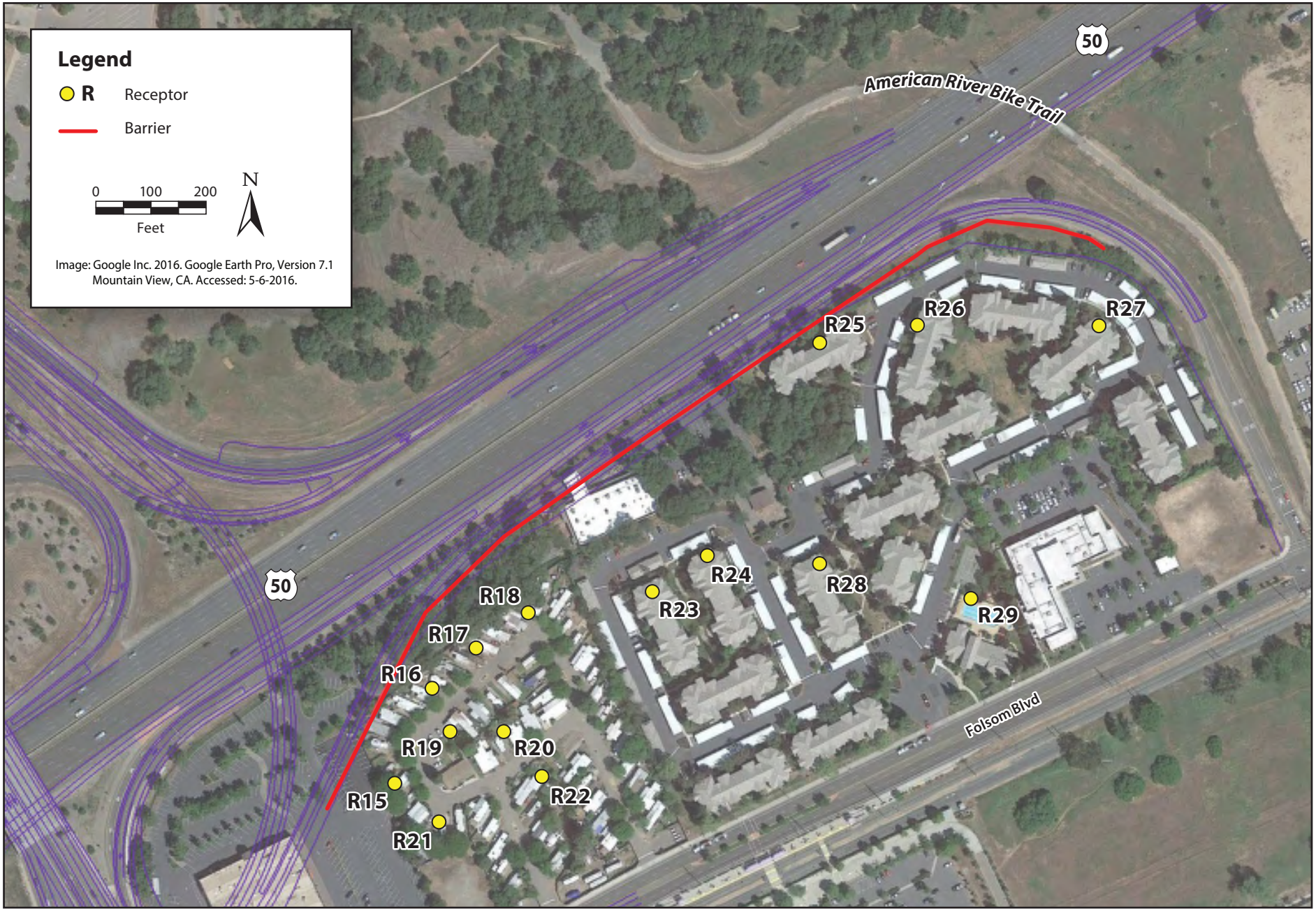


Figure 2.14-5
Noise Barrier, Alternative 2

2.15 Energy

2.15.1 Regulatory Setting

NEPA (42 USC 4332) requires the identification of all potentially significant impacts on the environment, including energy impacts.

The CEQA Guidelines, Appendix F, *Energy Conservation*, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

2.15.2 Affected Environment

The proposed improvements are regionally important to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards. Existing energy consumption is primarily a result of fuel use for motor vehicles and secondarily electricity use for lighting and signals.

2.15.3 Environmental Consequences

Build Alternatives

Each of the build alternatives would require temporary energy consumption during construction, including fuel for construction and personnel equipment and vehicles, and electricity for night lighting. During operation of the project, the build alternatives would improve overall network performance, which would improve fuel efficiency, compared to no-build conditions. The build alternative would improve PM peak hour delay and density under the existing and horizon year conditions at several intersections in the project area. The improved US 50 on-ramps would be metered and include HOV bypasses that may also encourage ridesharing. The build alternatives would not result in direct, indirect, or unavoidable impacts on energy demand or energy resources. When balancing the energy used during construction and operation against the energy saved by relieving congestion and other transportation efficiencies, the project would not result in substantial energy impacts.

No Build Alternative

The No Build Alternative would not result in substantial energy impacts; however, continued congestion and other transportation inefficiencies under the No Build Alternative would result in increased energy demands.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

Biological Environment

2.16 Natural Communities

This section discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed in Section 2.20, *Threatened and Endangered Species*. Section 2.17, *Wetlands and Other Waters*, provides discussion of wetlands and other waters.

2.16.1 Regulatory Setting

2.16.1.1 Oak Woodland Conservation Standards (PRC 21083.4)

PRC Section 21083.4 (instituted under Senate Bill [SB] 1334), established oak woodland conservation standards for CEQA processes within a County's jurisdiction. These standards apply to any land development project requiring a discretionary entitlement from the County that is subject to review under CEQA and that will have a potentially adverse impact on oak woodland. Oak woodland is defined as project site land where a majority of living trees are native oaks and with 10% or greater oak canopy cover. Counties are required to consider the significance of the conversion of oak woodlands, including a project's cumulative effect on oak woodlands statewide. The CEQA mitigation standards for project impacts on oak woodlands apply to oaks that have a trunk which is 5 inches or more in diameter at a height of 4.5 feet above the ground, or diameter at breast height (DBH). To mitigate adverse impacts on oak woodlands on project site land, a project applicant can implement one or more of four CEQA oak mitigation alternatives.

- Conserve oak woodlands through the use of conservation easements.
- Plant an appropriate number of oak trees, including maintaining plantings for 7 years and replacing dead or diseased trees.
- Contribute funds to the Oak Woodlands Conservation Fund, as established under CFGC Section 1363(a), for the purpose of purchasing oak woodlands conservation easements.
- Other mitigation measures developed by the county where the project is located.

Counties are required to implement one or more of these four mitigation alternatives and the planting of oak trees cannot constitute more than 50% of the required mitigation. Oak trees in the biological study area (BSA) that are growing outside the existing Caltrans ROW could be subject to this code.

2.16.1.2 Lake or Streambed Alteration (CFGC 1602)

CDFW regulates activities that would interfere with the natural flow of or substantially alter the channel, bed, or bank of a lake, river, or stream, including disturbance of riparian vegetation, under CFGC Sections 1600–1616. CDFW requires a Lake or Streambed Alteration Agreement (LSAA) permit for these activities. Requirements to protect the integrity of biological resources and water quality often are conditions of LSAAs. CDFW may establish conditions that include avoiding or minimizing vegetation removal, using standard erosion control measures, limiting the use of heavy equipment, limiting work periods to avoid impacts on fisheries and wildlife resources, and restoring degraded sites or compensating for permanent habitat losses. The valley foothill riparian woodland in the BSA would likely be regulated by CDFW.

2.16.1.3 Sacramento County General Plan

Goals and policies in the Sacramento County General Plan Conservation Element (County of Sacramento 2011) apply to natural communities in the proposed project area that would be affected by implementation of the project. These policies include allowing no net loss of riparian woodlands and oak woodlands; mitigating for loss or modification of these and other native vegetation and special-status species habitats; retaining riparian vegetation whenever possible in channel modifications; protecting, enhancing, and restoring riparian, in-channel and shaded riverine aquatic habitat; mitigating for loss of native trees for road expansion consistent with other General Plan policies; protecting and preserving native trees in riparian areas that are used by Swainson's hawk (*Buteo swainsoni*); and ensuring no net loss of oak and riparian tree canopy coverage by preservation or mitigation on-site, off-site, or through payment into the County's Tree Preservation Fund or another appropriate fund. The General Plan has policies CO-58, CO-59, CO-138, CO-139, CO-140, CO-141, CO-145, CO-146, and CO-149, which include mitigation requirements for trees and woodlands.

> CO-58. Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.
>
> CO-59. Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:
>
> - vernal pools,
> - wetlands,
> - riparian,
> - native vegetative habitat, and
> - special status species habitat.
>
> CO-138. Protect and preserve non-oak native trees along riparian areas if used by Swainson's Hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.
>
> CO-139. Native trees other than oaks, which cannot be protected through development, shall be replaced with in-kind species in accordance with established tree planting

specifications, the combined diameter of which shall equal the combined diameter of the trees removed.

CO-140. For projects involving native oak woodlands, oak savannah or mixed riparian areas, ensure mitigation through either of the following methods:

- An adopted habitat conservation plan.
- Ensure no net loss of canopy area through a combination of the following: (1) preserving the main, central portions of consolidated and isolated groves constituting the existing canopy and (2) provide an area on-site to mitigate any canopy lost. Native oak mitigation area must be a contiguous area on-site which is equal to the size of canopy area lost and shall be adjacent to existing oak canopy to ensure opportunities for regeneration.
- Removal of native oaks shall be compensated with native oak species with a minimum of a one to one DBH replacement.
- A provision for a comparable on-site area for the propagation of oak trees may substitute for replacement tree planting requirements at the discretion of the County Tree Coordinator when removal of a mature oak tree is necessary.
- If the project site is not capable of supporting all the required replacement trees, a sum equivalent to the replacement cost of the number of trees that cannot be accommodated may be paid to the County's Tree Preservation Fund or another appropriate tree preservation fund.
- If on-site mitigation is not possible given site limitation, off-site mitigation may be considered. Such a mitigation area must meet all of the following criteria to preserve, enhance, and maintain a natural woodland habitat in perpetuity, preferably by transfer of title to an appropriate public entity. Protected woodland habitat could be used as a suitable site for replacement tree plantings required by ordinances or other mitigations.
  - Equal or greater in area to the total area that is included within a radius of 30 feet of the dripline of all trees to be removed;
  - Adjacent to protected stream corridor or other preserved natural areas;
  - Supports a significant number of native broadleaf trees; and
  - Offers good potential for continued regeneration of an integrated woodland community.

CO-141. In 15 years the native oak canopy within on-site mitigation areas shall be 50 percent canopy coverage for valley oak and 30 percent canopy coverage for blue oak and other native oaks.

CO-145. Removal of non-native tree canopy for development shall be mitigated by creation of new tree canopy equivalent to the acreage of non-native tree canopy removed. New tree canopy acreage shall be calculated using the 15-year shade cover values for tree species.

CO-146. If new tree canopy cannot be created onsite to mitigate for the non-native tree canopy removed for new development, project proponents (including public agencies) shall contribute to the Greenprint funding in an amount proportional to the tree canopy of the specific project.

CO-149. Trees planted within new or existing parking lots should utilize pervious cement and structured soils in a radius from the base of the tree necessary to maximize water infiltration sufficient to sustain the tree at full growth.

2.16.2 Affected Environment

This section is based on the *Hazel Avenue/U.S. 50 Interchange Project Aquatic Resources Delineation* (ICF 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and the *Natural Environment Study Report* (California Department of Transportation 2018; provided in Volume 3, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the proposed project. This section presents findings of this report as it relates to natural communities within the BSA.

2.16.2.1 Methods

The approximately 100-acre BSA encompasses the project footprint (Figure 2.16-1).

An ICF botanist/wetland ecologist identified and mapped land cover types and natural communities in the BSA on April 6 and May 31, 2016. The botanist/wetland ecologist walked or visually surveyed all of the BSA and compiled a list of all plant species observed (California Department of Transportation 2018; provided in Volume 3).

2.16.2.2 Land Cover Types

The BSA is within the Sacramento Valley subregion of the California Floristic Province (Baldwin et al. 2012:41). There are 11 land cover types in the BSA, and 6 of these are considered natural communities of special concern (Fremont cottonwood-oak woodland, valley foothill riparian woodland, emergent wetland, seasonal wetland, perennial drainage, and ephemeral drainage) (Figure 2.16-1). Natural communities of special concern are habitats considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, State, and Federal agencies consider these habitats important, and compensation for loss of sensitive communities is generally required by agencies. The California Natural Diversity Database (CNDDB) contains a current list of rare natural communities throughout the State. The U.S. Fish and Wildlife Service (USFWS) considers certain habitats, such as riparian communities, important to wildlife; and USACE and EPA consider stream habitats important for water quality and wildlife. The BSA also supports five common and maintained land cover types (maintained vegetation/urban oaks, ruderal, landscaped, developed, and ditch).

The locations and dominant plant species of the six land cover types within the BSA that are not wetlands or other waters are described below. The five land cover types that are wetlands or other waters of the U.S. are described in Section 2.17.

Fremont Cottonwood-Oak Woodland

The proposed jughandle road area south of Folsom Boulevard supports Fremont cottonwood-oak woodland. The overstory is dominated by interior live oak (*Quercus wislizeni*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), and willows (*Salix* spp.). The understory includes small willows, coyote brush (*Baccharis pilularis*), poison-oak (*Toxicodendron diversilobum*), and annual grasses and forbs. Blue elderberry shrubs (*Sambucus nigra* ssp. *caerulea*) occur in this area.

Maintained Vegetation/Urban Oaks

The areas between the US 50 on-ramps and off-ramps are planted with native trees and shrubs found in oak woodlands such as interior live oak, valley oak (*Quercus lobata*), buckeye (*Aesculus californica*), Lemmon's ceanothus (*Ceanothus lemmonii*), coffeeberry (*Frangula californica*), California flannelbush (*Fremontodendron californicum*), and Fremont cottonwood, with annual grasses and forbs in the understory. Two mature interior live oak trees and a large blue elderberry cluster occur between the US 50 westbound off-ramp to Hazel Avenue and the westbound loop on-ramp, as well as a large blue elderberry cluster adjacent to the US 50 eastbound Hazel Avenue off-ramp, appear to be older than the planted trees and shrubs and may have been present on the site prior to construction of the ramps. The understory vegetation in these areas is regularly maintained by mowing for fire hazard reduction.

Valley Foothill Riparian Woodland

Valley foothill riparian woodland occurs on the banks of Alder Creek above the ordinary high water mark (OHWM). Dominant species in this community include willow, white alder (*Alnus rhombifolia*), and California blackberry (*Rubus ursinus*). California foothill pine (*Pinus sabiniana*) and interior live oak also occur in this natural community.

Ruderal

Ruderal habitat occurs throughout the BSA within the US 50 ROW and south of Folsom Boulevard. Areas mapped as ruderal support primarily nonnative, weedy species. Dominant species in this community include annual grasses such as wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), and perennial ryegrass (*Festuca perennis*). Typical forbs in ruderal habitat in the BSA are Italian thistle (*Carduus pycnocephalus*), heron's bill (*Erodium botrys* and *E. cicutarium*), hawkbit (*Leontodon saxatilis* ssp. *longirostris*), milk thistle (*Silybum marianum*), hairy clover (*Trifolium hirtum*), and hairy vetch (*Vicia villosa*). The ruderal habitat on both sides of Alder Creek also supports some native forbs, including elegant clarkia (*Clarkia unguiculata*) and dwarf brodiaea (*Brodiaea nana*). Scattered native trees such as Fremont cottonwood, interior live oak, valley oak, and California foothill pine also occur in areas mapped as ruderal. A blue elderberry shrub cluster also occurs in ruderal habitat along US 50.

Developed and Landscaped

Developed and landscaped land cover types are discussed together because they are similar from a wildlife habitat value standpoint. These cover types comprise the largest portion of the BSA. Developed areas largely consist of hardscape, including buildings, parking lots, driveways, and sidewalks. Native vegetation has been removed or replaced with grass lawn and ornamental plantings. The landscaping adjacent to developed facilities consists of shade and street trees, hedges and shrubs, lawns and gardens. The growth of vegetation in this land cover type is typically managed by trimming or mowing.

2.16.2.3 Wildlife Corridors

No Natural Landscape Blocks or Essential Connectivity Areas were identified by the California Essential Habitat Connectivity Project in or adjacent to the BSA, likely because of the presence of US 50 and the high amount of development in the area (California Department of Fish and Wildlife 2016). The closest Natural Landscape Block is south of White Rock Road, south of the project. Although no wildlife movement corridors were identified, the jughandle area and surrounding area on the Aerojet property contain a substantial amount of natural land that is used by wildlife. Animals could travel from the south into this area, but would be blocked from further travel by Folsom Boulevard and US 50. Animals may also travel along Alder Creek; however, the high water level created by the mechanically stabilized earth MSE wall above the box culvert prevents any crossing of terrestrial wildlife underneath US 50.

2.16.3 Environmental Consequences

Impacts on natural communities of special concern are discussed in the following subsections and are shown in Figures 2.16-2 and 2.16-3. Impacts on natural communities of special concern that are wetlands or non-wetland waters are discussed in Section 2.17.

2.16.3.1 Fremont Cottonwood-Oak Woodland

Direct Impacts

Construction of the jughandle road for the proposed project would result in trimming or removal of Fremont cottonwood-oak woodland vegetation. For the purposes of this analysis, all tree removal in Fremont cottonwood-oak woodland would be considered a long-term impact because of the time required for habitat regeneration, even if the project construction component requiring the removal is considered a temporary impact. Table 2.16-1 summarizes the permanent and temporary impacts on Fremont cottonwood-oak woodland by build alternative.

Table 2.16-1. Impacts on Fremont Cottonwood-Oak Woodland by Alternative

Alternative 1		Alternative 1A		Alternative 2	
Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
2.97	0.19	2.97	0.19	2.97	0.19

Indirect Impacts

It is not anticipated that there would be any indirect effects on Fremont cottonwood-oak woodland as a result of the proposed project.

Impact Conclusion

Because Fremont cottonwood-oak woodlands are important habitat for special-status wildlife species, the loss of Fremont cottonwood-oak woodland would be an adverse impact. Implementation of the avoidance, minimization, and mitigation measures described below would reduce potential impacts on Fremont cottonwood-oak woodland.

2.16.3.2 Valley Foothill Riparian Woodland

Direct Impacts

Construction of the proposed project would result in trimming or removal of valley foothill riparian woodland vegetation. For the purposes of this analysis, all riparian vegetation disturbance and tree removal are considered long-term impacts because of the time required for habitat regeneration, even if the project construction component requiring the disturbance or removal is considered a temporary impact. Table 2.16-2 summarizes the permanent and temporary impacts on valley foothill riparian woodland by build alternative.

Table 2.16-2. Impacts on Valley Foothill Riparian Woodland by Alternative

Alternative 1		Alternative 1A		Alternative 2	
Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
0.03	0.03	0.03	0.03	0.03	0.03

Indirect Impacts

It is not anticipated that there would be any indirect effects on valley foothill riparian woodland as a result of the proposed project.

Impact Conclusion

Because riparian woodlands are important habitat for special-status wildlife species, the loss of valley foothill riparian woodland would be an adverse impact. Implementation of avoidance, minimization, and mitigation measures described below would reduce potential impacts on valley foothill riparian woodland.

2.16.3.3 Wildlife Corridors

Direct Impacts

Because of the existing amount of development in the surrounding area and the presence of US 50, the BSA provides limited opportunities for animal movement or migration. Animals moving along Alder Creek or through the Aerojet property to the jughandle area of the proposed project are blocked by the presence of the freeway and/or development. Construction activities and presence of construction equipment and personnel are not expected to limit animal movement or migration any more than it is already limited by existing development.

Indirect Impacts

The project, once constructed, would not affect wildlife dispersal and migration corridors because of the existing development and barriers in the area surrounding the proposed project and the limited opportunities for animal movement and migration in the project area. The constructed project is not expected to limit animal movement or migration any more than the constraints from existing development.

Because the proposed project area does not provide areas through which animals can travel to other natural areas, there would be no impact on wildlife dispersal and migration corridors from the proposed project.

2.16.4 Avoidance, Minimization, and/or Mitigation Measures

2.16.4.1 Fremont Cottonwood-Oak Woodland

Compensatory mitigation for permanent and temporary direct effects on Fremont cottonwood-oak woodland will be mitigated either by additional planting of Fremont cottonwood-oak woodland species or by payment into the County's tree preservation fund.

As summarized in Table 2.16-3, the required mitigation for the proposed project would be 2.12 acres less than the total permanent impact and 0.14 acre less than the total temporary impacts on Fremont cottonwood-oak woodland, because 2.26 acres of the affected habitat under all three alternatives was already mitigated for in Phase 2 of the Glenborough at Easton and Easton Place Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the area that has been previously mitigated for Phase 2 of the Easton Project. Implementation of compensatory mitigation would be necessary to prevent a net loss of Fremont cottonwood-oak woodland. Compensation ratios in the compensatory mitigation below are based on information from the County and were confirmed as current (Nagao pers. comm.).

Implementation of measures described below would mitigate adverse temporary direct and indirect impacts on Fremont cottonwood-oak woodland in the long term. However, even with compensatory mitigation, impacts would not be compensated for in the near term due to the time required for planted woodland to reach the maturity of the removed woodland and the loss would remain adverse for many years.

Table 2.16-3. Compensation for Permanent and Temporary Impacts on Fremont Cottonwood Oak Woodland by Alternative

	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Mitigation Acres Required	2.97	0.19	2.97	0.19	2.97	0.19
Mitigated through Easton Project	2.12	0.14	2.12	0.14	2.12	0.14
Mitigation Required for Proposed Project	0.85	0.05	0.85	0.05	0.85	0.05
Total Required for Proposed Project	**0.90**		**0.90**		**0.90**	

Avoidance and Minimization Measures

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The County and/or their contractor will install orange construction fencing between the construction area and adjacent sensitive biological resource areas. Sensitive biological resources that occur adjacent to the construction area that could be directly affected by the project include natural communities of special concern; fairy shrimp, valley elderberry longhorn beetle and western pond turtle habitats; nest sites of Swainson's hawk, yellow-breasted chat, tricolored blackbird, song sparrow, and other migratory birds; roosting bats; and protected trees to be avoided.

Barrier fencing around sensitive areas will be installed as one of the first orders of work and prior to equipment staging. Preliminary fencing locations are included in the draft project design drawings and labeled as Environmentally Sensitive Areas. The locations of the fencing will be updated or confirmed as part of final design, prior to construction. Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the orange construction fencing, and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans and described in the specifications. Barrier fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.

Conduct Environmental Awareness Training for Construction Employees

The County or their contractor will retain a qualified biologist to conduct environmental awareness training for construction crews before project implementation. The awareness training will be provided to all construction personnel and will brief them on the need to avoid effects on sensitive biological resources (e.g., native trees, natural communities of special concern, and special-status species habitats in and adjacent to the construction area). The education program will include a brief review of the special-status species with the potential to occur in the BSA (including their life history, habitat requirements, and

photographs of the species). The training will identify the portions of the BSA in which the species may occur, as well as their legal status and protection. The program also will cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. This will include the steps to be taken if a sensitive species is found within the construction area (i.e., notifying the crew foreman, who will call a designated biologist). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each crew member. The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The County or their contractor will retain a qualified biologist to monitor all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, road construction) within or adjacent to environmentally sensitive areas (e.g., wetlands, streams, riparian vegetation, special-status species habitat, active bird nests, and adjacent areas within 250-feet or where indirect effects are possible). The purpose of the monitoring is to ensure that avoidance and minimization measures are properly implemented to protect sensitive biological resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. The biologist will inspect the fencing around environmentally sensitive areas regularly and will communicate any issues to the resident engineer or construction foreman. The contractor will be responsible for maintaining the fence during construction and ensuring that no construction personnel, equipment, or runoff/sediment from the construction area enters environmentally sensitive areas. The monitor will complete daily logs, and a final monitoring report will be prepared at the end of each construction season that will be submitted to the County and other overseeing agencies (i.e., CDFW, USFWS, and USACE), as appropriate.

Protect Native Trees during Construction

This measure applies to all native oaks that have a diameter at breast height (dbh) of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined dbh of at least 10 inches.

With the exception of the trees slated for removal that will be mitigated for through compensatory measures, all native oak trees in the project area, all portions of adjacent off-site native oak trees that have driplines that extend onto the project area, and all off-site native oak trees that may be impacted by utility installation and/or improvements associated with this project, will be preserved and protected as follows:

1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs which make up the dripline does not change the protected area.
2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system.
3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall be attached to the native trees.
4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees.
5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines.
6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist.
7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a six-inch depth.
8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees.
9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees.
10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) “Tree Pruning Guidelines”.
11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials shall be kept two (2) feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.

12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts to the trees.
13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least one foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1 inch or more.

Mitigation Measure

Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

The County and/or Easton will compensate for the permanent loss of 2.97 acres and temporary loss of .19 acres of Fremont cottonwood-oak woodland at a minimum ratio of 1:1 (1 acre planted for every 1 acre permanently affected). The loss of most of the Fremont cottonwood-oak woodland habitat in the project area, which is located near the intersection of Folsom Boulevard and Nimbus Road, has been previously mitigated as part of Phase 2 of the Easton Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the areas of effect and the area that has been previously mitigated for Phase 2 of the Easton Project. For the proposed project, compensation would only be required for 0.90 acre of the direct impacts.

As part of the woodland mitigation, compensation may include either compensation for the woodland habitat at a minimum ratio or 1:1 as indicated above and/or compliance with Mitigation Measure BIO-17 and/or Mitigation Measure BIO-18.

2.16.4.2 Valley Foothill Riparian Woodland

Compensatory mitigation for permanent and temporary direct effects on valley foothill riparian woodland will consist of either additional planting of valley foothill riparian woodland species or by purchase of credits at a CDFW-approved mitigation bank.

Table 2.16-4 summarizes acreages of compensation required by alternative for permanent and temporary impacts on valley foothill riparian woodland. Implementation of compensatory mitigation would be necessary to prevent a net loss of valley foothill riparian woodland.

Implementation of measures described below would mitigate adverse temporary direct and indirect impacts on valley foothill riparian woodland in the long term.

Table 2.16-4. Compensation for Permanent and Temporary Impacts on Valley Foothill Riparian Woodland by Alternative

Alternative 1	Alternative 1A	Alternative 2
Compensation (acres)	Compensation (acres)	Compensation (acres)
0.06	0.06	0.06

Avoidance and Minimization Measures

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Protect Native Trees during Construction

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Mitigation Measure

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The County will compensate for the permanent and temporary loss of valley foothill riparian habitat (see Figures 2.16-2 and 2.16-3, Sheet 4) by planting a minimum of 0.06 acre of valley foothill riparian woodland species (a minimum ratio of 1:1 [1 acre planted for every 1 acre permanently and temporarily affected]) on-site or off-site and/or purchasing mitigation bank credits equivalent to a minimum of 0.06 acre of valley foothill riparian habitat.

On-site compensation will be used to the maximum extent practicable, but off-site compensation and/or purchase of mitigation bank credits may be needed to achieve no net loss of existing in-kind riparian habitat. Each of these options is discussed below.

- Riparian habitat restoration and/or enhancement on-site or off-site should occur in the same year construction is completed. For on-site or off-site plantings, the County will prepare a mitigation planting plan, including a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those in and adjacent to the project area and will include native species, such as white alder, Fremont cottonwood, valley oak, black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), boxelder (*Acer negundo*), and black willow (*Salix gooddingii*). All plantings will be fitted with exclusion cages or other suitable protection from herbivory until plantings are established. Plantings will be irrigated for up to 3 years or until established. Plantings will be monitored annually for 3 years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.
- The County will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid. Replacement riparian habitat will include tree species that would support nesting Swainson's hawk (i.e., oak, cottonwood) and will occur within the range of nesting Swainson's hawk within the Sacramento Valley.

2.16.4.3 Wildlife Corridors

Because there would be no impact on wildlife dispersal and migration corridors, no avoidance, minimization, or mitigation measures are necessary.

2.16.5 References Cited

Baldwin, B.G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, eds. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. Berkeley, CA: University of California Press.

California Department of Fish and Wildlife. 2016. California Habitat Connectivity Project BIOS Habitat Connectivity Viewer. Available: http://www.dfg.ca.gov/biogeodata/bios/. Accessed: June 10, 2016.

California Department of Transportation. 2018. *Natural Environment Study. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

County of Sacramento. 2008. *Easton Project, Easton Place and Glenborough at Easton Final Environmental Impact Report.* November 2008. State Clearinghouse Number: SCH2005062128.

County of Sacramento. 2011. *Sacramento County General Plan of 2005-2030*. Amended November 9, 2011. Available: http://www.per.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan-Update/Final%202030%20General%20Plan_sm.pdf. Accessed: June 28, 2016.

ICF. 2018. Aquatic Resources Delineation. Hazel Avenue/U.S. 50 Interchange Project. October. (ICF 00529.15) Sacramento, CA. Prepared for Sacramento County Office of Planning and Environmental Review, Sacramento, CA.

2.16.5.1 Personal Communications

Nagao, Michelle. 2016. Environmental Analyst, Sacramento County Development Department. July 14, 2016—Phone call to discuss County's regulation of protected trees and monitoring of its own projects.

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

Legend

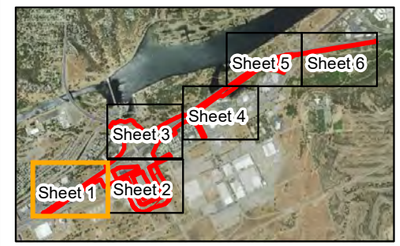
Biological Study Area

Land Cover

Developed

Landscaped

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

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Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat

121°13'10"W
121°13'0"W
121°12'50"W
38°37'40"N
38°37'30"N
50
Folsom Blvd
Nimbus Rd
1
4
5
6
7
8
9
10
11
12
See Inset
Inset Map

Hazel Avenue / U.S. 50 Interchange Project

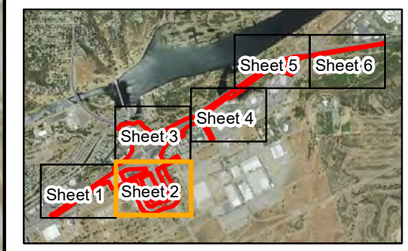
Sheet 2 of 6

Legend

- Biological Study Area
- Indirect Effects Assessment Area for Branchiopods
- Elderberry Shrub
- Red-tailed Hawk Nest

Land Cover

- Developed
- Ditch
- Landscaped
- Maintained Vegetation/Urban Oaks
- Fremont Cottonwood-Oak Woodland
- Ruderal
- Seasonal Wetland



0 50 100 200
Feet
1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

Path: \\PDC01\RDSGIS1\Projects_1\County_of_Sacramento\v00529_15_HazelAve\Cmapdoc\BioBio_Resources_20180823.mxd; Author: ; Date: 6/3/2019

Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat

121°13'10"W
121°13'0"W
121°12'50"W
38°38'0"N
38°37'50"N
Hazel Ave
SW-2
2
SW-1
50
ED-1
13
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

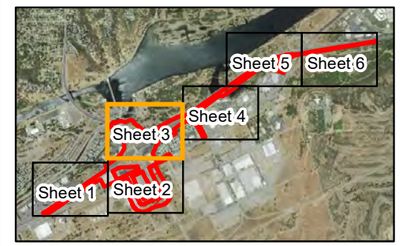
Sheet 3 of 6

Legend

- Biological Study Area
- Elderberry Shrub

Land Cover

- Developed
- Ephemeral Drainage
- Landscaped
- Maintained Vegetation/Urban Oaks
- Ruderal
- Seasonal Wetland



0 50 100 200
Feet
1 inch = 200 feet

Notes:
Base Map Source: ICF and ECORP
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Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat

121°12'40"W 121°12'30"W 121°12'20"W 121°12'10"W

38°38'10"N

38°38'0"N

PDC-1

EW-1

D-1

EW-2

Alder Creek

PD-1

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

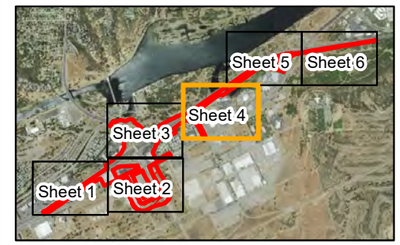
- Biological Study Area

Western Pond Turtle Habitat

- Aquatic
- Upland

Land Cover

- Developed
- Ditch
- Emergent Wetland
- Landscaped
- Perennial Drainage
- Perennial Drainage (Culverted)
- Valley Foothill Riparian
- Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat

121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
ED-2
D-1
3
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

Legend

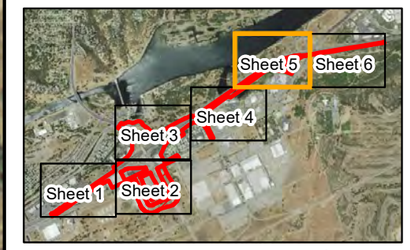
- Biological Study Area
- Elderberry Shrub

Western Pond Turtle Habitat

- Upland

Land Cover

- Developed
- Ditch
- Ephemeral Drainage
- Ruderal



0 50 100 200
Feet
1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

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Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat



Hazel Avenue / U.S. 50 Interchange Project

Sheet 6 of 6

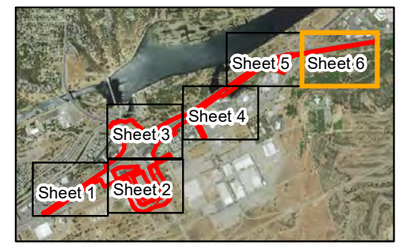
Legend

Biological Study Area

Land Cover

Developed

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
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Figure 2.16-1
Biological Resources
Landcover, Branchiopod Habitat, Elderberry Shrub Locations, and Western Pond Turtle Habitat

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

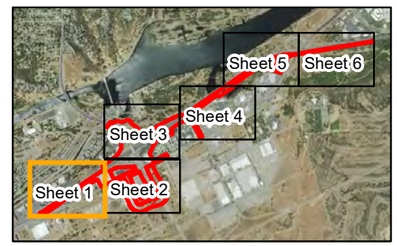
Temporary Effect

Land Cover

Developed

Landscaped

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A

121°13'10"W
121°13'0"W
121°12'50"W
38°37'40"N
38°37'30"N
50
Folsom Blvd
Nimbus Rd
1
4
5
6
7
8
9
10
11
12
Install Water Conveyance Systems that Maintain Hydrology of, and Prevent Contaminants from Entering, Suitable Vernal Pool Branchiopod Habitat

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

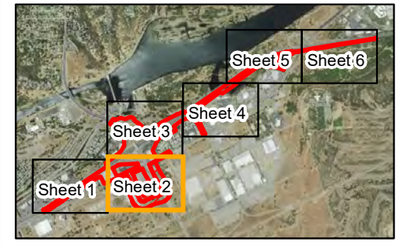
- Biological Study Area
- Previously Mitigated by the Easton Project

Alternatives 1 and 1A

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ditch
- Landscaped
- Maintained Vegetation/Urban Oaks
- Fremont Cottonwood-Oak Woodland
- Ruderal
- Seasonal Wetland
- Elderberry Shrub
- Red-tailed Hawk Nest



0 50 100 200
Feet
1 inch = 200 feet

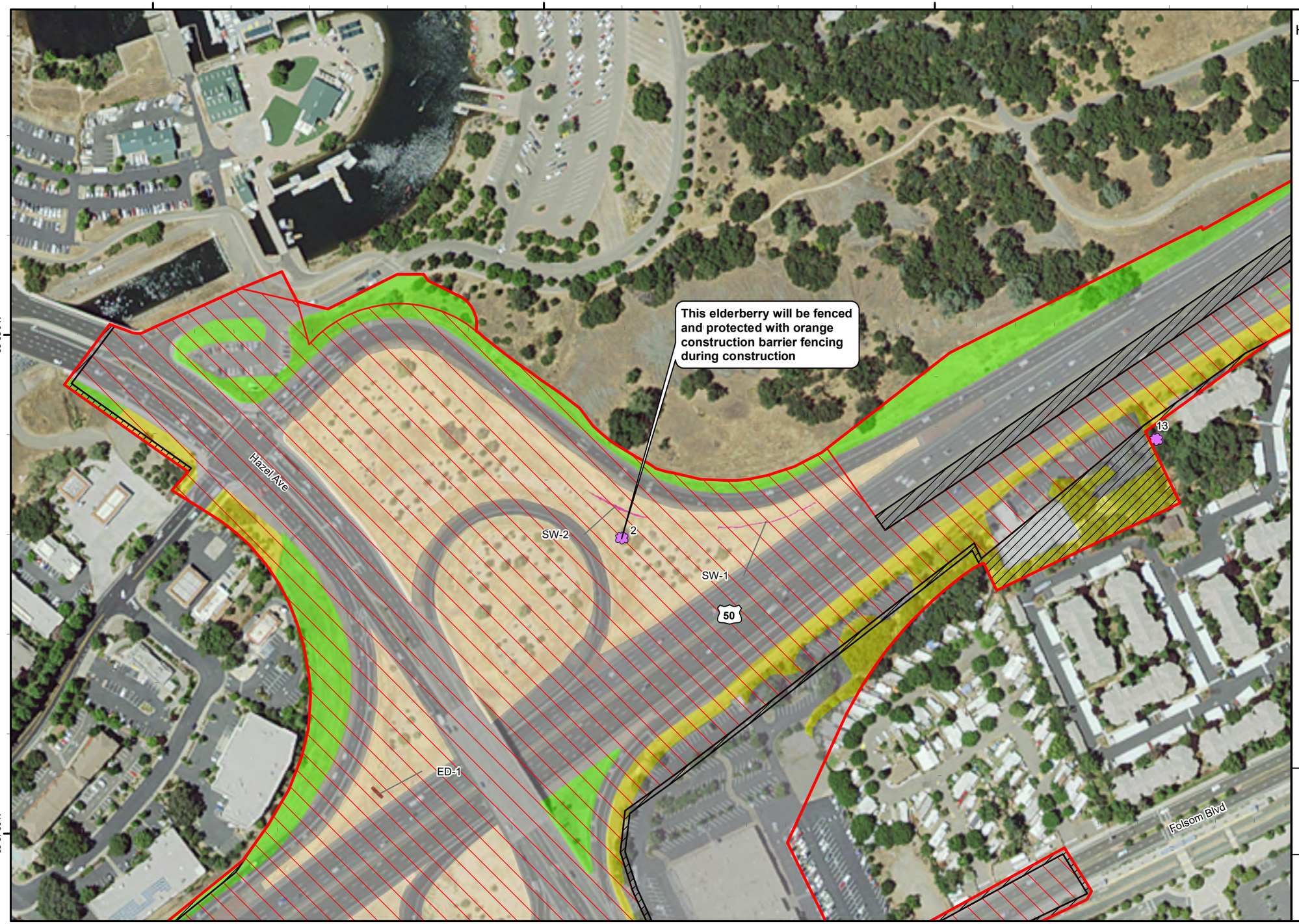
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PLSS: Rio De Los Americanos Land Grant

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Drawn By: A. Angier

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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A

121°13'10"W
121°13'0"W
121°12'50"W
38°38'0"N
38°37'50"N



Hazel Avenue / U.S. 50 Interchange Project

Sheet 3 of 6

Legend

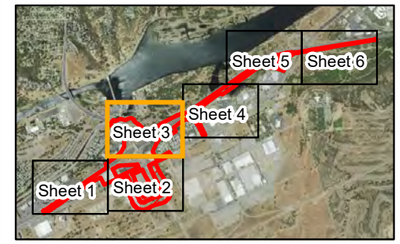
- Biological Study Area

Alternatives 1 and 1A

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ephemeral Drainage
- Landscaped
- Maintained Vegetation/Urban Oaks
- Ruderal
- Seasonal Wetland
- Elderberry Shrub



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Delineated By: L. Webber
Delineation Date: May 31. 2016
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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A

121°12'40"W
121°12'30"W
121°12'20"W
121°12'10"W
38°38'10"N
38°36'0"N
PDC-1
EW-1
EW-2
D-1
PD-1
Alder Creek
See inset
50
Folsom Blvd
Inset

Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

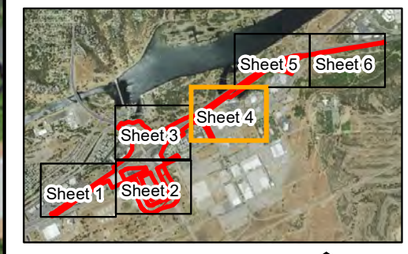
- Biological Study Area

Alternatives 1 and 1A

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ditch
- Emergent Wetland
- Landscaped
- Perennial Drainage
- Perennial Drainage (Culverted)
- Valley Foothill Riparian
- Ruderal



0 50 100 200
Feet
1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A

121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
ED-2
D-1
3
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

Temporary Effect

Land Cover

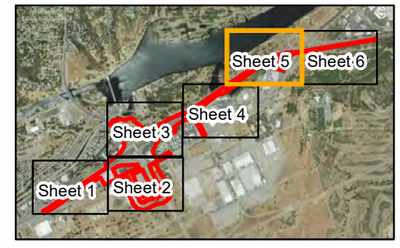
Developed

Ditch

Ephemeral Drainage

Ruderal

Elderberry Shrub



0 50 100 200
Feet
1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A



Hazel Avenue / U.S. 50 Interchange Project

Sheet 6 of 6

Legend

Biological Study Area

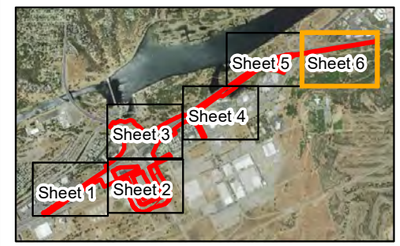
Alternatives 1 and 1A

Permanent Effect

Land Cover

Developed

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
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Figure 2.16-2
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternatives 1 and 1A

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

Legend

Biological Study Area

Alternative 2

Permanent Effect

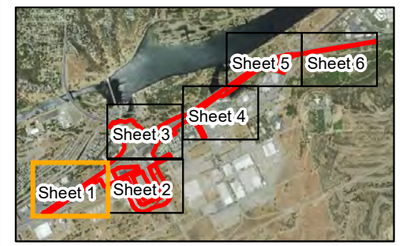
Temporary Effect

Land Cover

Developed

Landscaped

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Delineated By: L. Webber
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Drawn By: A. Angier

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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2

121°13'10"W
121°13'0"W
121°12'50"W
38°37'40"N
38°37'30"N
50
Folsom Blvd
Nimbus Rd
1
4
5
6
7
8
9
10
11
12
Install Water Conveyance Systems that Maintain Hydrology of, and Prevent Contaminants from Entering, Suitable Vernal Pool Branchiopod Habitat

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

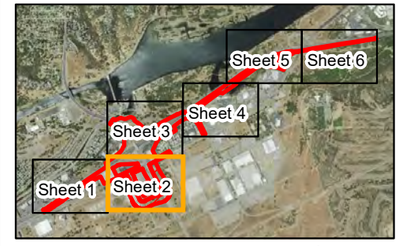
- Biological Study Area
- Previously Mitigated by the Easton Project

Alternative 2

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ditch
- Landscaped
- Maintained Vegetation/Urban Oaks
- Fremont Cottonwood-Oak Woodland
- Ruderal
- Seasonal Wetland
- Elderberry Shrub
- Red-tailed Hawk Nest



0 50 100 200
Feet
1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2

121°13'10"W
121°13'0"W
121°12'50"W
38°38'0"N
38°37'50"N
This elderberry will be fenced and protected with orange construction barrier fencing during construction
Hazel Ave
SW-2
2
SW-1
50
13
ED-1
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 3 of 6

Legend

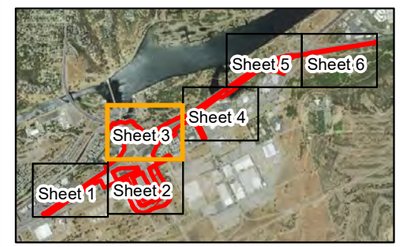
- Biological Study Area

Alternative 2

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ephemeral Drainage
- Landscaped
- Maintained Vegetation/Urban Oaks
- Ruderal
- Seasonal Wetland
- Elderberry Shrub



0 50 100 200
Feet
1 inch = 200 feet

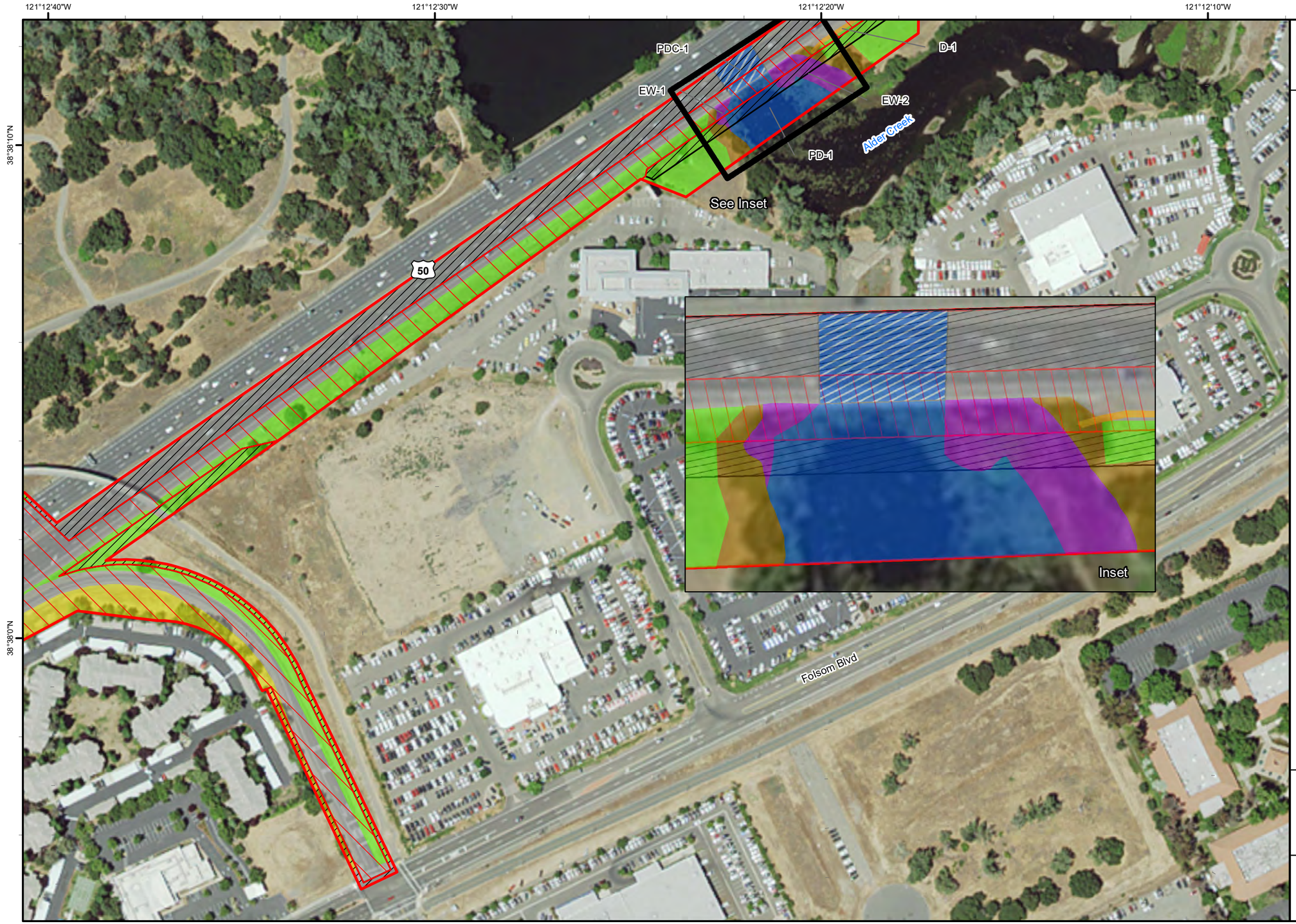
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PLSS: Rio De Los Americanos Land Grant

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Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2



Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

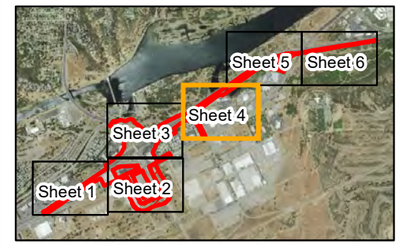
- Biological Study Area

Alternative 2

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ditch
- Emergent Wetland
- Landscaped
- Perennial Drainage
- Perennial Drainage (Culverted)
- Valley Foothill Riparian
- Ruderal



0 50 100 200

Feet

1 inch = 200 feet

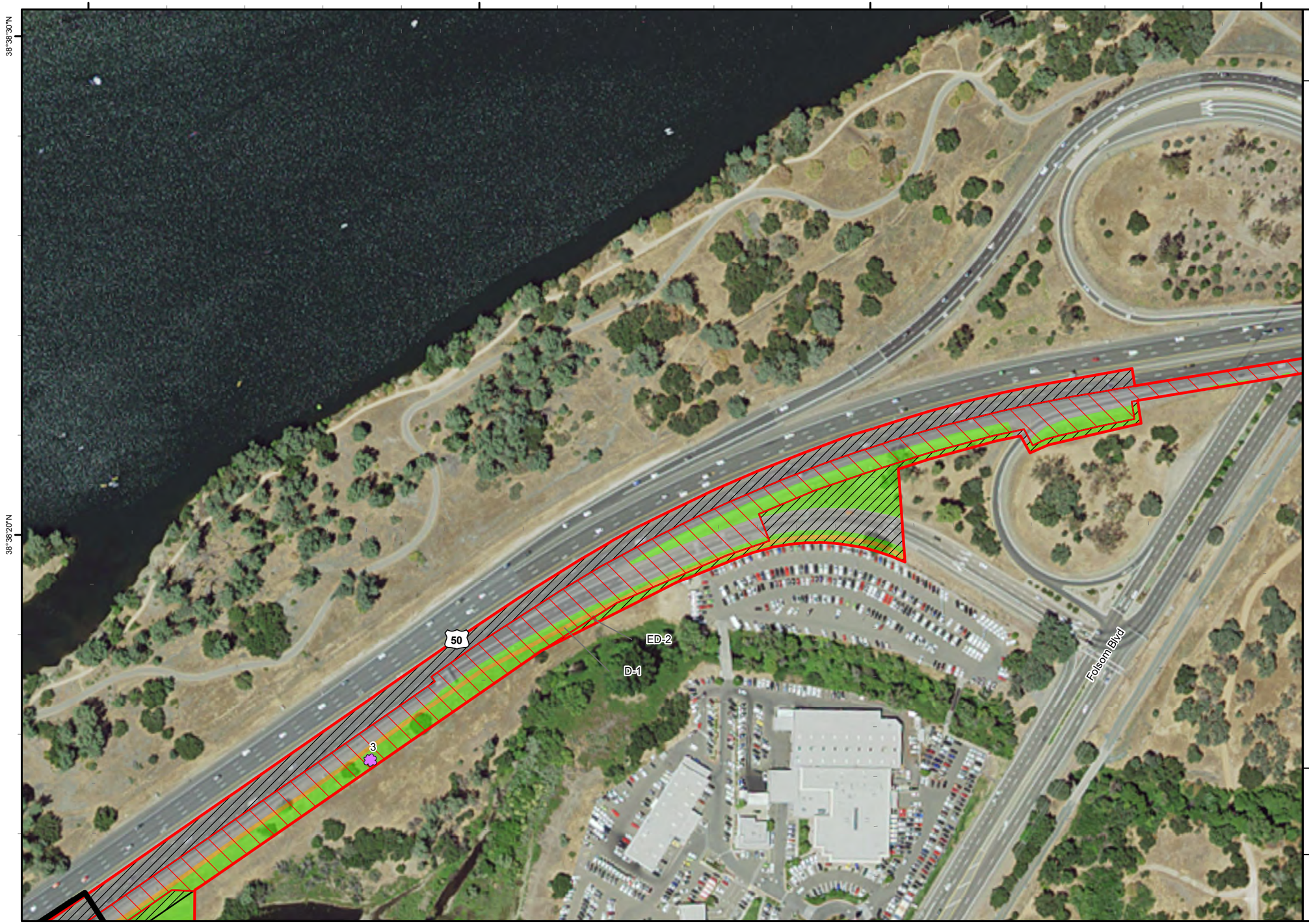
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Delineated By: L. Webber
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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2



Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

Legend

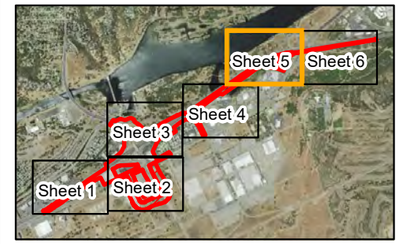
- Biological Study Area

Alternative 2

- Permanent Effect
- Temporary Effect

Land Cover

- Developed
- Ditch
- Ephemeral Drainage
- Ruderal
- Elderberry Shrub



0 50 100 200
Feet

1 inch = 200 feet

Notes:

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Imagery Source: NAIP 2014
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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2



Hazel Avenue / U.S. 50 Interchange Project

Sheet 6 of 6

Legend

Biological Study Area

Alternative 2

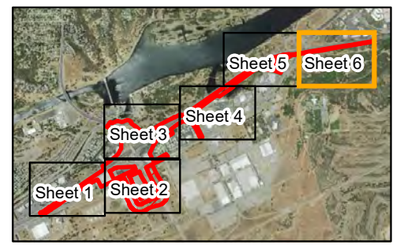
Permanent Effect

Temporary Effect

Land Cover

Developed

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.16-3
Impacts on Biological Resources - Land Cover and Elderberry Shrubs
Alternative 2

2.17 Wetlands and Other Waters

2.17.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the Federal level, the Federal Water Pollution Control Act, more commonly referred to as the CWA (33 USC 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the OHWM, in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by USACE with oversight by EPA.

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

Ordinarily, projects that do not meet the criteria for a Nationwide permit may be permitted under one of 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 EPA's Section 404(b)(1) Guidelines (40 CFR 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines (Guidelines) were developed by the EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative that would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a LEDPA to the proposed discharge that would have lesser effects on waters of the United States, and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of Federal agencies with regard to wetlands. Essentially, EO 11990 states that a Federal agency, such as FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no

practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the State level, wetlands and waters are regulated primarily by the SWRCB, the RWQCBs, and CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600–1607 of the CFGC require any agency proposing a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, an LSAA will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of USACE may or may not be included in the area covered by an LSAA obtained from CDFW.

The RWQCBs were established under the Porter-Cologne Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities that may result in a discharge to waters of the United States. This is most frequently required in tandem with a Section 404 permit request. Please see Section 2.9, *Water Quality and Stormwater Runoff*, for more details.

2.17.2 Affected Environment

This section is a summary of the analysis documented in the *Hazel Avenue/U.S. 50 Interchange Project Aquatic Resources Delineation* (ICF 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

2.17.2.1 Methods

As described in Section 2.16, *Natural Communities*, the BSA was defined as the project footprint (Figure 2.16-1).

An ICF botanist/wetland ecologist conducted delineation fieldwork in the BSA on April 6 and May 31, 2016. The delineation was conducted using the routine on-site determination method described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the supplemental procedures and wetland indicators provided in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008).

Non-wetland waters of the United States were mapped and delineated in the field in accordance with indicators and guidance in USACE Regulatory Guidance Letter No. 05-05, dated December 7, 2005 (U.S. Army Corps of Engineers 2005), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region* (Lichvar and McColley 2008). Methods and standards conform to the USACE Sacramento District's *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (U.S. Army Corps of Engineers 2016a)

and *Revised Map and Drawing Standards for the Pacific Division Regulatory Program Delineations* (U.S. Army Corps of Engineers 2016b).

The delineation of the potential wetlands and non-wetland waters of the United States report (ICF 2018) was submitted to the USACE in October 2018 with a request for a preliminary jurisdictional determination. The USACE responded on December 12, 2018, concurring with the results and providing the preliminary jurisdictional determination (USACE file number SPK-2018-00952).

2.17.2.2 Wetlands and Other Waters

As discussed in Section 2.16, there are 10 land cover types within the BSA, 5 of which are wetlands or non-wetland waters (Figure 2.16-1). The locations and dominant plant species of the five types of wetlands or non-wetland waters within the BSA are described in the following subsections.

Emergent Wetland

Emergent wetland occurs at the edges of open water in Alder Creek below valley foothill riparian woodland vegetation and below the OHWM of the creek. Dominant species in this community include white alder saplings, tall flatsedge (*Cyperus eragrostis*), Pacific rush (*Juncus effusus* ssp. *pacificus*), tule (*Schoenoplectus acutus*), California blackberry, curly dock (*Rumex crispus*), and floating water primrose (*Ludwigia peploides* ssp. *peploides*). The emergent wetlands in the BSA are potential waters of the United States and are waters of the State.

Seasonal Wetland

Seasonal wetlands are normally inundated during the winter and early spring but are dry by late spring. The seasonal wetlands in the BSA consist of created features that occur in the cloverleaf loops of the Hazel Avenue/US 50 interchange and are not naturally occurring features. These wetlands support few native plant species. Dominant species in the seasonal wetlands are nonnatives, including Mediterranean barley (*Hordeum marinum* var. *gussoneanum*), Italian ryegrass (*Festuca perennis*), and hyssop loosestrife (*Lythrum hyssopifolia*). The seasonal wetlands in the BSA are potential waters of the United States and are waters of the State.

Perennial Drainage

The BSA contains one perennial drainage, Alder Creek, which connects to Lake Natoma on the north side of US 50. Alder Creek flows under US 50 through a box culvert that is beneath an MSE wall. As a result of the MSE, the water in Alder Creek backs up at the south side of the US 50 crossing, creating a 150- to 200-foot-wide, pond-like area with mostly stagnant water. An emergent wetland fringe is present on both sides of the creek. The open-water portion of Alder Creek appears to qualify as an ‘other’ (i.e., non-wetland) water of the United States on the basis of its hydrologic connection to the American River, a traditional navigable water. Alder Creek is also a water of the State.

Ephemeral Drainage

A 10-foot-long segment of a 3.5-foot-wide ephemeral drainage crosses the interchange north of US 50. A 20-foot-long segment of a 1-foot-wide ephemeral drainage crosses the BSA east of Alder Creek. This drainage extends south from the edge of US 50 to Alder Creek. The drainages supports ruderal vegetation. The ephemeral drainages are potential non-wetland waters of the United States and are waters of the State.

Ditch

The BSA contains three ditches: two excavated drainage ditches that have been verified as waters of the United States, and an excavated roadside ditch that was delineated by ICF in 2016. The two excavated drainage ditches are in the BSA south of Folsom Boulevard. These are constructed features, but are included as waters of the United States in the verified delineation for the part of the BSA that was done for the Easton Place and Glenborough at Easton Project (U.S. Army Corps of Engineers 2012). The ditches support ruderal vegetation. The constructed roadside ditch extends from the east end of the BSA to Alder Creek. This ditch supports ruderal vegetation and receives runoff from US 50 and from the interchange loop at Folsom Boulevard. The ditch is approximately 3 feet wide. The constructed roadside ditch is a potential non-wetland water of the United States and is a water of the State.

2.17.3 Environmental Consequences

Impacts on wetlands and non-wetland waters are discussed in this section and are shown in Figures 2.16-2 and 2.16-3. Table 2.17-1 summarizes the impacts by alternative.

Table 2.17-1. Summary of Impacts on Wetlands and Non-Wetland Waters by Alternative

Wetland or Non-Wetland Waters Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06
Seasonal wetland	0.02	0.00	0.02	0.00	0.02	0.00
Subtotal wetlands	*0.08*	*0.06*	*0.08*	*0.06*	*0.08*	*0.06*
Perennial drainage	0.10	0.18	0.10	0.18	0.10	0.18
Ephemeral drainage	0.001	0.0003	0.001	0.0003	0.001	0.0003
Ditch	0.14	0.03	0.14	0.03	0.14	0.03
Subtotal non-wetland waters	*0.24*	*0.21*	*0.24*	*0.21*	*0.24*	*0.21*
Total all wetlands and non-wetland waters	**0.32**	**0.27**	**0.32**	**0.27**	**0.32**	**0.27**

2.17.3.1 Emergent Wetland and Seasonal Wetland

Direct Impacts

Construction of the proposed project would result in permanent and temporary impacts on emergent wetland and seasonal wetland natural communities. Project impacts were considered to be permanent if they would result in the placement of permanent fill in wetlands. Impacts were considered to be temporary if fill would be removed following completion of construction and temporarily disturbed portions of wetlands would be restored. Table 2.17-1 summarizes the direct impacts on wetland type by build alternative.

Indirect Impacts

Indirect impacts caused by sedimentation or modification of hydrology could occur in portions of emergent wetlands and seasonal wetlands that lie outside the project footprint.

Because emergent wetlands and seasonal wetlands are waters of the United States and are regulated by USACE, the loss of emergent wetland and seasonal wetland would be an adverse impact.

2.17.3.2 Perennial Drainage and Ephemeral Drainage

Direct Impacts

Construction of the proposed project would result in direct permanent and temporary impacts on perennial drainage habitat (i.e., non-emergent wetland areas) in Alder Creek and on ephemeral drainages. Impacts were considered to be permanent if they would result in the placement of permanent fill in Alder Creek or the ephemeral drainages associated with widening US 50 to accommodate an auxiliary lane. Impacts were considered to be temporary if fill would be removed following completion of construction and temporarily disturbed portions of Alder Creek and the ephemeral drainages would be restored. Temporary impacts may include modification of the bank or channel of Alder Creek and the ephemeral drainages, increased turbidity, and runoff of chemical substances. Table 2.17-4 summarizes the direct impacts on perennial drainage habitat in Alder Creek and on ephemeral drainages by build alternative.

Indirect Impacts

Indirect impacts from project construction on water quality, such as increased turbidity and chemical runoff, could occur in perennial drainage habitat outside of the project footprint and in the portion of the ephemeral drainage ED-2 located outside of the project footprint.

Impact Conclusion

Because perennial drainages and ephemeral drainages are non-wetland waters of the United States and waters of the State and are regulated by USACE, the loss of perennial drainage ephemeral drainages would be an adverse impact. Implementation of avoidance, minimization,

and mitigation measures would reduce potential impacts on the perennial drainage and ephemeral drainages.

2.17.3.3 Ditch

Direct Impacts

Impacts on the two excavated drainage ditches were mitigated as part of Easton Place and Glenborough at Easton Project; therefore, impacts on these two ditches are not discussed in this document. Figures 2.16-2 and 2.16-3 show the area that has been previously mitigated for Phase 2 of the Easton Project.

Construction of the proposed project would result in direct permanent and temporary impacts on the constructed roadside ditch located east of Alder Creek. Impacts were considered to be permanent if they would result in the placement of permanent fill in the ditch associated with widening of US 50 to accommodate an auxiliary lane. Impacts were considered to be temporary if fill would be removed following completion of construction and temporarily disturbed portions of the ditch would be restored. Temporary impacts may include modification of the ditch bank or channel, increased turbidity, and runoff of chemical substances. Table 2.17-1 summarizes the direct impacts on the constructed roadside ditch by build alternative.

Indirect Impacts

Indirect impacts from project construction on water quality, such as increased turbidity and chemical runoff, could occur in the portion of the constructed roadside ditch that is outside the project footprint.

Impact Conclusion

Because the roadside ditch located east of Alder Creek is verified and regulated by USACE as a non-wetland waters of the United States and it is a water of the State, the loss of ditch would be an adverse impact. Implementation of avoidance and minimization measures would reduce potential impacts on the ditch.

2.17.4 Avoidance, Minimization, and/or Mitigation Measures

2.17.4.1 Emergent Wetland and Seasonal Wetland

Sacramento County will comply with any regulatory requirements identified as part of the CWA Section 404 permit for the work that occurs in wetlands. Table 2.17-2 summarizes acreages of compensation required by alternative for permanent and temporary impacts on emergent wetlands. The actual affected acreage is pending Section 404 permit approval by USACE.

Implementation of the BMPs discussed in Section 2.9.4, *Avoidance, Minimization, and/or Mitigation Measures*, of the *Water Quality* section and the measures described below would mitigate the adverse direct and indirect impacts on emergent wetland and seasonal wetland.

Table 2.17-2. Compensation for Permanent Impacts on Wetlands by Alternative*

Habitat Type	Alternative 1	Alternative 1A	Alternative 2
	Compensation (acres)	Compensation (acres)	Compensation (acres)
Emergent wetland	0.12	0.12	0.12
Seasonal wetland	0.02	0.02	0.02

* Final compensatory acreages are pending the Section 404 permit requirements.

Avoidance and Minimization Measures

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Mitigation Measure

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The County will compensate for the permanent fill of waters of the United States/waters of the State (a direct impact associated with roadway and interchange construction) in two wetland habitat types, emergent wetland and seasonal wetland, and in two non-wetland waters type, perennial drainage and ephemeral drainage. The minimum wetland compensation ratio to ensure no net loss of wetland or drainage functions and values will be 1:1 (1 acre of habitat credit for every 1 acre of permanent impact). The final compensation ratio will be approved by USACE. The County will compensate for permanent loss of wetlands and non-wetland waters through one or more of the following mitigation options:

- Purchase habitat credits from a USACE-approved mitigation bank with service areas for Sacramento County, such as the Cosumnes Floodplain Mitigation Bank or Elsie Gridley Mitigation Bank, and provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be according to the fee schedule that is in effect at the time the

fee is paid. The mitigation will be approved by USACE and may be modified during the permitting process.

- Pay into the National Fish and Wildlife Foundation Sacramento District In-Lieu Fee Program.

Temporarily disturbed wetlands and non-wetland waters will be returned to preconstruction condition following construction. The County also will implement the conditions and requirements of State and Federal permits that will be obtained for the proposed project.

2.17.4.2 Perennial Drainage and Ephemeral Drainage

The County will comply with any regulatory requirements identified as part of the CWA Section 404 permit for the work that occurs in the perennial drainage and ephemeral drainages. Table 2.17-3 summarizes acreages of compensation required by alternative for permanent impacts on perennial drainage and ephemeral drainages. The actual affected acreage is pending the Section 404 permit approval by USACE.

Implementation of the BMPs discussed in Section 2.9.4 of the *Water Quality* section and the measures listed below would mitigate the adverse direct and indirect impacts on perennial drainage and ephemeral drainages.

Table 2.17-3. Compensation for Permanent and Temporary Impacts on Perennial Drainage and Ephemeral Drainage Habitat by Alternative*

Habitat Type	Alternative 1	Alternative 1A	Alternative 2
	Compensation (acres)	Compensation (acres)	Compensation (acres)
Perennial drainage	0.28	0.28	0.28
Ephemeral drainage	0.001	0.001	0.001

* Final compensatory acreages are pending the Section 404 permit requirements.

Avoidance and Minimization Measures

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Mitigation Measure

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Please see Section 2.17.4.1, *Emergent Wetland and Seasonal Wetland*, for the description of this measure.

2.17.4.3 Ditch

The County will comply with any regulatory requirements identified as part of the CWA Section 404 permit for the work that occurs in jurisdictional ditch habitat. The constructed roadside ditch is a feature created to intercept runoff from the adjacent roadway, and new road construction would replace the constructed roadside ditch to maintain the drainage function. Because the constructed roadside ditch provides minimal habitat for wildlife species and will be replaced, no additional compensatory mitigation would be necessary.

Implementation of the BMPs discussed in Section 2.9.4 of the *Water Quality* section and the measure listed below minimize the adverse direct and indirect impacts on the ditch.

Avoidance and Minimization Measure

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1 for the description of this measure.

2.17.5 Wetlands Only Practicable Finding

As stated in EO 11990, a Federal agency, such as FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

Because the interchange improvements must be constructed in the same location as the existing interchange and wetlands occur within this footprint, there are no practicable alternatives to the proposed project that could avoid impacts on wetlands.

The project and the avoidance and minimization measures include all practicable measures to minimize harm to wetlands and would be implemented as part of the project. In addition, the compensatory mitigation for loss of wetlands and non-wetland waters of the United State/Waters of the State would ensure no net loss of aquatic resource functions.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed project includes all practicable measures to minimize harm to wetlands that may result from such use.

2.17.6 References Cited

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Wetlands Delineation Manual. (Technical Report Y-87-1.) Vicksburg, MS: U.S. Army Waterways Experiment Station. Available: http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf.

ICF. 2018. *Aquatic Resources Delineation.* Hazel Avenue/U.S. 50 Interchange Project. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. Sacramento, CA. Prepared for Sacramento County Office of Planning and Environmental Review. October 2018.

Lichvar, R. W. and S. M. McColley. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. ERDC/CRREL TR-08-12. U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory. Wetland Regulatory Assistance Program. August.

U.S. Army Corps of Engineers. 2005. *Ordinary High Water Mark Identification.* Regulatory Guidance Letter No. 05-05. December 7. (Letter 05-05.) Available: http://www.usace.army.mil/cw/cecwo/reg/rgls/rgl05-05.pdf.

U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. *(Version 2.0)*. ed. J. S. Wakeley, R. W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Available: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/trel08-28.pdf.

U.S. Army Corps of Engineers. 2012. Department of the Army Permit SPK-2004-00515. Issued to Easton Development Company, June 15, 2012.

U.S. Army Corps of Engineers. 2016a. Minimum Standards for Acceptance of Aquatic Resources Delineation Reports, with Template. January. Available: http://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/Minimum_Standards_for_Delineation_with_Template-final.pdf. Accessed March 2016.

U.S. Army Corps of Engineers. 2016b. Updated *Map and Drawing Standards for the South Pacific Division Regulatory Program*. February 10. Available: http://www.spd.usace.army.mil/Portals/13/docs/regulatory/standards/MapStand020816.pdf.

2.18 Plant Species

2.18.1 Regulatory Setting

USFWS and CDFW have regulatory responsibility for the protection of special-status plant species. *Special-status species* are selected for protection because they are rare and/or subject to population and habitat declines. *Special status* is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under FESA and/or the California Endangered Species Act (CESA). Please see Section 2.20, *Threatened and Endangered Species*, for detailed information about these species.

This section of the document discusses all the other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at CFGC Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at CFGC Sections 1900–1913, and CEQA, PRC Sections 2100–21177.

2.18.2 Affected Environment

This section is based on the *Natural Environment Study Report* (California Department of Transportation 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the proposed project. This section presents findings of this report as it relates to plant species within the BSA.

2.18.2.1 Methods

An ICF botanist reviewed CNPS's online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2016), the CNDDB (California Department of Fish and Wildlife 2016), and USFWS's list of endangered and threatened species that may occur in or be affected by the proposed project (U.S. Fish and Wildlife Service 2016) to develop a list of special-status plants that could be present in the project region. Species from the lists were considered if they were known to occur in the project region (i.e., within approximately 5 miles of the BSA) or had potential habitat in the BSA and the BSA was within the species' range. For preparation of this document, an updated USFWS (2019) species list was obtained from the Information for Planning and Consultation (IPaC) website and the CNPS Inventory (California Native Plant Society 2018) and CNDDB (California Department of Fish and Wildlife 2018) were reviewed and are included in Appendix G, *Agency Letters*.

An ICF botanist/wetland ecologist conducted botanical surveys in the BSA on April 6 and May 31, 2016. The surveys coincided with the identification periods of special-status plants identified as having potential to occur in the project region. The botanist/wetland walked or visually surveyed all of the BSA and compiled a list of all plant species observed (California Department of Transportation 2018; provided in Volume 3).

2.18.2.2 Typical Plant Species in the BSA

Dominant plant species found in the six land cover types within the BSA that are not wetlands or other waters are described in Section 2.16, *Natural Communities*. Dominant plant species found in the five land cover types that are wetlands or other waters of the United States are described in Section 2.17, *Wetlands and Other Waters*. A complete list of the plant species observed in the BSA is provided in Volume 3 in the *Natural Environmental Study Report* (California Department of Transportation 2018).

2.18.2.3 Protected Trees

The BSA contains oaks and other native trees in the Fremont cottonwood-oak woodland and valley foothill riparian woodland, as well as native trees that occur in landscaped areas, maintained vegetation/urban oaks, and ruderal. Native trees, oak woodlands, and riparian areas are protected under the County's General Plan policies. Approximately 144 mature interior live and valley oak trees occur in the BSA and outside of Fremont cottonwood-oak woodland and valley foothill riparian woodland communities. Impacts on these trees are discussed in Chapter 3, *California Environmental Quality Act Evaluation*, Section 3.15, *Biological Resources*, *Impact BIO-14: The removal of native and/or landmark trees*.

2.18.2.4 Special-Status Plants

Thirteen special-status plant species that are not listed or proposed for listing under FESA or CESA were identified as occurring in the BSA vicinity based on the CNDDB search results, the CNPS Inventory, and the USFWS list for the project region (Appendix G) (Table 2.18-1). None of these special-status plants have been recorded within the BSA. Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) was observed approximately 0.25 mile north of the BSA in the Folsom Lake Recreation Area. A non-special-status clarkia species, elegant clarkia, was observed growing on a slope along the south edge of US 50 east of the Alder Creek crossing during the May 2016 surveys in the BSA.

Five of the 13 special-status plant species would not be expected to occur in the BSA because suitable soils for these species have not been mapped in the BSA (i.e., serpentine, gabbro, and clay soils). Five of the 13 special-status species would not be expected, because there is no suitable habitat present in the BSA (i.e., chaparral and vernal pool). The roadside slopes on the south side of US 50, ditches, seasonal wetland, and emergent wetland natural communities in the BSA were determined during prefield investigation to contain potential habitat for the remaining three special-status plant species—Brandegee's clarkia, legenere (*Legenere limosa*), and Sanford's arrowhead (*Sagittaria sanfordii*)—that are known to occur within 5 miles of the BSA.

Although potential habitats are present, the natural communities in the BSA have been substantially altered from historical conditions and were determined to have a low likelihood of supporting special-status plants. For example, seasonal wetlands in the BSA provide very marginal habitat for special-status plants because they consist of excavated features that occur in the freeway interchange, rather than as naturally occurring features.

No special-status plants were observed during the April and May 2016 botanical surveys, which were conducted during the reported identification periods of the 13 special-status plant species that are not listed or proposed for listing under FESA or CESA and are known to occur in the project region and/or identified as having potential habitat in the BSA. Therefore, special-status plants are absent from the BSA.

Table 2.18-1. Special-Status Plant Species with Potential to Occur in the Vicinity of the Project Biological Study Area

Common and *Scientific Name*	Legal Status Federal/State/CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Brewer's calandrinia *Calandrinia breweri*	–/–/4.2	Widely scattered throughout California: Coast Ranges, central Sierra Nevada Foothills, Western Transverse Ranges. On sandy or loamy, disturbed sites and burns in chaparral and coastal scrub; 33–4,000 feet	(January) March–June	Habitat Absent	No suitable habitat in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Red Hills soaproot *Chlorogalum grandiflorum*	–/–/1B.2	Northern and central Sierra Nevada Foothills: Amador, Butte, Calaveras, El Dorado, Placer, and Tuolumne Counties. Serpentine or gabbro soils in chaparral, lower montane coniferous forest, and cismontane woodland; 800–4,050 feet.	May–June	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	–/–/4.2	Northern Sierra Nevada Foothills from Butte to El Dorado Counties. Chaparral, cismontane woodland, lower coniferous forest, often on roadcuts; 240–3,000 feet.	May–July	Habitat Present	Suitable habitat along south edge of US 50. Nearest recorded occurrence is ~0.25 mile north of the BSA in the Folsom Lake Recreation Area. Not observed during April or May 2016 surveys.
Bisbee Peak rush-rose *Crocanthemum suffrutescens*	–/–/3.2	Amador, Calaveras, El Dorado, Mariposa, Sacramento, and Tuolumne Counties. Chaparral openings, often on serpentine, gabbro, or Ione soils; 150–2,750 feet.	April–August	Habitat Absent	No suitable soils or plant communities in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Dwarf downingia *Downingia pusilla*	–/–/2B.2	Central Valley. Vernal pools and mesic valley and foothill grasslands; below 1,450 feet.	March–May	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is ~1.25 miles north of the BSA at Phoenix Park.
Jepson's woolly sunflower *Eriophyllum jepsonii*	–/–/4.3	Alameda, Contra Costa, Kern, Monterey, San Benito, Santa Clara, San Luis Obispo, Stanislaus, and Ventura Counties. Chaparral, cismontane woodland, coastal scrub, sometimes serpentinite, on dry, rocky slopes; 650-3,360 feet	April-June	Habitat Absent	No suitable soils in the BSA. BSA is outside of the species known elevational range. Nearest recorded occurrence is more than 5 miles outside of the BSA.

Table 2.18-1. Continued

Common and *Scientific Name*	Legal Status Federal/State/CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Tuolumne button-celery *Eryngium pinnatisectum*	–/–/1B.2	Amador, Calaveras, Sacramento, and Tuolumne Counties. Vernal pools and moist areas in cismontane woodland and lower montane coniferous forest; 230–3,000 feet.	May–August	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Stinkbells *Fritillaria agrestis*	–/–/4.2	Alameda, Contra Costa, Fresno, Kern, Mendocino, Monterey, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, San Luis Obispo, San Mateo, Stanislaus, and Tuolumne Counties. Chaparral, cismontane woodland, pinyon-juniper woodland, valley and foothill grassland, on clay, sometimes serpentinite substrate; 30–5,100 feet.	March–June	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Eastern Sacramento Valley, northeastern San Joaquin Valley with occurrences in Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba Counties. Wet areas in valley and foothill grassland, vernal pool margins; 100–750 feet.	March–May	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.
Legenere *Legenere limosa*	–/–/1B.1	Primarily in the lower Sacramento Valley, also from north Coast Ranges, northern San Joaquin Valley and the Santa Cruz Mountains. Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and river banks; below 2,890 feet.	April–June	Habitat Present	Marginal habitat present in seasonal wetland and ditch habitats. Nearest recorded occurrences are ~4 miles south of the BSA. Not observed during April or May 2016 surveys.
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	–/–/1B.1	Central Valley in Amador, Calaveras, Merced, Placer, and Sacramento Counties. Edges of vernal pools; 65–1,080 feet.	April–May	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is ~1.25 miles north of the BSA at Phoenix Field Ecological Reserve.

Table 2.18-1. Continued

Common and *Scientific Name*	Legal Status Federal/State/CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Scattered locations in Central Valley and Coast Ranges. Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 2,130 feet.	May–October	Habitat Present	Potential habitat present in emergent wetland at edges of Alder Creek. Nearest recorded occurrence is ~3.9 miles southwest of the BSA. Not observed during April or May 2016 surveys.
El Dorado County mule ears *Wyethia reticulata*	–/–/1B.2	El Dorado and Yuba Counties. On clay or gabbro soils in chaparral, cismontane woodland, and lower montane coniferous forest; 600–2,060 feet.	April–August	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA.

BSA = biological study area

[a] Status explanations:

Federal

– = No listing status

State

– = No listing status

California Rare Plant Rank

1B = List 1B species: rare, threatened, or endangered in California and elsewhere
2B = List 2 species: rare, threatened, or endangered in California but more common elsewhere
3 = List 3 species: more information is needed about this plant
4 = List 4 species: limited distribution; species on a watch list
.1 = Seriously endangered in California (over 80% of occurrences threatened—high degree and immediacy of threat)
.2 = Fairly endangered in California (20-80% occurrences threatened)

2.18.3 Environmental Consequences

2.18.3.1 Special-Status Plants

Because no special-status plants were observed within the BSA during appropriately-timed botanical surveys, special-status plants are considered absent from the BSA. Therefore, there would be no impacts on special-status plants as a result of the proposed project.

2.18.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.18.5 References Cited

California Department of Fish and Wildlife. 2016. California Natural Diversity Database, RareFind 5. (February 28, 2016 update). Sacramento, CA. Search of 7.5-minute Buffalo Creek, Carmichael, Citrus Heights, Clarksville, Folsom, and Folsom SE quadrangles. Sacramento CA. Accessed: April 4, 2016.

California Department of Fish and Wildlife. 2018. California Natural Diversity Database, RareFind 5. (September 30, 2018 update). Sacramento, CA. Search of 7.5-minute Buffalo Creek, Carmichael, Citrus Heights, Clarksville, Folsom, and Folsom SE quadrangles. Sacramento CA. Accessed: October 16, 2018.

California Department of Transportation. 2018. *Natural Environment Study. Hazel Avenue/ U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

California Native Plant Society. 2016. Inventory of Rare and Endangered Plants (Online Edition, Version v7-16mar3-5-16). Search of the Folsom, Rocklin, Pilot Hill, Citrus Heights, Carmichael, Roseville, Clarksville, Buffalo Creek, and Folsom SE USGS 7.5-minute Quadrangles. Available: http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. Accessed: March 23, 2016.

California Native Plant Society. 2018. Inventory of Rare and Endangered Plants (Online Edition, VersionV8-03 0.45). Search of the Folsom, Citrus Heights, Carmichael, Clarksville, Buffalo Creek, and Folsom SE USGS 7.5-minute Quadrangles. Available: http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. Accessed: October 17, 2018.

U.S. Fish and Wildlife Service. 2016. List of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated April 4, 2016. Sacramento, CA.

U.S. Fish and Wildlife Service. 2019. Updated list of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated July 23, 2019. Sacramento, CA.

2.19 Animal Species

2.19.1 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 the Threatened and Endangered Species Section 2.20, *Threatened and Endangered Species* 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 (MBTA)
- 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

Local regulations that apply to animals are discussed in the Sacramento County General Plan. Goals and policies in the Sacramento County General Plan Conservation Element that either directly or indirectly apply to animals include allowing no net loss of wetlands, riparian woodlands, and oak woodlands; mitigating for loss or modification of these and other native vegetation and special-status species habitats; discouraging introduction of invasive nonnative aquatic species; retaining wetland and riparian vegetation whenever possible in channel modifications; protecting, enhancing, and restoring riparian, in-channel and shaded riverine aquatic habitat; mitigating for loss of native trees for road expansion consistent with other General Plan policies protecting and preserving native trees in riparian areas that are used by Swainson's hawk; and ensuring no net loss of oak and riparian tree canopy coverage by preservation or mitigation on-site, off-site, or through payment into the County's Tree Preservation Fund or another appropriate fund. Species that are protected only under local regulations are discussed in Chapter 3.

2.19.2 Affected Environment

This section is based on the *Natural Environment Study Report* that was prepared for this project and is included as an appendix in Volume 3 of this EA/EIR. This section presents findings of this report as it relates to animal species within the BSA.

2.19.2.1 Methods

As described in Section 2.16, *Natural Communities*, the BSA was defined as the project footprint (Figure 2.16-1, Impacts on Biological Resources – Land Cover and Elderberry Shrubs, Alternative 2).

An ICF wildlife biologist reviewed the CNDDB (California Department of Fish and Wildlife 2016) and USFWS's list of endangered and threatened species that may occur in or be affected by the proposed project (U.S. Fish and Wildlife Service 2016) to develop a list of special-status animals that could be present in the project region. Species from the lists were considered if they were known to occur in the project region (i.e., within approximately 5 miles of the BSA) or had potential habitat in the BSA and the BSA was within the species' range. For preparation of this document, an updated USFWS (2019) species list was obtained from the IPaC website and the CNDDB (California Department of Fish and Wildlife 2018) were reviewed and are included in Appendix G, *Agency Letters*.

ICF wildlife biologist Jennifer Haire conducted a reconnaissance-level field survey of the BSA on April 6 and May 31, 2016. This survey focused on evaluating natural communities in the BSA and determining their suitability for special-status animal species. Ms. Haire walked or visually surveyed all of the BSA, making notes on the types and suitability of habitat present, and recording any wildlife species observed (California Department of Transportation 2018; provided in Volume 3).

2.19.2.2 Typical Animal Species Associated with Land Cover Types

As discussed in Section 2.16, there are 11 land cover types within the BSA (Figure 2.16-1). The typical animals species associated with each land cover type are described below.

Fremont Cottonwood-Oak Woodland

Oak woodlands are important habitats because of their high value to wildlife in the form of nesting sites, cover, and food (Mayer and Laudenslayer 1988:80). Birds associated with oak woodlands include acorn woodpecker (*Melanerpes formicivorus*), western scrub jay (*Aphelocoma californica)*, yellow-billed magpie (*Pica nuttalli*), and many warblers and flycatchers (Zeiner et al. 1990a:376, 452, 460). Cavities in oak trees are important nesting sites for acorn woodpecker, oak titmouse (*Baeolophus inornatus*), Bewick's wren (*Thryomanes bewickii*), and western bluebird (*Sialia mexicana*) (California Partners in Flight 2002:24). Oak woodlands provide nesting sites and foraging habitat for raptors, such as red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), and great horned owls (*Bubo virginianus*) (Zeiner et al. 1990a:132, 136, 326; California Partners in Flight 2002:24). Mammals associated with oak woodlands include western gray squirrel (*Sciurus griseus*), pallid bat (*Antrozous*

pallidus), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), and gray fox (*Urocyon cinereoargenteus*) (Zeiner et al. 1990b:70, 146, 324, 352). Acorns are an important food source for species such as California quail (*Callipepla californica*), wild turkey (*Meleagris gallopavo*), western gray squirrel, and mule deer (Mayer and Laudenslayer 1988:79).

Planted Oak Woodland

Wildlife use of planted oak woodland would be similar to use for oak woodland; however, the number and diversity of species would be lower because of the location of this land cover type in the US 50 on- and off-ramps.

Valley Foothill Riparian Woodland

When vegetation is diverse and well developed, riparian woodland provides high-value habitat for wildlife, including several special-status species. Riparian woodland habitat provides food, water, and migration and dispersal corridors, as well as escape, nesting, and thermal cover for many wildlife species (Mayer and Laudenslayer 1988:86). Invertebrates, amphibians, and aquatic reptiles live in aquatic and adjacent upland habitats. Raptors, herons, egrets, and other birds nest in the upper canopy. A variety of songbirds use the shrub canopy, and cavity-nesting birds, such as Nuttall's woodpecker (*Picoides nuttallii*) and oak titmouse, occupy dying trees and snags (Zeiner et al. 1990a:388, 472). Several mammals including raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and striped skunk (*Mephitis mephitis*) are common in riparian habitats (Zeiner et al. 1990b:2, 298, 316).

Emergent Wetland

Emergent wetlands provide food, cover, and water for a variety of amphibians, reptiles, birds, and mammals (Mayer and Laudenslayer 1988:124). Wildlife species that utilize freshwater marsh habitat include Sierran treefrog (*Pseudacris sierra*), valley gartersnake (*Thamnophis sirtalis fitchi*) (Zeiner et al. 1988:78, 216), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), Virginia rail (*Rallus limicola*), and red-winged blackbird (*Agelaius phoeniceus*) (Zeiner et al. 1990a:32, 34, 176, 638).

Seasonal Wetland

Seasonal wetlands provide unique habitat for a variety of aquatic invertebrates, which provide food for other wildlife species including great blue heron, killdeer (*Charadrius vociferus*), American avocet (*Recurvirostra americana*), black-necked stilt (*Himantopus mexicanus*) and greater yellowlegs (*Tringa melanoleuca*) (Zeiner et al. 1990a:32, 192, 200, 202). Amphibians such as Sierran treefrog, western spadefoot (*Spea hammondii*), and California toad (*Anaxyrus boreas halophilus*) use seasonal wetlands for breeding and feeding (Zeiner et al. 1988:56, 64, 78).

Perennial Drainage

Wildlife use of this land cover type is dependent on the extent of emergent and submergent vegetation, and adjacent streamside (riparian) vegetation. Drainages with well-vegetated areas provide food, water, and migration and dispersal corridors, as well as escape, nesting and thermal cover for many wildlife species (Mayer and Laudenslayer 1988). Wildlife species associated with stream and riparian habitats include western toad (*Bufo boreas*), California newt (*Taricha torosa*), black phoebe (*Sayornis nigricans*), Anna's hummingbird (*Calypte anna*), great egret, belted kingfisher (*Megaceryle alcyon*), raccoon, and striped skunk (Zeiner et al. 1990a, 1990b). Many species of insectivorous birds, including white-throated swift (*Aeronautes saxatalis*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), black phoebe, and ash-throated flycatcher (*Myiarchus cinerascens*) catch their prey over open water.

Ephemeral Drainage

Ephemeral drainages provide temporary sources of water for several common wildlife species. The channel banks may be used by California ground squirrels (*Spermophilus beecheyi*), western fence lizards (*Sceloporus occidentalis*), and gopher snakes (*Pituophis melanoleucus*).

Ditch

Wildlife use of ditches is dependent on several factors, including the extent of vegetation within and along the ditch, whether or not the ditch is concrete-lined, the period of time that water remains within the ditch, and the velocity of flow. Concrete-lined ditches or those with high flow velocities typically have low value for wildlife, although large ditches/canals with slower flows can be used by waterfowl. Ditches with vegetated channels and banks and adequate duration of water can provide food, water, cover, and dispersal corridors for various wildlife species, such as Sierran treefrog, California newt, great egret, raccoon, and striped skunk. Ditch banks could be used by California ground squirrel and western fence lizard.

Ruderal

Because landscaped and ruderal areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife. Wildlife species commonly found in urban areas are also found in ruderal and disturbed areas. Such species may include, Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), yellow-billed magpie (*Pica nuttalli*), mourning dove (*Zenaida macroura*), Virginia opossum (*Didelphus virginiana*), and striped skunk (*Mephitis mephitis*) (Zeiner et al. 1990a: 310, 460, 646, 668, 682; Zeiner et al.1990b: 2, 316). American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicesis*), frequently forage in this habitat (Zeiner et al. 1990a; 136, 144).

Developed and Landscaped

Developed and landscaped land cover types are discussed together because they are similar from a wildlife habitat value standpoint. Because landscaped areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife. Wildlife species described

above for ruderal areas would also occur in landscaped and developed areas. Additionally, bats may also roost in or on, and some birds may nest in or on, built structures.

2.19.2.3 Special-Status Animals

Animals that are not listed or proposed for listing under the FESA or CESA that were identified from the review of the CNDDB and USFWS species lists as potentially occurring in the project vicinity are listed in Table 2.19-1. This table contains information about the species' habitats and potential for occurrence in the BSA. Animals that are not listed or proposed for listing under the ESA or CESA that have the potential to occur in the BSA and be affected by the proposed project are listed and discussed below.

- Midvalley fairy shrimp (*Branchinecta mesovallensis*)
- Western pond turtle (*Actinemys marmorata*)
- White-tailed kite (*Elanus leucurus*)
- Yellow-breasted chat (*Icteria virens*)
- Song sparrow (Modesto population; *Melospiza melodia*)
- Pallid bat
- Western red bat (*Lasiurus blossevillii*)

Table 2.19-1. Special-Status Animal Species that are not Listed or Proposed for Listing Under FESA or CESA with Potential to Occur in the Vicinity of the Project Biological Study Area

Common and Scientific Name	Status (State/Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Invertebrates				
Midvalley fairy shrimp *Branchinecta mesovallensis*	–/–	Occurs in Sacramento, Solano, Merced, Madera, San Joaquin, Fresno, and Contra Costa Counties. Has been found in small, short-lived vernal pools and grass-bottomed swales.	Present	Seasonal wetlands on Aerojet property provide potentially suitable habitat.
Hairy water flea *Dumontia oregonensis*	–/–	In California, only found at Mather Field. Also occurs at three pools in Medford, Oregon. Occurs in vernal pools.	Absent	No vernal pools in the BSA; unlikely to be associated with seasonal wetlands in the BSA because of disturbed nature of area.
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	–/–	San Francisco Bay Area including San Mateo, Sonoma, Alameda, and Marin Counties; Also in Solano, Contra Costa, and Sacramento Counties. Occurs in playa-like vernal pools and ponds.	Absent	There are no playa-like vernal pools or ponds in the BSA.
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	–/–	Tehama, Placer, El Dorado, Sacramento, Yolo, Lake, Sonoma, Solano, San Joaquin, and Contra Costa Counties. Upland areas near vernal pools.	Absent	No vernal pools in BSA; unlikely to be associated with seasonal wetlands in the BSA because of disturbed nature of area.
An andrenid bee *Andrena subapasta*	–/–	Range information not known. Nests in uplands near vernal pools. Collects pollen primarily from *Arenaria californica* but also *Orthocarpus erianthus* and *Lasthenia* species.	Absent	No vernal pools in BSA; unlikely to be associated with seasonal wetlands in the BSA because of disturbed nature of area.
Amphibians				
Western spadefoot *Spea hammondii*	SSC/–	Occurs in the Sierra Nevada foothills, Central Valley, Coast Ranges, and coastal counties in Southern California; west of Sierran-desert range axis. Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands, also temporary rain pools.	Absent	There are no appropriate streams, ponds, or vernal pools of adequate size and depth to support this species in or adjacent to the BSA. The majority of the project area is between freeway and dense development.

Table 2.19-1. Continued

Common and Scientific Name	Status (State/Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Reptiles				
Western pond turtle *Actinemys marmorata*	SSC/–	Occurs throughout California west of the Sierra-Cascade crest. Found from sea level to 6,000 feet. Does not occur in desert regions except for along the Mojave River and its tributaries. Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Present	Species observed in Alder Creek during the field survey. Alder Creek provides suitable aquatic habitat and adjacent grassland areas provide suitable upland habitat.
Birds				
Golden eagle *Aquila chrysaetos*	FP/P	Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley; ranges from sea level to around 11,500 feet. Rolling foothills, mountain ranges, sage-juniper flats, and desert. Nests on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grassland, chaparral, and oak woodland with plentiful medium and large-sized mammals.	Absent	Could occasionally occur in the BSA but would not nest there.
White-tailed kite *Elanus leucurus*	FP/–	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border. Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Suitable nesting and foraging habitat present in the BSA.
Western burrowing owl *Athene cunicularia hypugea*	SSC/–	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast. Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows.	Absent	Annual grasslands are either located adjacent to the freeway or are tall and dense on the Aerojet property and no burrows were observed in either area.
Yellow-breasted chat *Icteria virens*	SSC/–	Summer resident and migrant in coastal California and Sierra Nevada foothills, east of the Cascades in northern California, along the Colorado river, and very locally inland in Southern California; numerous in northwestern region of the State. Nests in dense riparian habitats with a well-developed shrub layer and an open canopy, dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines.	Present	Valley foothill riparian provides suitable habitat; no CNDDB records but eBird record within 1 mile of the BSA (eBird 2016).

Table 2.19-1. Continued

Common and Scientific Name	Status (State/Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Grasshopper sparrow *Ammodramus savannarum*	SSC/–	Central Valley and foothills, west slope of Sierra Nevada, Coast Ranges, and coastal areas from Del Norte County south to San Diego County; rare breeder in the Shasta Valley area of Siskiyou County. Occurs in short- to medium-height dry grasslands with scattered shrubs in the Central Valley and foothills and south coast; found prairies and pastures scattered in largely forested areas along north coast. Nests on ground in slight depression.	Absent	Annual grasslands are either located adjacent to the freeway or are tall and dense on the Aerojet property and would not likely provide nesting habitat.
Song sparrow (Modesto population) *Melospiza melodia*	SSC/–	Resides in the north-central portion of the Central Valley, with the highest densities in the Butte Sink area of the Sacramento Valley and in the Sacramento–San Joaquin River Delta. Associated with freshwater marshes dominated by tules and cattails and riparian willow thickets. Also nests in riparian forests with blackberry understory and along vegetated irrigation canals and levees.	Present	Emergent wetland and valley foothill riparian provides suitable habitat; no CNDDB records but numerous eBird records within 1 mile of the BSA (eBird 2016).

Table 2.19-1. Continued

Common and Scientific Name	Status (State/Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Mammals				
Pallid bat *Antrozous pallidus*	SSC/–	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations. Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in Northern California and oak woodland, grassland, and desert scrub in Southern California. Relies heavily on trees for roosts.	Present	Could roost in valley foothill riparian, oak woodland, and other trees in the BSA.
Western red bat *Lasiurus blossevillii*	SSC/–	Occurs throughout much of California at lower elevations. Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the Central Valley.	Present	Could roost in valley foothill riparian, oak woodland, and other trees in the BSA.
North American porcupine *Erethizon dorsatum*	–/–	Occurs in forests in the Sierra Nevada, Cascade, Coast, and Transverse Ranges. Found in coniferous forest and mixed woodlands. Den in hollow trees or rocky areas.	Absent	Could occasionally occur in the Fremont cottonwood-oak woodland portion of the BSA but denning habitat not present.
American badger *Taxidea taxus*	SSC/–	Throughout California, except for the humid coastal forests of northwestern California in Del Norte and the northwestern Humboldt Counties. Occurs in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, and mountain meadows near timberline; they require sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	Absent	Annual grasslands are either located adjacent to the freeway or are tall and dense on the Aerojet property and no burrows were observed in either area.

[a] Status explanations:

State

FP = fully protected under the California Fish and Game Code
SSC = species of special concern in California
– = no listing.

Other

P = protected under the Bald and Golden Eagle Protection Act

Midvalley Fairy Shrimp

Midvalley fairy shrimp is not listed or a species of special concern, but is considered rare because of its limited range within the center of the Central Valley (U.S. Fish and Wildlife Service 2005). Midvalley fairy shrimp has been found in Sacramento County around the city of Sacramento and Mather Regional Park, in Merced County in the vicinity of the Virginia Smith Trust property, and in San Joaquin, Madera, and Fresno Counties in isolated locations (U.S. Fish and Wildlife Service 2005). The species has been found in shallow, short-lived vernal pools and swales dominated by wetland grasses and ranging from 17 to 2,174 square feet in area and averaging less than 4 inches in depth (Helm 1998:131, 133, 137). Midvalley fairy shrimp has been observed to reach maturity in as little as 8 days and reproduction was observed in as few as 16 days after hatching (Helm 1998:133). It appears that midvalley fairy shrimp can tolerate fairly high water temperatures (e.g., 89.6ºF) (Helm 1998:131). Midvalley fairy shrimp occasionally co-occurs with vernal pool fairy shrimp (Eriksen and Belk 1999:91).

Surveys for midvalley fairy shrimp were not conducted for the proposed project. There is one record for midvalley fairy shrimp within 5 miles of the project. There are four potential seasonal wetlands in the vernal pool branchiopod indirect effects assessment area (within 250 feet of the BSA) that provide potential habitat for midvalley fairy shrimp (Figure 2.16-1). Because these four potential seasonal wetlands are outside the BSA, they were not included in the delineation conducted by ICF for the proposed project in 2016. ECORP biologists conducted 2 years of wet season surveys (2008–2010) for vernal pool branchiopods for the Glenborough at Easton and Easton Place Project; one of the four potential seasonal wetlands in the indirect effects assessment area was surveyed by ECORP.

The two seasonal wetlands between the Hazel Avenue/US 50 westbound on-ramp and off-ramp are located in an area where the surface was likely removed/disturbed during construction of the interchange. Additionally, the repeated drying and filling from road runoff would likely deplete the cyst bank, if present in these wetlands. Therefore, these two wetlands are not considered suitable habitat for midvalley fairy shrimp.

Western Pond Turtle

Western pond turtle is a California species of special concern. In California, the species' range is discontinuously distributed throughout the State west of the Cascade-Sierran crest (Jennings and Hayes 1994:99). Aquatic habitats used by western pond turtles include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas (Stebbins 2003:250). Western pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris (Jennings et al. 1992:11). Western pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994:98). Turtles have been observed overwintering several hundred meters from aquatic habitat. In the southern portion of the range and along the central coast, western pond turtles are active year-round. In the remainder of their range, western pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992:11).

Focused surveys for western pond turtle were not conducted; however, five western pond turtles were observed in the ponded portion of Alder Creek during the April field survey. One dead turtle was also observed along the US 50 road shoulder by a WRGCO biologist that was doing a hydrology survey on the same day. There are five records for western pond turtle within 5 miles of the BSA (California Department of Fish and Wildlife 2018). The closest record is for an occurrence in the American River, approximately 0.5 mile from the BSA. Alder Creek in the BSA provides suitable aquatic habitat for western pond turtle. The valley foothill riparian woodland and ruderal areas adjacent to the creek provide suitable upland habitat for western pond turtle (Figure 2.16-1, Sheets 4 and 5).

White-Tailed Kite

White-tailed kite is fully protected under the CFGC. White-tailed kites generally inhabit low-elevation grassland, savannah, oak woodland, wetland, agricultural, and riparian habitats. Some large shrubs or trees are required for nesting and for communal roosting sites. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands (Dunk 1995). White-tailed kites make nests of loosely piled sticks and twigs, lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February through October and peaks between May and August. White-tailed kites forage in undisturbed, open grassland, meadows, farmland, and emergent wetlands (Zeiner et al. 1990a:120)

Focused surveys for white-tailed kite were not conducted. There are eight records for white-tailed kite nests within 10 miles of the BSA (California Department of Fish and Wildlife 2018). The closest record is from 1991 for a nest approximately 0.4 mile southeast of the BSA. White-tailed kite could nest in valley foothill riparian woodland, oak woodland, and in individual trees in the BSA (Figure 2.19-1).

Yellow-Breasted Chat

Yellow-breasted chat is a California species of special concern. Yellow-breasted chat occurs in the northern Sacramento Valley in scattered areas, Cascade Range, low to mid-elevations in the Sierra Nevada, northwestern California, most of the central and southern coasts, and scattered locations in the southern deserts of California. Yellow-breasted chats nest regularly along low- and mid-elevation streams in the Sierra Nevada. They occur in early successional riparian habitats with a well-developed shrub layer and an open canopy. Nesting habitat is usually restricted to the narrow border of streams, creeks, sloughs, and rivers. Nests are built in Himalayan blackberry, wild grape (*Vitis* spp.), willow, and other plants that form dense thickets and tangles. Breeding occurs from late April through early August. (Shuford and Gardali 2008:351–355.)

Focused surveys for yellow-breasted chat were not conducted. There are no CNDDB records for nesting yellow-breasted chats within 5 miles of the BSA; however, there is one eBird (a website that documents bird distribution) record for an individual observed within 1 mile of the BSA (eBird 2016). The valley foothill riparian woodland along Alder Creek in and near the BSA provides suitable nesting habitat for yellow-breasted chat (Figure 2.19-1).

Song Sparrow (Modesto Population)

The Modesto population of song sparrow is a California species of special concern. This population of song sparrow occurs primarily at elevations below 200 feet above mean sea level from Colusa County south through the Sacramento-San Joaquin River Delta (except for Suisun Marsh) to Stanislaus County. Song sparrows are associated with freshwater marsh that is dominated by tules and cattails, as well as riparian willow thickets. They may also nest in valley oak riparian forests with blackberry understory, along vegetated irrigation canals and levees, and in recently planted oak restoration sites. Song sparrows require moderately dense vegetation that provides cover for nest sites, a source of standing or running water, semi-open canopies to allow light penetration, and exposed ground or leaf litter for foraging. (Shuford and Gardali 2008:400–402.) The breeding season for the Modesto population of song sparrow is late March to early August (Gardali no date:1)

Focused surveys for song sparrow were not conducted. There are no CNDDB records for nesting song sparrows within 5 miles of the BSA; however, there are numerous eBird records for individuals observed within 1 mile of the BSA (eBird 2016). The valley foothill riparian woodland and emergent wetland along Alder Creek in and near the BSA provide suitable nesting habitat for song sparrow (Figure 2.19-1).

Special-Status Bats and Roosting Colonies of Non-Special-Status Bats

Two special-status bat species, pallid bat and western red bat, were identified as potentially occurring in the BSA. Pallid bat and western red bat are California species of concern and are considered high-priority species in California by the Western Bat Working Group (2015). This section describes these species.

Pallid bat is found throughout most of California at low to middle elevations (6,000 feet), in a variety of habitats including desert, brushy terrain, coniferous forest, and non-coniferous woodlands. Daytime roost sites include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are commonly under bridges but are also in caves and mines (Brown and Pierson 1996). Hibernation may occur during late November through March. Pallid bats breed from late October through February (Zeiner et al. 1990b:70) and one or two young are born in May or June (Brown and Pierson 1996).

Western red bat is found throughout much of California at lower elevations, primarily in riparian and wooded habitats but also occurs seasonally in urban areas (Brown and Pierson 1996). Western red bats roost in the foliage of trees that are often located on the edge of habitats adjacent to streams, fields, or urban areas. This species breeds in August and September and young are born in May through July (Zeiner et al. 1990b:60).

CDFW also requires that substantial roost colonies of non-special-status bats (such as Mexican free-tailed bat [*Tadarida brasiliensis*]) be protected from disturbance, especially during the breeding and hibernation seasons.

Focused surveys for special-status bats were not conducted; however, the Hazel Avenue bridge structure, Alder Creek box culvert, and buildings to be removed were examined for roosting

habitat during the April 6, 2016, survey. There is one CNDDB record for pallid bat within 5 miles of the BSA (California Department of Fish and Wildlife 2018). There are no CNDDB records for western red bat; however, the BSA provides suitable habitat for this species. Although no evidence of bat use (e.g., guano, urine staining) was observed, the Hazel Avenue bridge structure contains weep holes and an opening with metal bars across it that could allow bats to enter the open space within the bridge. The Alder Creek box culvert does not contain any open space through which bats could enter the culvert (because of the MSE wall above it and the high water level). Shallow, recessed areas along the sides of the culvert structure are not deep enough to provide suitable cover for roosting bats. Buildings in the BSA that would be removed do not have any openings that provide entry into spaces that would provide suitable roosting habitat for bats. Trees in valley foothill riparian woodland and oak woodland, and other larger trees in the BSA (such as the oak trees in the Cattlemen's Restaurant parking lot) provide suitable roosting habitat for pallid bat and western red bat (Figure 2.19-1).

Migratory Birds

Several non-special-status migratory birds, including red-tailed hawk, Anna's hummingbird, and acorn woodpecker, could nest on the ground or in shrubs or trees in and adjacent to the BSA. These generally common species are locally and regionally abundant. The breeding season for most birds is generally from February 1 to August 31. In addition, swallows and black phoebes could nest on the Alder Creek box culvert. Cliff swallows and barn swallows are species that frequently build mud nests on the sides or undersides of artificial structures such as bridges. Swallows winter in South America and return to California to breed in February. Swallows nest from April to August and migrate south in September and October (Zeiner et al. 1990a). Black phoebes also build mud nests on, near, or over water on cliff faces, on walls of old buildings, under bridges, under eaves, and on other natural and artificial sheltered locations near water. Black phoebes breed from March to August (Zeiner et al. 1990a). The occupied nests and eggs of migratory birds are protected by Federal and State laws, including the MBTA and CFGC Sections 3503 and 3503.5. USFWS is responsible for overseeing compliance with the MBTA, and CDFW is responsible for overseeing compliance with the CFGC and making recommendations on nesting bird protection.

The habitat-based field survey was conducted during the breeding season for most birds but a focused survey for nest structures was not conducted. The viewable portion of the side of the Alder Creek box culvert was examined for swallow nests during the April 6, 2016, field survey and no nests were observed. An active red-tailed hawk nest was observed during the May 31, 2016, survey in the vernal pool branchiopod indirect effects assessment area (Figure 2.16-1). Suitable nesting habitat for migratory birds is present within the Fremont cottonwood-oak woodland, planted oak woodland, valley foothill riparian woodland, emergent wetland, ruderal, and landscaped land cover types in and adjacent to the BSA (Figure 2.16-1).

2.19.3 Environmental Consequences

2.19.3.1 Midvalley Fairy Shrimp

Direct Impacts

Construction of any of the proposed build alternatives would not result in the removal or filling of the four potential seasonal wetlands that provide potential habitat for midvalley fairy shrimp. Potential temporary direct impacts from the build alternatives would be construction equipment driving through pools when they are dry or other short-term construction-related disturbance that does not alter the pool or its hydrology, and fuel or oil leaks or spills from construction equipment adjacent to the pools that could result in injury or mortality of midvalley fairy shrimp and degradation of habitat.

Indirect Impacts

Potential indirect effects on midvalley fairy shrimp that were considered were changes in hydrology and increased contaminants from runoff containing fuel, oil, and other pollutants. Indirect impacts that were considered but were dismissed for all alternatives as potentially affecting midvalley fairy shrimp were degradation of habitat from increased human presence and introduction of exotic predators. In general, indirect effects were assumed to occur at potential seasonal wetlands that are outside of, but within 250 feet of, the project footprint for all alternatives.

Changes in Hydrology

Compacting soil and increasing the amount of paved surface within 250 feet of potential seasonal wetlands has the potential to modify the hydrologic regime of the pools if the increase in impermeable surface results in additional water entering the pools either through sheet flow or a water conveyance structure. This could result in water persisting (ponding) for a longer time (several days or possibly weeks), which could extend the seasonal inundation period for midvalley fairy shrimp. However, it is unlikely that the increased amount of surface runoff would cause the habitats to become ponded year-round, a condition that would make the habitat unsuitable for midvalley fairy shrimp. For all build alternatives, water conveyance structures (i.e., ditches) would likely be constructed along the edges of the newly constructed roadway to capture water draining off the roadway. Therefore, changes in hydrology as a result of the build alternatives would not result in an indirect effect on midvalley fairy shrimp.

Increased Contaminants

New roadway would be constructed near the four pools that provide potential habitat for midvalley fairy shrimp. Fuel, oil, and other contaminants from vehicles on the roadway adjacent to the pools could be carried into the pools from road runoff during storm events. These contaminants could result in sickness or mortality of midvalley fairy shrimp, or degradation of habitat. For all alternatives, water conveyance structures (i.e., ditches) would likely be constructed along the edges of the newly constructed roadway to capture water draining off the

roadway. Therefore, increased contaminants would not be an indirect effect of any of the alternatives.

Impact Conclusion

Temporary disturbance of habitat during construction and potential indirect impacts on habitat from changes in hydrology and increased contaminants would be considered adverse impacts on midvalley fairy shrimp. However, these potential impacts would be avoided through implementation of BMPs discussed in Section 2.9.4 of the *Water Quality* chapter and avoidance and minimization measures described below.

2.19.3.2 Western Pond Turtle

Direct Impacts

Construction of the proposed project would result in direct permanent and temporary impacts on suitable aquatic (Alder Creek) and upland (riparian and grassland) habitats for western pond turtle. Because suitable habitat for western pond turtle is limited to Alder Creek and adjacent riparian and ruderal habitats, direct impacts from all alternatives would be the same (Table 2.19-2; Figure 2.19-2).

Table 2.19-2. Impacts on Western Pond Turtle Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Aquatic						
Perennial drainage (Alder Creek)	0.10	0.18	0.10	0.18	0.10	0.18
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06
Total Aquatic Impacts	**0.16**	**0.24**	**0.16**	**0.24**	**0.16**	**0.24**
Upland						
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Ruderal	0.15	0.21	0.15	0.21	0.15	0.21
Total Upland Impacts	**0.18**	**0.24**	**0.18**	**0.24**	**0.18**	**0.24**

Permanent impacts on aquatic habitat would result from construction of piers within the creek and permanent impacts on upland habitat would result from construction of abutments, removal of riparian vegetation, and paving over and/or fencing ruderal habitat near the creek. Temporary impacts on upland habitat would consist of construction impacts that temporarily remove or disturb habitat, but the habitat would be restored to pre-project conditions. Construction activities could also result in the injury or mortality of western pond turtle from being struck or crushed by construction equipment or becoming entrapped in open trenches. Fuel or oil leaks, or spills into suitable aquatic habitat, also have the potential to result in sickness or mortality of western pond turtle and degradation of habitat.

Indirect Impacts

Because the additional roadway would be operated and maintained similar to existing conditions, the only indirect effect that is expected is degradation of habitat adjacent to the additional lane of roadway near Alder Creek. Temporarily disturbed or undisturbed upland habitat adjacent to the new lane of roadway would likely be degraded from weedy plant species that would colonize this area.

Impact Conclusion

Permanent and temporary losses of suitable aquatic and upland habitat, potential injury or mortality, and degradation of habitat would be considered adverse impacts on western pond turtle. Implementation of BMPs discussed in Section 2.9.4 of the *Water Quality* chapter and avoidance, minimization, and mitigation measures described below would reduce impacts on western pond turtle.

2.19.3.3 White-Tailed Kite

Direct Impacts

Construction activities would occur during the white-tailed kite nesting season (February to October) and could result in the disturbance of this species. Trees that provide suitable nesting habitat for white-tailed kite would be removed to construct the proposed project. Construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Because white-tailed kite is fully protected, removal of occupied nest trees during the breeding season and activities that may result in loss of white-tailed kites are prohibited.

Removal of suitable nest trees in the BSA would reduce the amount of available nesting habitat for white-tailed kite and a temporal loss of nesting habitat would continue until replacement trees mature. Table 2.19-3 shows the estimated permanent and temporary impacts on suitable white-tailed kite nesting habitat by alternative. This table does not include the loss of suitable nest trees in the landscaped cover type. Figures 2.19-3 and 2.19-4 show the location of impacts on suitable white-tailed kite nesting habitats.

Table 2.19-3. Impacts on Suitable White-Tailed Kite Nesting Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Fremont cottonwood-oak woodland	2.97	0.19	2.97	0.19	2.97	0.19
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Total Impacts	**3.00**	**0.22**	**3.00**	**0.22**	**3.00**	**0.22**

Indirect Impacts

It is not anticipated that there would be any indirect effects on white-tailed kite as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in disturbance during the nesting season, removal of suitable nest trees, and direct permanent and temporary impacts on suitable foraging habitat would be considered adverse impacts on white-tailed kite. Implementation of avoidance, minimization, and mitigation measures described below would reduce potential impacts on white-tailed kite.

2.19.3.4 Yellow-Breasted Chat

Direct Impacts

Construction of the proposed project would result in direct permanent and temporary impacts on suitable nesting habitat (valley foothill riparian woodland) for yellow-breasted chat. Additionally, construction disturbance (noise and/or activity) during the breeding season (late April through early August) could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Table 2.19-4 shows the estimated permanent and temporary impacts on suitable yellow-breasted chat habitat by alternative. Figures 2.19-3 and 2.19-4 show the location of impacts on suitable yellow-breasted chat habitat.

Table 2.19-4. Impacts on Yellow-Breasted Chat Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03

Indirect Impacts

It is not anticipated that there would be any indirect effects on yellow-breasted chat as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in disturbance during the nesting season, and permanent and temporary losses of suitable nesting habitat would be considered adverse impacts on yellow-breasted chat. Implementation of avoidance, minimization, and mitigation measures described below would reduce impacts on yellow-breasted chat.

2.19.3.5 Song Sparrow (Modesto Population)

Direct Impacts

Construction of the proposed project would result in direct permanent and temporary impacts on suitable nesting habitat (valley foothill riparian woodland and emergent wetland) for song sparrow. Additionally, construction disturbance (noise and/or activity) during the breeding season (late March through early August) could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Table 2.19-5 shows the estimated permanent and temporary impacts on suitable song sparrow habitat by alternative. Figures 2.19-3 and 2.19-4 show the location of impacts on suitable song sparrow habitat.

Table 2.19-5. Impacts on Song Sparrow Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06
Total	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**

Indirect Impacts

It is not anticipated that there would be any indirect effects on song sparrow as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in disturbance during the nesting season, and permanent and temporary losses of suitable nesting habitat would be considered adverse impacts on song sparrow. Implementation of avoidance, minimization, and mitigation measures described below would reduce impacts on song sparrow.

2.19.3.6 Special-Status Bats and Roosting Colonies of Non-Special Status Bats

Direct Impacts

Construction of any of the build alternatives would occur during the bat maternity season (April 1 through September 15) and would result in the removal or disturbance of trees that provide suitable roosting habitat (cavities, crevices, furrowed bark, and foliage) for special-status bats. Implementation of Alternative 2 would result in the removal (permanent impact) of more trees that provide suitable roosting habitat for bats (Figure 2.19-4) than Alternatives 1 and 1a (Figure 2.19-3). Disturbance (temporary impact) of trees that provide suitable roosting habitat would be the same for all alternatives. Removal or disturbance of trees providing suitable roosting habitat could result in the injury or mortality of roosting bats, if present during removal or disturbance of the tree. Removal of occupied roost habitat would also displace bats, causing them to relocate to another roost site, and potentially competing with other bats for the roost site. The Hazel Avenue

bridge structure would be disturbed (i.e., vibrations, noise) during widening under Alternatives 1 and 1A but would not be removed. As such, the structure would continue to provide suitable roosting habitat for bats. Under Alternative 2, the Hazel Avenue bridge structure would not be widened and therefore the bats potentially in the bridge would not be disturbed.

Indirect Impacts

It is not anticipated that there would be any indirect effects on special-status or non-special-status bats as a result of the proposed project.

Impact Conclusion

Removal or disturbance of trees that provide suitable roosting habitat, and potential injury or mortality or displacement of roosting bats during tree removal are considered adverse impacts on special-status bats and roosting colonies of non-special-status bats. Implementation of avoidance, minimization, and mitigation measures described below would reduce potential impacts on special-status and non-special-status bats.

2.19.3.7 Migratory Birds

Direct Impacts

Tree removal and trimming is expected to occur for construction of the proposed project. Clearing of ruderal areas, where ground-nesting birds may be present, may also occur. Additionally, the Alder Creek box culvert that provides suitable nesting substrate for swallows and black phoebes would be disturbed when the new bridge is constructed next to the culvert. Construction activities would occur during the nesting season of migratory birds (generally February 1 through September 15) and could result in the possible injury or mortality of nesting birds. Removal or destruction of nests or construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment.

Indirect Impacts

It is not anticipated that there would be any indirect effects on nesting migratory birds as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in injury or mortality of nesting birds or nest abandonment, and removal or destruction of active nests during the breeding season are considered adverse impacts on nesting birds. Implementation of avoidance, minimization, and mitigation measures described below would reduce potential impacts on nesting birds.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

2.19.4.1 Avoidance and Minimization Measures

Midvalley Fairy Shrimp

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat

Concentrated flow conveyance systems identified for the proposed project may include roadside ditches, biofiltration swales, curb and gutters, dikes, overside drains, and culverts. Water conveyance systems surrounding suitable vernal pool branchiopod habitat in the project area will be evaluated, designed, and installed to maintain the existing hydrology of the four potential seasonal wetlands (see Figure 2.16-1, Sheet 2) that provide potential habitat for vernal pool branchiopods.

Western Pond Turtle

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work

To avoid potential injury or mortality of western pond turtles, the County will retain a qualified wildlife biologist who is CDFW-approved to capture and relocate turtles. The biologist will conduct a preconstruction survey for western pond turtles within 24 hours of the start of construction and will survey Alder Creek and the adjacent riparian and ruderal habitat within the construction area. If in-water work does not start immediately, the biologist will return to the construction site immediately prior to the start of in-water work (i.e., dewatering, vegetation removal, or any other activities in the creek) to conduct another preconstruction survey. The biologist will remain on-site until initial in-water work is complete. If a turtle becomes trapped during initial in-water work, the biologist will relocate the individual to suitable aquatic habitat upstream of the construction area (the area downstream of the construction area is not accessible because of US 50). For the remainder of construction, the biologist will remain on-call in case a turtle is discovered. The construction crew will be instructed to notify the crew foreman, who will contact the biologist if a turtle is found trapped within the construction area. Work in the area where the turtle is trapped will stop until the biologist arrives and removes and relocates the turtle. The biologist will report their activities to the County and CDFW within 1 day of relocating any turtle.

Restore Temporarily Disturbed Ruderal Habitat

Upon project completion, the County will restore all temporarily disturbed ruderal habitat (1.92 acres under all alternatives) to pre-project or better conditions. To the extent feasible, native grasses and forbs will be used to reseed disturbed areas.

White-Tailed Kite

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Restore Temporarily Disturbed Ruderal Habitat

Please see the *Western Pond Turtle* section above for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

To the maximum extent feasible, vegetation removal (trees, shrubs, and ground vegetation) will occur during the non-breeding season for most migratory birds (generally between September 16 and January 31). This timing is highly preferable because if an active nest is found during preconstruction surveys in a tree (or other vegetation) that would be removed by project construction, the tree (or other vegetation) cannot be removed until the end of the nesting season, which could delay construction. If vegetation cannot be removed between October and January, or if ground cover re-establishes in areas where vegetation has been removed, the affected area must be surveyed for nesting birds, as discussed in the following measures: *Conduct Focused Surveys for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction and Implement Protective Measures during Construction,* and *Conduct Preconstruction Surveys for Nesting Migratory Birds.* To minimize potential impacts on roosting bats, tree trimming and removal should be conducted from September 1 through October 15 (see the measure: *Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures*). Tree trimming and removal during this timeframe would avoid or minimize impacts on nesting birds and roosting bats.

Conduct Focused Survey for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction

If construction, grading, or project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk and white-tailed kite nests on the site and within 0.25 mile of the site will be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing). If active nests are found, CDFW will be contacted to determine appropriate protective measures, and these measures will be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, nothing further will be required.

Yellow-Breasted Chat

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Please see the, *White-Tailed Kite* section above for the description of this measure.

Conduct Preconstruction Surveys for Nesting Migratory Birds

If construction activities, including vegetation removal, would occur during the breeding season (generally February 1 through September 15), the County will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys 15 days or less before the start of construction. Surveys will include a search of all trees and shrubs, marsh, wetland, and ruderal vegetation that provide suitable nesting habitat in the project area. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site until the end of the breeding season (September 15) or until a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Song Sparrow (Modesto Population)

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Please see the *White-Tailed Kite* section above for the description of this measure.

Conduct Preconstruction Surveys for Nesting Migratory Birds

Please see the *Yellow-Breasted Chat* section above for the description of this measure.

Special-Status Bats and Roosting Colonies of Non-Special-Status Bats

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures

To minimize potential impacts on tree roosting bats, tree trimming and removal should be conducted between September 1 and October 15, which corresponds to a time period when bats have not yet entered torpor or be caring for nonvolant (non-flying) young. Trimming or removing trees during this timeframe would also avoid impacts on nesting birds.

If tree removal or trimming cannot be conducted between September 1 and October 15, qualified biologists will examine trees for suitable bat roosting habitat before tree removal or trimming. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch) will be identified and the area around these features searched for bats and bat signs (e.g., guano, culled insect parts, staining). Riparian woodland and stands of mature broadleaf trees are considered potential habitat for solitary foliage-roosting bat species. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, the protective measures listed below will be implemented for trees containing high-quality habitat features.

- Removal or disturbance of trees providing bat roosting habitat will be avoided between April 1 and August 31 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary).
- If a maternity roost is found, whether solitary or colonial, that roost will remain undisturbed until September 1 or until a qualified biologist has determined the roost is no longer active.
- Qualified biologists will monitor tree trimming/removal of the habitat. Trees should be trimmed or removed over two consecutive days. The first day (in the afternoon), limbs and branches should be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices or deep bark fissures should be avoided, and only branches or limbs without those features should be removed. On the second day, the entire tree should be removed. Biologists should search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided to the County and CDFW.

Migratory Birds

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Please see the *White-Tailed Kite* section above for the description of this measure.

Conduct Preconstruction Surveys for Nesting Migratory Birds

Please see the *Yellow-Breasted Chat* section above for the description of this measure.

2.19.4.2 Mitigation Measures

Western Pond Turtle

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Please see Section 2.17.4.1, *Emergent Wetland*, for the description of this measure.

White-Tailed Kite

Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Yellow-Breasted Chat

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Song Sparrow (Modesto Population)

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Please see Section 2.17.4.1, *Emergent Wetland*, for the description of this measure.

Special-Status Bats and Roosting Colonies of Non-Special-Status Bats

Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Migratory Birds

Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Please see Section 2.17.4.1, *Emergent Wetland*, for the description of this measure.

2.19.5 References Cited

Brown, P. E., and E. D. Pierson. 1996. *Natural History and Management of Bats in California and Nevada*. Workshop sponsored by the Western Section of The Wildlife Society. November 13–15.

California Department of Fish and Wildlife. 2016. California Natural Diversity Database, RareFind 5. (February 28, 2016 update). Sacramento, CA. Search of 7.5-minute Buffalo Creek, Carmichael, Citrus Heights, Clarksville, Folsom, and Folsom SE quadrangles. Sacramento CA. Accessed: April 4, 2016.

California Department of Fish and Wildlife. 2018. California Natural Diversity Database, RareFind 5. (September 30, 2018 update). Sacramento, CA. Search of 7.5-minute Buffalo Creek, Carmichael, Citrus Heights, Clarksville, Folsom, and Folsom SE quadrangles. Sacramento CA. Accessed: October 16, 2018.

California Department of Transportation. 2018. *Natural Environment Study. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

California Partners in Flight. 2002. Version 2.0. *The Oak Woodland Bird Conservation Plan: A strategy for for Protecting and Managing Oak Woodland Habitats and Associated Birds in California* (S. Zack, lead author). Point Reyes Bird Observatory, Stinson Beach, CA.

County of Sacramento. 2011. *Sacramento County General Plan of 2005-2030*. Amended November 9, 2011. Available: http://www.per.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan-Update/Final%202030%20General%20Plan_sm.pdf. Accessed: June 28, 2016.

Dunk, J. R. 1995. White-Tailed Kite (*Elanus leucurus*). In A. Poole, (ed.). *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. Available: http://bna.birds.cornell.edu/bna/species/178.

eBird. 2016. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed: May 25, 2016.

Eriksen, C. H., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press. Eureka, CA.

Gardali, T. No date. *Modesto Song Sparrow* (Melospiza melodia mailliardi) (species account). Point Reyes Bird Observatory. Stinson Beach, CA.

Helm, B. 1998. *Biogeography of eight large branchiopods endemic to California*. In C.W. Witham, E.T. Bauder, D. Belk, W. R. Ferren, Jr., and R. Ornduf (eds.), Ecology, conservation, and management of vernal pool ecosystems—proceedings from a 1996 conference, pages 124–139. California Native Plant Society. Sacramento, CA. 285 pages.

Jennings, M. R., and M. P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Rancho Cordova, CA: California Department of Fish and Game.

Jennings, M. R., M. P. Hayes, and D. C. Holland. 1992. *A Petition to the U.S. Fish and Wildlife Service to Place the California Red-Legged Frog (*Rana aurora draytonii*) and the Western Pond Turtle (*Clemmys marmorata*) on the List of Endangered and Threatened Wildlife and Plants*.

Mayer, K. E., and W. F. Laudenslayer, Jr. 1988. *A Guide to Wildlife Habitats of California.* October. Sacramento: California Department of Fish and Game.

Shuford, W. D., and T. Gardali (eds.). 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. *Studies of Western Birds No. 1*. Western Field Ornithologists, Camarillo, CA, and California Department of Fish and Game, Sacramento, CA.

Stebbins, R. C. 2003. *Western Reptiles and Amphibians*. Third Edition. New York, NY: Houghton Mifflin Company.

U.S. Fish and Wildlife Service. 2005. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxxvi +606 pages. Available: https:www.fws/sacramento/es/Recovery-Planning/Vernal-Pool/Documents

U.S. Fish and Wildlife Service. 2016. List of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated April 4, 2016. Sacramento, CA.

U.S. Fish and Wildlife Service. 2019. Updated list of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated July 23, 2019. Sacramento, CA.

Western Bat Working Group. 2015. *Western Bat Species Regional Priority Matrix*. Available: http://wbwg.org/matrices/species-matrix/. Accessed: December 23, 2015.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer (eds.). 1988. *California's Wildlife*. *Volume I: Amphibians and Reptiles*. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer (eds.). 1990a. *California's Wildlife. Volume II: Birds*. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer (eds.). 1990b. *California's Wildlife. Volume III: Mammals*. California Statewide Wildlife Habitat Relationships System. Sacramento, CA: California Department of Fish and Game.

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

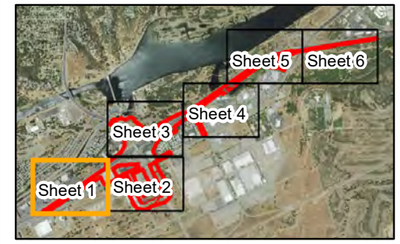
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

Legend

Biological Study Area



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats

121°13'10"W
121°13'0"W
121°12'50"W
38°37'40"N
38°37'30"N
50
Folsom Blvd
Nimbus Rd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

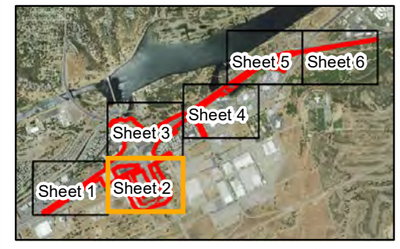
Biological Study Area

Nesting Habitat

Fremont Cottonwood- Oak Woodland (White-tailed Kite and Swainson's Hawk)

Potential Bat Roosting Habitat

Fremont Cottonwood- Oak Woodland



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDOCHRDSGIS1\Projects_1\County_of_Sacramento\000529_15_HazelAve\Comapdoc\BioBird_Bat_Habitat.mxd; Author: ; Date: 7/17/2019

Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats

121°13'10"W
121°13'0"W
121°12'50"W
38°38'0"N
38°37'50"N
Hazel Ave
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

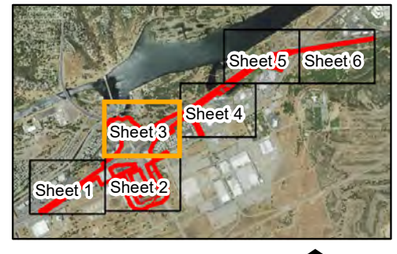
Sheet 3 of 6

Legend

Biological Study Area

Potential Bat Roosting Habitat

Landscaped



0 50 100 200
Feet

1 inch = 200 feet

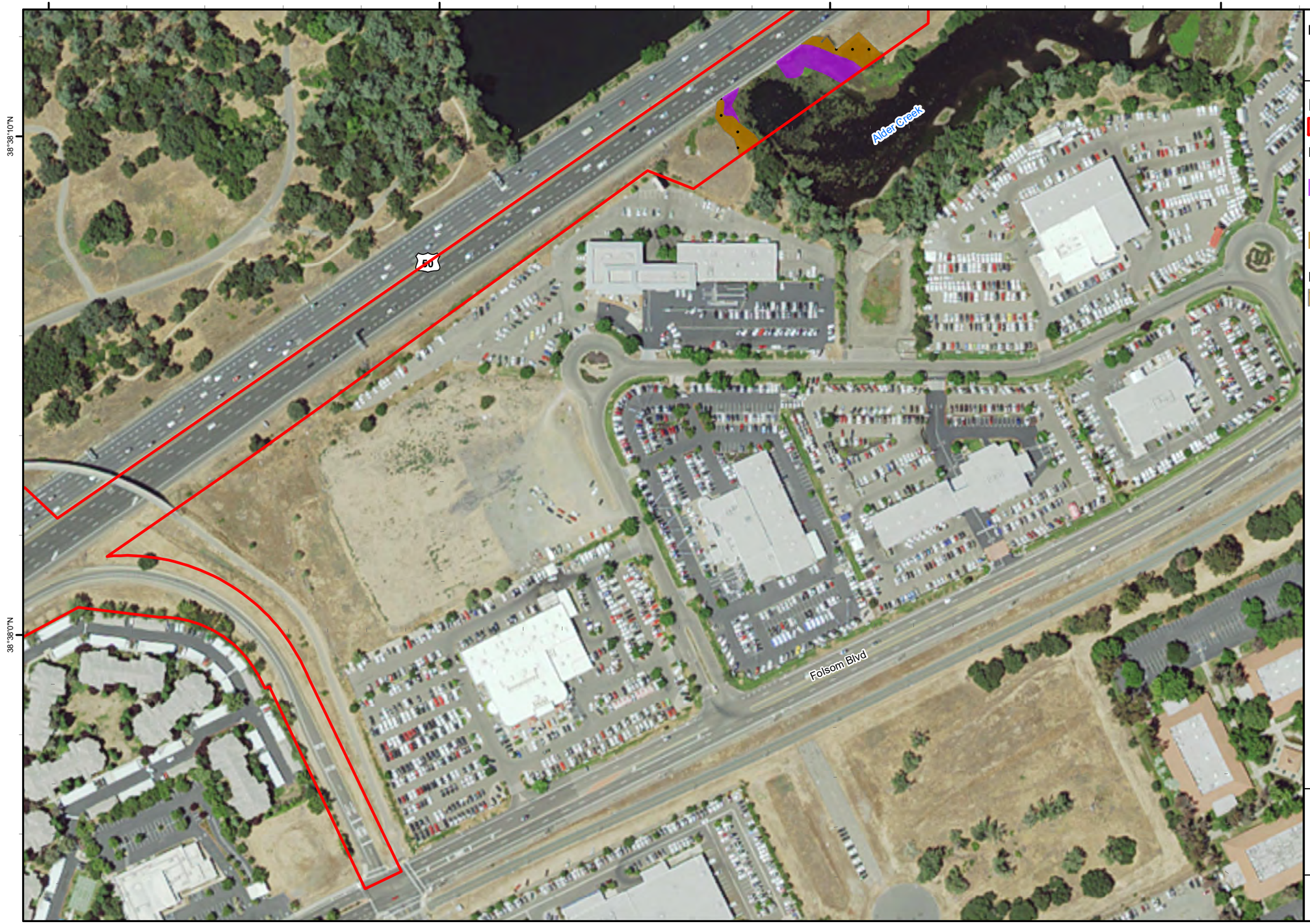
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Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats



Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

Biological Study Area

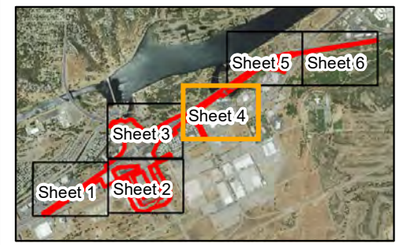
Nesting Habitat

Emergent Wetland (Tricolored Blackbird and Song Sparrow - Modesto Population)

Valley Foothill Riparian (White-tailed Kite, Swainson's Hawk and Yellow- breasted Chat)

Potential Bat Roosting Habitat

Valley Foothill Riparian



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats

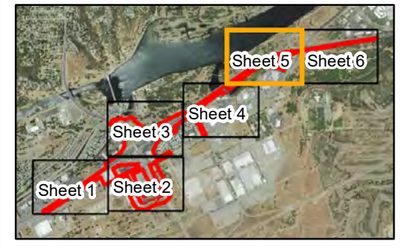
121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

Legend

Biological Study Area



0 50 100 200
Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats

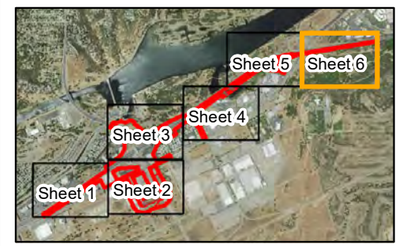


Hazel Avenue / U.S. 50 Interchange Project

Sheet 6 of 6

Legend

Biological Study Area



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.19-1
Habitats for Special-Status Birds and Roosting Bats

121°12'30"W

121°12'20"W

121°12'10"W

38°38'10"N

50

Alder Creek

50

Hazel Avenue / U.S. 50 Interchange Project

Legend

Biological Study Area

Project Impacts

Permanent Effect

Temporary Effect

Aquatic Habitat

Emergent Wetland

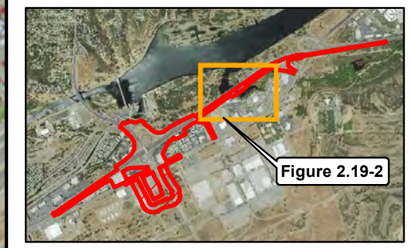
Perennial Drainage

Perennial Drainage (Culverted)

Upland

Valley Foothill Riparian

Ruderal



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Drawn By: A. Angier

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Figure 2.19-2
Impacts on Western Pond Turtle Habitat
All Alternatives

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

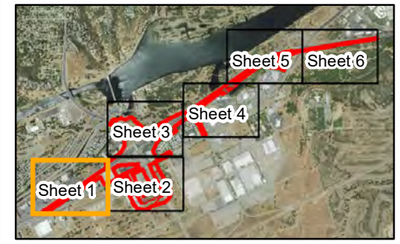
Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

Temporary Effect



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°13'10"W
121°13'0"W
121°12'50"W
38°37'40"N
38°37'30"N
50
Folsom Blvd
Nimbus Rd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

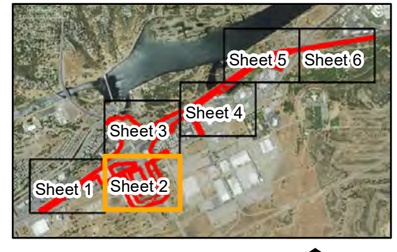
Temporary Effect

Nesting Habitat

Fremont Cottonwood-Oak Woodland (White-tailed Kite and Swainson's Hawk)

Potential Bat Roosting Habitat

Fremont Cottonwood-Oak Woodland



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°13'10"W
121°13'0"W
121°12'50"W
38°38'0"N
38°37'50"N
Hazel Ave
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 3 of 6

Legend

Biological Study Area

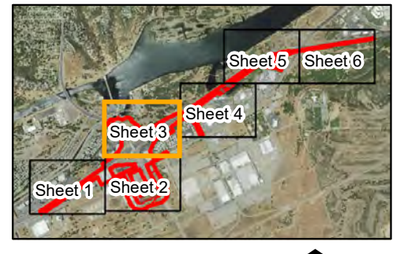
Alternatives 1 and 1A

Permanent Effect

Temporary Effect

Potential Bat Roosting Habitat

Landscaped



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°12'40"W
121°12'30"W
121°12'20"W
121°12'10"W
38°38'10"N
38°38'0"N
Alder Creek
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

Temporary Effect

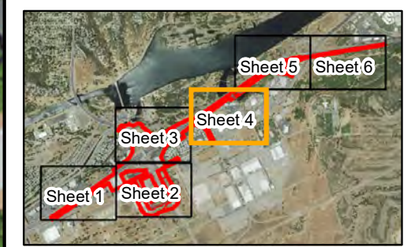
Nesting Habitat

Emergent Wetland (Tricolored Blackbird and Song Sparrow - Modesto Population)

Valley Foothill Riparian (White-tailed Kite, Swainson's Hawk and Yellow- breasted Chat)

Potential Bat Roosting Habitat

Valley Foothill Riparian



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

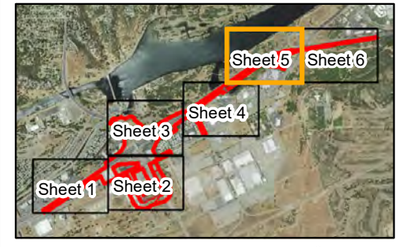
Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect

Temporary Effect



0 50 100 200
Feet
1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°11'40"W

121°11'30"W

121°11'20"W

38°38'30"N

38°38'20"N

Hazel Avenue / U.S. 50 Interchange Project

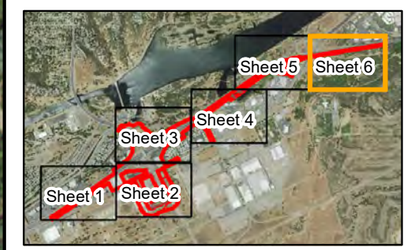
Sheet 6 of 6

Legend

Biological Study Area

Alternatives 1 and 1A

Permanent Effect



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-3
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternatives 1 and 1A

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

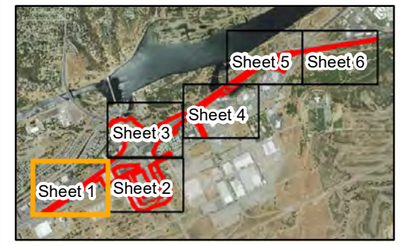
Legend

Biological Study Area

Alternative 2

Permanent Effect

Temporary Effect



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

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Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2

121°13'10"W

121°13'0"W

121°12'50"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

Nimbus Rd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

Biological Study Area

Alternative 2

Permanent Effect

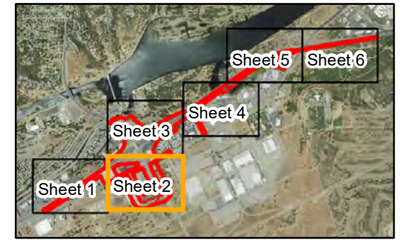
Temporary Effect

Nesting Habitat

Fremont Cottonwood-Oak Woodland (White-tailed Kite and Swainson's Hawk)

Potential Bat Roosting Habitat

Fremont Cottonwood-Oak Woodland



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDC\IT\RDS\GIS\Projects_1\County_of_Sacramento\000529_15_HazelAveIC\mapdoc\Bio\Bird_Bat_Habitat_Alt2_Impacts.mxd; Author: ; Date: 7/17/2019

Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2

121°13'10"W

121°13'0"W

121°12'50"W

38°38'0"N

38°37'50"N

Hazel Ave

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 3 of 6

Legend

Biological Study Area

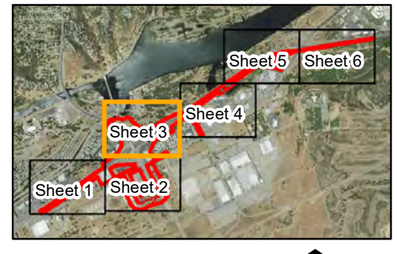
Alternative 2

Permanent Effect

Temporary Effect

Potential Bat Roosting Habitat

Landscaped



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDCCIFRDSGIS1\Projects_1\County_of_Sacramento\000529_15_HazelAve\Cmaps\docBio\Bird_Bat_Habitat_Alt2_Impacts.mxd; Author: ; Date: 7/17/2019

Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2

121°12'40"W 121°12'30"W 121°12'20"W 121°12'10"W

38°38'10"N

38°38'0"N

Alder Creek

50

Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

Biological Study Area

Alternative 2

Permanent Effect

Temporary Effect

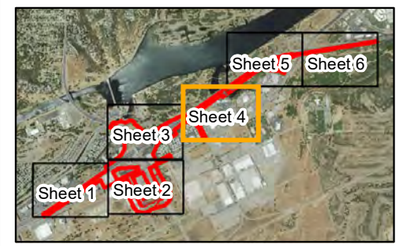
Nesting Habitat

Emergent Wetland (Tricolored Blackbird and Song Sparrow-Modesto Population)

Valley Foothill Riparian (White-tailed Kite, Swainson's Hawk and Yellow-breasted Chat)

Potential Bat Roosting Habitat

Valley Foothill Riparian



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDOCITRDSGIS1\Projects_1\County_of_Sacramento\000529_15_HazelAve\GIS\mapdoc\Bio\Bird_Bat_Habitat_Alt2_Impacts.mxd; Author: ; Date: 7/17/2019

Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2

121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

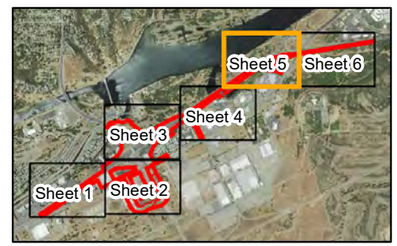
Legend

Biological Study Area

Alternative 2

Permanent Effect

Temporary Effect



0 50 100 200
Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDC01\RDSGIS1\Projects_1\County_of_Sacramento\00529_15_HazelAve\Cmaps\doc\Bio\Bird_Bat_Habitat_Alt2_Impacts.mxd; Author: ; Date: 7/17/2019

Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2



Hazel Avenue / U.S. 50 Interchange Project

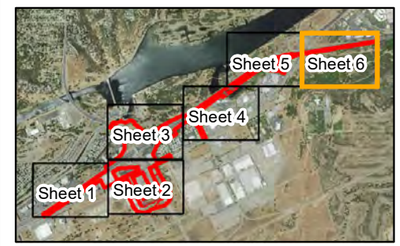
Sheet 6 of 6

Legend

Biological Study Area

Alternative 2

Permanent Effect



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Drawn By: A. Angier

Path: \\PDC\ICT\RDS\GIS\1\Projects_1\County_of_Sacramento\000529_15_HazelAve\C\map\doc\Bio\Bird_Bat_Habitat_Alt2_Impacts.mxd; Author: ; Date: 7/17/2019

Figure 2.19-4
Impacts on Habitat for Special-Status Birds and Roosting Bats
Alternative 2

2.20 Threatened and Endangered Species

2.20.1 Regulatory Setting

The primary Federal law protecting threatened and endangered species is FESA (16 USC 1531 et seq.; see also 50 CFR 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 FHWA, are required to consult with USFWS and NMFS 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—CESA (CFGC 2050 et seq.). CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. Section 2081 of the CFGC prohibits take of any species determined to be an endangered species or a threatened species. *Take* is defined in Section 86 of CFGC 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 CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, CDFW may also authorize impacts on CESA species by issuing a Consistency Determination under Section 2080.1 of CFGC.

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.

2.20.2 Affected Environment

This section is based on the *Natural Environment Study Report* (California Department of Transportation 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the proposed project. This section presents findings of this report as it relates to threatened and endangered

species within the BSA, as well as updates to species listing status since preparation of the report.

2.20.2.1 Methods

As described in Section 2.16, *Natural Communities*, the BSA was defined as the project footprint (Figure 2.16-1). Prefield research and a survey for habitat for special-status plants and animals in the BSA were described in Sections 2.18.2.1, *Methods*, and 2.19.2.1, *Methods*, respectively. In addition to the survey of the BSA, a 250-foot buffer was surveyed on the west, south, and east sides of the jughandle area south of Folsom Boulevard for vernal pool branchiopod habitat in order to assess potential indirect effects on vernal pool branchiopods. This area is depicted as "vernal pool branchiopod indirect effects assessment area" on Figure 2.16-1. Elderberry shrubs within 100 feet of the BSA were also identified in order to assess direct and indirect effects on valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

2.20.2.2 Section 7 Consultation Status

A USFWS species list and updated species list were obtained from the IPaC website in 2016 and July 2019, respectively (U.S. Fish and Wildlife Service 2016, 2019). The most recent version of the list obtained is included in Appendix G, *Agency Letters*. A list of threatened and endangered fish species for the Folsom USGS 7.5-minute quadrangle was obtained from NMFS's California Species List Tools website in 2017 and again in July 2019 (National Marine Fisheries Service 2017, 2019). The most recent version of the list is included in Appendix G. Based on the location of the project, which is outside of the limits of NMFS jurisdiction, no further consultation with NMFS is necessary. A Biological Assessment was prepared and sent to the USFWS on March 13, 2019 to initiate consultation for the project's effects on valley elderberry longhorn beetle.

2.20.2.3 Threatened and Endangered Species

Plants

Eight Federal- and/or State-listed threatened or endangered plant species occur in the BSA vicinity based on the CNDDB search results, the CNPS Inventory, and the USFWS list for the project region (Appendix G). There is no suitable habitat for any of these eight plant species in the BSA (Table 2.20-1) and none were observed during the April and May 2016 botanical surveys, which were conducted during the reported identification periods of these species. Therefore, Federal- and/or State-listed plants are considered absent from the BSA and are not discussed further.

Table 2.20-1. State- and Federal-Listed Plant Species with Potential to Occur in the Vicinity of the Project Biological Study Area

Common and *Scientific Name*	Legal Status Federal/State/CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Stebbins' morning-glory *Calystegia stebbinsii*	E/E/1B.1	Northern Sierra Nevada foothills, with reported occurrences in El Dorado and Nevada Counties. Serpentine or gabbroic soils in chaparral openings and cismontane woodland; 185–1,090 meters.	April–July	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA. *No effect.*
Pine Hill ceanothus *Ceanothus roderickii*	E/R/1B.1	Endemic to El Dorado County. Serpentine or gabbro soils in chaparral or cismontane woodland; 800–2,060 feet.	April–June	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA. *No effect.*
Pine Hill flannelbush *Fremontodendron decumbens*	E/R/1B.2	Pine Hill area in El Dorado County, Grass Valley vicinity in Nevada County, Yuba County. Rocky gabbro or serpentine soils in chaparral, cismontane woodland; 1,400–2,500 feet.	April–July	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA. *No effect.*
El Dorado bedstraw *Galium californicum* ssp. *sierrae*	E/R/1B.2	Endemic to El Dorado County. On gabbro soils in chaparral, cismontane woodland, lower montane coniferous forest; 330–1,020 feet.	May–June	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA. *No effect.*
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–/E/1B.2	Inner North Coast Ranges, Central Sierra Nevada Foothills, Sacramento Valley and Modoc Plateau: Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama Counties; also Oregon. Clay soils in areas of shallow water, lake margins of swamps and marshes, vernal pool margins; 30–7,800 feet.	April–August	Habitat Absent	No suitable soils in the BSA, although the margins of Alder Creek could be suitable habitat. Nearest recorded occurrences are ~2.5 miles south of the BSA.
Slender Orcutt grass *Orcuttia tenuis*	T/E/1B.1	Sierra Nevada and Cascade Range foothills from Siskiyou to Sacramento Counties. Vernal pools; 115–5,775 feet.	May–September (rarely October)	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is ~5 miles south of the BSA. *No effect.*

Table 2.20-1. Continued

Common and *Scientific Name*	Legal Status Federal/State/CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Sacramento Orcutt grass *Orcuttia viscida*	E/E/1B.1	Endemic to Sacramento County. Vernal pools; 100–330 feet.	April–July	Habitat Absent	No vernal pool habitat in the BSA. Nearest recorded occurrence is ~1.25 miles north of the BSA at Phoenix Park. *No effect.*
Layne's ragwort (or Layne's butterweed) *Packera layneae*	T/R/1B.2	Northern Sierra Nevada Foothills, Butte, El Dorado, Placer, Tuolumne, and Yuba Counties. Rocky serpentine or gabbro soils in chaparral and foothill woodland; 650–3,280 feet.	April–August	Habitat Absent	No suitable soils in the BSA. Nearest recorded occurrence is more than 5 miles outside of the BSA. *No effect.*

BSA = biological study area

[a] Status explanations:

Federal

E = Listed as endangered under FESA
T = Listed as threatened under FESA
– = No listing status

State

E = Listed as endangered under CESA
R = Listed as rare under the CESA. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

California Rare Plant Rank

1B = List 1B species: rare, threatened, or endangered in California and elsewhere
.1 = Seriously endangered in California (over 80% of occurrences threatened—high degree and immediacy of threat)
.2 = Fairly endangered in California (20–80% occurrences threatened)

Animals

Table 2.20-2 lists animals listed or proposed for listing under FESA or CESA that were identified from the CNDDB and USFWS species lists as potentially occurring in the project vicinity. This table contains information about the species' habitats and potential for occurrence in the BSA. Federal- or State-listed threatened or endangered animal species with potential to occur in the BSA and that could be affected by the proposed project are listed and discussed in the following subsections.

- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Valley elderberry longhorn beetle
- Swainson's hawk
- Tricolored blackbird (*Agelaius tricolor*)

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp is Federally listed as threatened. The species is found in southern Oregon and in California. There are approximately 32 populations scattered from Shasta County in the north through the Central Valley to the southern border of Tulare County, and along the central Coast Range from northern Solano County to San Benito County. Four disjunct populations occur in San Luis Obispo, Santa Barbara, and Riverside Counties (Eriksen and Belk 1999:92, 125; U.S. Fish and Wildlife Service 2007:17). Final designation of critical habitat for vernal pool fairy shrimp occurred on August 11, 2005 (70 *Federal Register* [FR] 46945).

Vernal pool fairy shrimp commonly inhabit vernal pools or vernal pool–like habitats, typically in grassland landscapes. Most frequently, vernal pool fairy shrimp are found in vernal pools or vernal swales, in unplowed grasslands (Eng et al. 1990:257). The chemical composition of the habitat and temperature variations resulting from pools filling at different times and distribution of pools along altitudinal and longitudinal gradients are the most important factors in determining the distribution of different species of fairy shrimp including vernal pool fairy shrimp, or their appearance from year to year (Eng et al. 1990:273; U.S. Fish and Wildlife Service 2007:5). Vernal pool fairy shrimp sometimes occur in other wetlands that provide habitat characteristics similar to those of vernal pools; these other wetlands include alkaline rain pools, rock outcrop pools, and some disturbed and constructed sites, including tire ruts, ditches, and puddles (59 FR 48136–48153, September 16, 1994; Eriksen and Belk 1999:93; U.S. Fish and Wildlife Service 2007:24, 58). Suitable pools must stay inundated long enough for the shrimp to complete their life cycle.

Table 2.20-2. Federal- and State-Listed Animals with Potential to Occur in the Vicinity of the Project Biological Study Area

Common and Scientific Name	Legal Status (Federal/State/ Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservatio*	E/–/–	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, Placer, and Glenn Counties; Central Valley. Large, deep vernal pools in annual grasslands.	Absent	There are no large, deep vernal pools in the BSA. *No effect.*
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–/–	Found in Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County. Common in vernal pools; also found in sandstone rock outcrop pools.	Present	Seasonal wetlands on Aerojet property provide potentially suitable habitat. *May effect, not likely to adversely affect.*
Vernal pool tadpole shrimp *Lepidurus packardi*	E/–/–	Found from Shasta County south to Merced County in vernal pools and ephemeral stock ponds.	Absent	There are no vernal or seasonal pools that are deep enough or that would hold water long enough to support this species. *No effect.*
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–/–	Stream side habitats below 3,000 feet throughout the Central Valley Occur in riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Present	Several elderberry shrubs are present in the BSA. *May effect, likely to adversely affect.*
Fish				
Delta smelt *Hypomesus transpacificus*	T/E/–	Found primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay. Occur in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	Absent	The BSA is outside the known range of this species. The lower American River and BSA are not designated as critical habitat for the species. *No effect.*

Table 2.20-2. Continued

Common and Scientific Name	Legal Status (Federal/State/ Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Central Valley steelhead DPS *Oncorhynchus mykiss* Central Valley steelhead Critical Habitat	T/–/–	Sacramento River and tributary Central Valley rivers. Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	Absent	Nimbus Dam on the lower American River represents the upstream limit of anadromy; consequently, the BSA is outside the range of this population of steelhead. The BSA is not located within designated critical habitat for this DPS. Project effects would not extend to the lower American River. *No effect.*
Central Valley spring-run Chinook salmon ESU *Oncorhynchus tshawytscha*	T/T/–	Upper Sacramento River, Feather River, and Yuba River and several perennial tributaries of the Sacramento River (Battle, Butte, Clear, Deer, and Mill Creeks); occurs in well-oxygenated, riverine habitats; coldwater pools are needed for holding over-summering adults (Moyle 2002).	Absent	Nimbus Dam on the lower American River represents the upstream limit of anadromy; consequently, the BSA is outside the range of this population of Central Valley spring-run Chinook salmon. The Sacramento River is designated as critical habitat for this ESU. Project effects would not extend to the lower American River or Sacramento River. *No effect.*
Amphibians				
California tiger salamander *Ambystoma californiense*	T/T/–	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County. Small ponds, lakes, or vernal pools in grasslands and oak woodlands for reproduction and larval development; rodent burrows, rock crevices, or fallen logs for cover for adults and juveniles for summer dormancy.	Absent	There are no ponds, lakes, or vernal pools of adequate size and depth to support this species in or adjacent to the BSA. The majority of the project area is between freeway and dense development. *No effect.*

Table 2.20-2. Continued

Common and Scientific Name	Legal Status (Federal/State/ Other)	General Habitat Description	Habitat Present/ Absent	Rationale
California red-legged frog *Rana draytonii*	T/SSC/–	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County. Occurs in permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.	Absent	Within historic range of species but not within current range (U.S. Fish and Wildlife Service 2002:4–5); not expected to occur. *No effect.*
Foothill yellow-legged frog *Rana boylii*	–/C/–	Occurs in the Klamath, Cascade, north Coast, south Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet. Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge. Usually found near riffles with rocks and sunny banks nearby.	Absent	The BSA is not located within the species known range.
Reptiles				
Giant gartersnake *Thamnophis gigas*	T/T/–	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno. Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Absent	There are no sloughs, canals, rice fields, or freshwater marshes that provide suitable habitat. Although the ponded area of Alder Creek at US 50 provides appropriate conditions, the remainder of the creek has a rocky substrate and is predominantly shaded. *No effect.*

Table 2.20-2. Continued

Common and Scientific Name	Legal Status (Federal/State/ Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Birds				
Bald eagle *Haliaeetus leucocephalus*	–/E/P	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, east of the Sierra Nevada south of Mono County, and some rangelands and coastal wetlands. In western North America, nests and roosts in coniferous forests, woodlands, grasslands, and wetland habitats within 1 mile of a lake, reservoir, stream, or the ocean; nests are normally built in upper canopy of large trees, such as conifers.	Absent	Could occasionally occur in the BSA but would not nest there.
Swainson's hawk *Buteo swainsoni*	–/T/–	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County. Commonly nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	Present	Suitable nesting and foraging habitat present in the BSA.
California black rail *Laterallus jamaicensis coturniculus*	–/T, FP/–	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties. Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations.	Absent	Emergent wetland in the BSA provides poor-quality habitat (i.e., limited emergent vegetation, deep water, adjacent to freeway) and black rail is not expected to occur.
Bank swallow *Riparia riparia*	–/T/–	Occurs along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County. Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam, along streams, coastal bluffs, and sand/gravel pits.	Absent	No bluffs or banks adjacent to water in the BSA.

Table 2.20-2. Continued

Common and Scientific Name	Legal Status (Federal/State/ Other)	General Habitat Description	Habitat Present/ Absent	Rationale
Tricolored blackbird *Agelaius tricolor*	–/T/–	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties. Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony.	Present	Emergent wetland vegetation along Alder Creek provides suitable nesting habitat; could forage in grassland areas on the Aerojet property.

[a] Status explanations:

Federal

E = listed as endangered under FESA
T = listed as threatened under FESA
– = no listing

State

E = listed as endangered under CESA
T = listed as threatened under CESA
FP = fully protected under the CFGC
SSC = species of special concern in California
– = no listing

Other

P = protected under the Bald and Golden Eagle Protection Act
DPS = distinct population segment
ESU = evolutionarily significant unit

No vernal pool branchiopod surveys were conducted for the proposed project. There are six records for vernal pool fairy shrimp within 5 miles of the BSA. The closest vernal pool fairy shrimp record is approximately 3 miles southeast of the BSA (California Department of Fish and Wildlife 2018). There are four potential seasonal wetlands in the vernal pool branchiopod indirect effects assessment area (within 250 feet of the BSA) that provide potential habitat for vernal pool branchiopods (Figure 2.16-1). Because these four potential seasonal wetlands are outside the BSA, they were not included in the delineation of wetlands and other waters conducted for the proposed project in 2016. ECORP biologists conducted 2 years of wet season surveys (2008–2010) for vernal pool branchiopods for the Glenborough at Easton and Easton Place Project; one of the four potential seasonal wetlands in the indirect effects assessment area was surveyed by ECORP. No Federally listed vernal pool branchiopods were found in this pool during these surveys.

The seasonal wetlands between the Hazel Avenue/US 50 on-ramp and off-ramp are located in an area where the surface was likely removed/disturbed during construction of the interchange. Additionally, the repeated drying and filling from road runoff would likely deplete the cyst bank, if present in these wetlands. Therefore, these wetlands are not considered suitable habitat for vernal pool branchiopods. There is no designated critical habitat for vernal pool fairy shrimp in the BSA.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle is Federally listed as threatened. The presumed historical range and current range of valley elderberry longhorn beetle extend from Tehama County south to Fresno County through the Central Valley and associated foothills from about the 3,000-foot contour on the east and the watershed of the Central Valley on the west (79 FR 55881–55884; U.S. Fish and Wildlife Service 1999:1). Valley elderberry longhorn beetle is dependent on its host plant, elderberry, which is a common component of riparian corridors and adjacent upland areas in the Central Valley (Barr 1991:5).

Valley elderberry longhorn beetle has four life stages: egg, larva, pupa, and adult. Females deposit eggs on or adjacent to the host elderberry. Egg production varies; females have been observed to lay between 16 and 180 eggs. Eggs hatch within a few days of being deposited. Larvae emerge and bore into the woody stems of the host plant, creating a long feeding gallery in the pith. The larvae feed on the pith for 1 to 2 years. When a larva is ready to pupate, it chews an exit hole and then plugs it with frass. The larva then retreats into the feeding gallery and constructs a pupal chamber from wood and frass. The larvae metamorphose between December and April and the pupal stage lasts about a month. The adult remains in the pupal chamber for several weeks after metamorphosis and then emerges from the chamber through the exit hole. Adults emerge between mid-March and mid-June, which corresponds with elderberry flowering. Adults feed on elderberry leaves and mate within the elderberry canopy (Talley et al. 2006a:7 to 9).

There are 10 records for valley elderberry longhorn beetle within 5 miles of the BSA (California Department of Fish and Wildlife 2018). Five elderberry shrubs/clusters (#s 1, 2, 3, 4, and 5) are present in the BSA (Figure 2.16-1). Three of these shrubs (#s 1, 2, and 3) are located along US

50 or between on- and off-ramps in the BSA. Two elderberry shrubs (#s 4 and 5) are in the BSA in the area of the proposed jughandle off of Folsom Boulevard. As part of the FESA consultation conducted for the Easton Project, elderberry #5 was documented as affected. As such, impacts on this shrub have already been permitted and mitigated for by the Easton Project and no impacts from the proposed project would occur. Elderberry #5 is not discussed further. Eight additional elderberry shrubs are located within 100 feet of the BSA (#s 6–13). Six of these elderberry shrubs/clusters (#s 6–11) are located along Folsom Boulevard on Aerojet property in the vernal pool branchiopod indirect effects assessment area. The two other shrubs within 100 feet of the BSA are south of Folsom Boulevard and north of Nimbus Road (#12) and next to the Cattlemen's Restaurant parking lot (#13) (Figure 2.16-1). Surveys for valley elderberry longhorn beetle exit holes, stem counts, and stem diameter measurements were conducted only for the four shrubs (#s 1–4) that are expected to be directly affected by one of more of the project alternatives and the results of these surveys are shown in Table 2.20-3.

Table 2.20-3. Results of Surveys of Elderberry Shrubs in the Biological Study Area that May be Affected by One or More of the Project Alternatives

Elderberry Number	Riparian (Y/N)	Exit Holes (Y/N)	Number of Stems ≥1" and ≤3"	Number of Stems >3" and <5"	Number of Stems ≥5"	Total Number of Stems
1	N	Y	21	8	7	35
2	N	Y	22	0	5	27
3	N	Y	0	0	1	1
4	N	N	0	2	0	2
Total			**43**	**10**	**13**	**65**

Swainson's Hawk

Swainson's hawk is a State-listed threatened species. Swainson's hawks forage in grasslands, grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Vineyards, orchards, rice, and cotton crops are generally unsuitable for foraging because of the density of the vegetation (California Department of Fish and Game 1992:41). The majority of Swainson's hawks winter in South America, although some winter in the United States. Swainson's hawks arrive in California in early March to establish nesting territories and breed (California Department of Fish and Game 1994). They usually nest in large, mature trees. Most nest sites (87%) in the Central Valley are found in riparian habitats (Estep 1989:35), primarily because trees are more available there. Swainson's hawks also nest in mature roadside trees and in isolated trees in agricultural fields or pastures. The breeding season is from March through August (Estep 1989:12, 35).

Focused surveys for Swainson's hawk were not conducted; however, a Swainson's hawk was observed in the jughandle portion of the BSA during the May field survey. There are six records for Swainson's hawk nests within 5 miles of the BSA. The closest record is for a nest from 2012 that is approximately 2.5 miles southeast of the BSA (California Department of Fish and Wildlife 2018). Swainson's hawks could nest in valley foothill riparian woodland, oak woodland, and in individual trees in the BSA.

Tricolored Blackbird

Tricolored blackbird is listed under CESA as threatened and is under status review for potential listing under FESA. Tricolored blackbird is a highly colonial species that is largely endemic to California. Tricolored blackbird breeding colony sites require open, accessible water; a protected nesting substrate, including either flooded, thorny, or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony. Tricolored blackbird breeding colonies occur in freshwater marshes dominated by tules and cattails (*Typha* spp.), in Himalayan blackberries, and in silage and grain fields (Beedy and Hamilton 1997:3–4). The breeding season is from late February to early August (Meese et al. 2014). Tricolored blackbird foraging habitats in all seasons include annual grasslands, dry seasonal pools, agricultural fields (such as large tracts of alfalfa with continuous mowing schedules, and recently tilled fields), cattle feedlots, and dairies. Tricolored blackbirds also forage occasionally in riparian scrub habitats and along marsh borders. Weed-free row crops and intensively managed vineyards and orchards do not serve as regular foraging sites. Most tricolored blackbirds forage within 3 miles of their colony sites but commute distances of up to 8 miles have been reported (Beedy and Hamilton 1997:5).

Focused surveys for tricolored blackbird were not conducted. There are eight records for tricolored blackbird nesting colonies within 5 miles of the BSA; however, three of the records are extirpated or possibly extirpated (California Department of Fish and Wildlife 2018). The closest records are for four colonies approximately 3 miles southeast of the BSA that were active in either 2012 or 2014. The only area of potentially suitable nesting habitat in or adjacent to the BSA is the patch of emergent wetland along the ponded portion of Alder Creek (Figure 2.19-1). The dominant vegetation in the emergent wetland is tule, and the patch is approximately 200 feet long; its width varies from 10 to 30 feet, depending on location.

2.20.3 Environmental Consequences

Other than the vernal pool branchiopod indirect effects assessment area and elderberry shrubs within 100 feet of the BSA, impacts from the proposed project (i.e., project-related ground-disturbing construction, staging, or access activities) are expected to be contained within the project footprint.

2.20.3.1 Vernal Pool Fairy Shrimp

Direct Impacts

Construction of any of the build alternatives would not result in the removal or filling of the four potential seasonal wetlands that provide potential habitat for vernal pool fairy shrimp. Potential temporary direct impacts from any of the build alternatives would be construction equipment driving through pools when they are dry or other short-term construction-related disturbance that does not alter the pool or its hydrology, and fuel or oil leaks or spills from construction equipment adjacent to the pools that could result in injury to or mortality of vernal pool fairy shrimp and degradation of habitat. Temporary direct impacts will be avoided through the implementation of avoidance and minimization measures discussed below.

Indirect Impacts

Potential indirect effects on vernal pool fairy shrimp that were considered were changes in hydrology and increased contaminants from runoff containing fuel, oil, and other pollutants. Degradation of habitat from increased human presence and introduction of exotic predators are indirect impacts that were considered but were dismissed for all build alternatives as potentially affecting vernal pool fairy shrimp because reconstructing the interchange would not result in increased human presence or the introduction of exotic predators in suitable habitat. In general, indirect effects were assumed to occur at potential seasonal wetlands that are outside of, but within 250 feet of, the project footprint for all alternatives.

Changes in Hydrology

Compacting soil and increasing the amount of paved surface within 250 feet of potential seasonal wetlands has the potential to modify the hydrologic regime of the pools if the increase in impermeable surface results in additional water entering the pools either through sheet flow or a water conveyance structure. This could result in water persisting (ponding) for a longer time (several days or possibly weeks), which could extend the seasonal inundation period for vernal pool branchiopods. However, it is unlikely that the increased amount of surface runoff would cause the habitats to become ponded year-round, a condition that would make the habitat unsuitable for vernal pool fairy shrimp. For all alternatives, water conveyance structures (i.e., ditches) would likely be constructed along the edges of the newly constructed roadway to capture water draining off the roadway. Therefore, changes in hydrology would not be an indirect effect of any of the alternatives.

Increased Contaminants

Under each alternative, new roadway would be constructed near the four pools that provide potential habitat for vernal pool fairy shrimp. Fuel, oil, and other contaminants from vehicles on the roadway adjacent to the pools could be carried into the pools from road runoff during storm events. These contaminants could result in sickness or mortality of vernal pool fairy shrimp, or degradation of habitat. For all alternatives, water conveyance structures (i.e., ditches) would likely be constructed along the edges of the newly constructed roadway to capture water draining off the roadway. Therefore, increased contaminants would not be an indirect effect of any of the alternatives.

Impact Conclusion

Temporary disturbance of habitat during construction and potential indirect impacts on habitat from changes in hydrology and increased contaminants would be considered adverse impacts on vernal pool fairy shrimp. However, these potential impacts would be avoided through implementation of BMPs discussed in Section 2.9.4 of the *Water Quality* chapter and avoidance and minimization measures described below.

FESA Preliminary Effects Determination

A *may effect, not likely to adversely affect* determination was made for vernal pool fairy shrimp. This determination was made because there would be no permanent direct effects on vernal pool fairy shrimp, and potential temporary effects and indirect effects would be avoided through implementation of avoidance and minimization measures. No consultation on vernal pool fairy shrimp is required.

2.20.3.2 Valley Elderberry Longhorn Beetle

Direct Impacts

Direct impacts on valley elderberry longhorn beetle would consist of removing elderberry shrubs. Construction of any of the build alternatives would result in the removal of elderberry #1 (because of the embankment for the loop ramp), elderberry #3 (because of construction of the auxiliary lane between Hazel Avenue and the Folsom Boulevard interchange) and elderberry #4 (because of construction of the new intersection and at-grade railroad crossing for the jughandle) (Figures 2.16-2 and 2.16-3). Construction of Alternative 2 would also result in the removal of elderberry #2 (Figure 2.16-3).

Ground disturbance within 20 feet of an elderberry shrub's dripline could result in disturbance of roots. Root damage could result in stress or reduced vigor of elderberry shrubs. Under all alternatives, there would be no soil disturbance within 20 feet of the eight elderberry shrubs/clusters that are within 100 feet of the BSA. The roots of the six shrubs along Folsom Boulevard on the Aerojet property would not be affected because railroad tracks are located between the work area on Folsom Boulevard and the elderberry shrubs, and no work would occur on the south side of the tracks. The other two shrubs are located more than 20 feet from work areas. Therefore, under all alternatives, there would be no direct impacts on the eight elderberry shrubs/clusters within 100 feet of the BSA.

Indirect Impacts

Potential indirect impacts on the eight elderberry shrubs/clusters within 100 feet of the BSA were considered for all alternatives. Potential indirect effects on valley elderberry longhorn beetle that were considered were altered hydrology, exposure to dust, loss of connectivity to adjacent habitat, increased lighting, and disturbance from operations and maintenance activities. Each of these potential indirect effects is discussed briefly below.

Altered Hydrology

Reduction of water to elderberry shrubs as a result of altered hydrology from changes in topography or compaction of soil could result in reduced shrub vigor/vitality and an associated decrease in shoot, leaf, and flower production that could ultimately reduce the suitability of the shrubs to provide habitat for valley elderberry longhorn beetle. Because elderberry #s 5–11 are in flat areas with moderate amounts of pavement next to or near them, changes in the hydrology for these shrubs from altered topography or increased paved surface are unlikely to occur. Elderberry #12 would not likely be affected by changes in topography and increase paved

surface from the proposed project because it is approximately 80 feet from the BSA in a low area adjacent to the Cattlemen's Restaurant parking lot. Therefore, altered hydrology would not be an indirect effect on valley elderberry longhorn beetle for all alternatives.

Dust

Ground-disturbing activities during construction of the proposed project could result in dust becoming airborne and settling on elderberries within 100 feet of the BSA. Exposure of elderberries shrubs to dust is likely limited under current conditions because surrounding areas are paved or vegetated. Dust control measures would likely be required to meet air quality standards and would minimize the amount of dust generated during construction. Additionally, according to Talley et al. (2006b), in an experiment along the American River Parkway, conditions of elderberry shrubs related to dust from nearby trails and roads (paved and dirt) did not affect the presence of valley elderberry longhorn beetle. Additional work by Talley and Holyoak (2009) found no effect on elderberries from dust accumulations. Since dust has not been found to greatly affect elderberry shrubs and dust control measures would likely be implemented during construction, this indirect effect is not expected to affect the beetle for all alternatives.

Loss of Connectivity to Adjacent Habitat

Loss of connectivity between elderberry shrubs may result when elderberries or associated vegetation is removed. Removal of such vegetation could result in gaps in vegetation that are too wide for valley elderberry longhorn beetle to travel across due to their fairly limited movement distances (Talley et al. 2006a), resulting in separation of individuals or a reduction in the possibility of colonization of adjacent areas. Removal of associated vegetation may result in an altered habitat structure or microclimate that could affect behaviors of the beetle in response to these changes in unforeseen ways (U.S. Fish and Wildlife Service 2003).

Although more research is needed, valley elderberry longhorn beetle has been observed to fly a mile or more in contiguous or fairly contiguous habitat, and exit holes have been observed on isolated shrubs that are a minimum of 0.25 mile (0.4 kilometer) from the next nearest elderberry (Arnold pers. comm.). Within the American River Basin, evidence suggests that adult beetles disperse 164 feet (50 meters) or less from emergence sites (Talley et. al 2007:28).

The removal of three (Alternatives 1 and 1a) or four (Alternative 2) elderberry shrubs would result in a greater distance between existing shrubs. It is possible that the removal of these shrubs could result in the isolation of a beetle population or greater dispersal distances between shrubs. The distances between mapped elderberry shrubs (those in and within 100 feet of the BSA) are shown in Table 2.20-4 (locations of elderberry shrubs are shown on Figure 2.16-1). The distances between the shrubs are within the observed flight distance of the beetle, and therefore movement between the shrubs is possible. However, developed areas and the busy interstate may preclude the beetle from flying between some of the elderberry shrubs in and within 100 feet of the BSA. As such, loss of connectivity of habitat is not expected to be an indirect effect on valley elderberry longhorn beetle for all alternatives.

Table 2.20-4. Distances (Miles) to Nearest Mapped Elderberry Shrubs in the Biological Study Area

Elderberry Number	1	2	3	4–11	12	13
1	0.0	0.19	0.43	0.11	0.36	0.31
2	0.19	0.0	0.6	0.22	0.21	0.22
3	0.43	0.6	0.0	0.43	0.58	0.23
4–11	0.11	0.22	0.43	0.0	0.21	0.47
12	0.36	0.21	0.58	0.21	0.0	0.22
13	0.31	0.22	0.23	0.47	0.22	0.0

Impact Conclusion

Removal of elderberry shrubs, which provide suitable habitat for valley elderberry longhorn beetle, for construction of the project would be considered an adverse impact on valley elderberry longhorn beetle. Implementation of avoidance, minimization, and mitigation measures described below would reduce potential impacts on valley elderberry longhorn beetle.

Table 2.20-5. Impacts on Elderberry Shrubs by Alternative

Elderberry Number	Alternative 1	Alternative 1A	Alternative 2	No Build
1	**Direct effect (Removed)**	**Direct effect (Removed)**	**Direct effect (Removed)**	No Effect
2	No Effect	No Effect	**Direct effect (Removed)**	No Effect
3	**Direct effect (Removed)**	**Direct effect (Removed)**	**Direct effect (Removed)**	No Effect
4	**Direct effect (Removed)**	**Direct effect (Removed)**	**Direct effect (Removed)**	No Effect
6	No Effect	No Effect	No Effect	No Effect
7	No Effect	No Effect	No Effect	No Effect
8	No Effect	No Effect	No Effect	No Effect
9	No Effect	No Effect	No Effect	No Effect
10	No Effect	No Effect	No Effect	No Effect
11	No Effect	No Effect	No Effect	No Effect
12	No Effect	No Effect	No Effect	No Effect
13	No Effect	No Effect	No Effect	No Effect
Total Number of Elderberries Effected	**3**	**3**	**4**	**0**

FESA Preliminary Effects Determination

A *may affect, likely to adversely affect* determination was made for valley elderberry longhorn beetle. This determination was made because construction of Alternative 1 or 1A would result in the removal of three elderberry shrubs and construction of Alternative 2 would result in the removal of four elderberry shrubs that provide suitable habitat for, and may be occupied by, valley elderberry longhorn beetle. Relocation of three or four elderberry shrubs could result in the disturbance of valley elderberry longhorn beetle larvae or pupae that are within the elderberry shrubs when they are transplanted. The removal of these shrubs could also reduce the population of valley elderberry longhorn beetle in the project area. Subsequent generations of elderberry beetles could also be lost if the transplanted elderberry shrubs do not survive at the conservation area.

2.20.3.3 Swainson's Hawk

Direct Impacts

Construction activities would occur during the Swainson's hawk nesting season (March through August) for all build alternatives and could result in the disturbance of this species. Trees that provide suitable nesting habitat for Swainson's hawk would be removed to construct the proposed project. Construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. If suitable nest trees cannot be removed during the nonbreeding season or a Swainson's hawk is found to be nesting in a tree to be removed, an incidental take permit (ITP) from CDFW would be required before work could commence.

Removal of suitable nest trees in the BSA would reduce the amount of available nesting habitat for Swainson's hawk and a temporal loss of nesting habitat would continue until replacement trees mature. Table 2.20-6 summarizes the estimated permanent and temporary impacts on suitable Swainson's hawk nesting habitat by alternative. This table does not include the loss of suitable nest trees in the landscaped cover type. Figures 2.19-3 and 2.19-4 show impacts on suitable nesting habitat for Swainson's hawk. Ruderal areas were not considered suitable Swainson's hawk habitat because they are located within interchanges, in strips along the freeway, and in other patches within developed areas.

Table 2.20-6. Impacts on Suitable Swainson's Hawk Nesting Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Fremont cottonwood-oak woodland	2.97	0.19	2.97	0.19	2.97	0.19
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Total Impacts	**3.00**	**0.22**	**3.00**	**0.22**	**3.00**	**0.22**

Indirect Impacts

It is not anticipated that there would be any indirect effects on Swainson's hawk as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in disturbance during the nesting season and removal of suitable nest trees would be considered adverse impacts on Swainson's hawk. Implementation of avoidance, minimization, and mitigation measures described below would avoid take of, and reduce potential impacts on, Swainson's hawk.

2.20.3.4 Tricolored Blackbird

Direct Impacts

Construction of the proposed project would result in direct permanent and temporary impacts on suitable nesting (emergent wetland) habitat for tricolored blackbird. Additionally, construction disturbance (noise and/or activity) during the breeding season (late February through early August) could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. If suitable nesting habitat cannot be removed during the nonbreeding season or tricolored blackbirds are found to be nesting in habitat to be removed, an ITP from CDFW would be required before work could commence.

Table 2.20-7 shows the estimated permanent and temporary impacts on suitable tricolored blackbird nesting habitat by alternative. Figures 2.19-3 and 2.19-4 show impacts on suitable tricolored blackbird nesting habitat.

Table 2.20-7. Impacts on Suitable Tricolored Blackbird Nesting Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06

Indirect Impacts

It is not anticipated that there would be any indirect effects on tricolored blackbird as a result of the proposed project.

Impact Conclusion

Construction noise and activities that result in disturbance during the nesting season, and permanent and temporary losses of suitable nesting and foraging habitat would be considered adverse impacts on tricolored blackbird. Implementation of avoidance, minimization, and mitigation measures described below would avoid take of, and reduce impacts on, tricolored blackbird.

2.20.3.5 Summary of FESA Preliminary Effect Findings

The FESA preliminary effect determinations for all federally listed species on the CNDDB, USFWS, and NMFS species lists are shown in Table 2.20-8.

Table 2.20-8. Preliminary Effect Determinations for Federally Listed Species

Common Name	Scientific Name	Status	Preliminary Effect Determination
Plants			
Stebbins' morning-glory	*Calystegia stebbinsii*	Endangered	No effect
Pine Hill ceanothus	*Ceanothus roderickii*	Endangered	No effect
Pine Hill flannelbush	*Fremontodendron decumbens*	Endangered	No effect
El Dorado bedstraw	*Galium californicum* ssp. *Sierra*	Endangered	No effect
Slender Orcutt grass	*Orcuttia tenuis*	Threatened	No effect
Sacramento Orcutt grass	*Orcuttia viscida*	Endangered	No effect
Layne's ragwort (or Layne's butterweed)	*Packera layneae*	Threatened	No effect
Invertebrates			
Vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	May affect, not likely to adversely affect
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	No effect
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	No effect
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened	May affect, likely to adversely affect
Fish			
Delta smelt	*Hypomesus transpacificus*	Threatened	No effect
Central Valley steelhead DPS	*Oncorhynchus mykiss*	Threatened	No effect
Central Valley steelhead Critical habitat	*Oncorhynchus mykiss*	Threatened	No effect
Central Valley spring-run Chinook salmon ESU	*Oncorhynchus tshawytscha*	Threatened	No effect
Amphibians			
California tiger salamander	*Ambystoma californiense*	Threatened	No effect
California red-legged frog	*Rana draytonii*	Threatened	No effect
Reptiles			
Giant gartersnake	*Thamnophis gigas*	Threatened	No effect

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

2.20.4.1 Avoidance and Minimization Measures

Vernal Pool Fairy Shrimp

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat

Please see Section 2.19.4.1, *Avoidance and Minimization Measures*, for the description of this measure.

Valley Elderberry Longhorn Beetle

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Fence Elderberry Shrubs to be Protected

Elderberry shrubs/clusters within 165 feet of the construction area that will not be removed will be protected during construction. A qualified biologist (i.e., with elderberry/valley elderberry longhorn beetle experience) will mark the elderberry shrubs and clusters that will be protected during construction. Orange construction barrier fencing will be placed at the edge of the buffer areas established for each shrub or cluster. The buffer area distances will be proposed by the biologist and approved by USFWS. No construction activities will be permitted in the buffer zone other than those activities necessary to erect the fencing. Signs will be posted along fencing for the duration of construction and will contain the following information.

> This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

Temporary fences around the elderberry shrubs will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the resident engineer. Temporary fencing will be 4 feet high, commercial-quality woven polypropylene, and orange in color.

Buffer area fences around elderberry shrubs will be inspected periodically by a qualified biologist until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The contractor will be responsible for maintaining the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to the County and USFWS.

Swainson's Hawk

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Restore Temporarily Disturbed Ruderal Habitat

Please see Section 2.19.4.1, *Avoidance and Minimization Measures*, for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Please see Section 2.19.4.13, *Avoidance and Minimization Measures*, for the description of this measure.

Conduct Focused Survey for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction

Please see Section 2.19.4.3, *White-Tailed Kite,* for the description of this measure.

Tricolored Blackbird

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Restore Temporarily Disturbed Ruderal Habitat

Please see Section 2.19.4.1, *Avoidance and Minimization Measures*, for the description of this measure.

Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

Please see Section 2.19.4.1, *Avoidance and Minimization Measures*, for the description of this measure.

Conduct Preconstruction Surveys for Nesting Migratory Birds

Please see Section 2.19.4.1, *Avoidance and Minimization Measures*, for the description of this measure.

2.20.4.2 Mitigation Measures

Valley Elderberry Longhorn Beetle

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat

Before construction begins, the County will compensate for direct effects on valley elderberry longhorn beetle by transplanting shrubs that cannot be avoided to a USFWS-approved conservation bank. The County will also purchase credits at the approved conservation bank in accordance with ratios shown in Table 2.20-9 for the alternative

selected. Compensation ratios shown are for shrub-level impact compensation (U.S. Fish and Wildlife Service 2017).

Table 2.20-9. Compensation for Direct Effects on Elderberry Shrubs by Alternative

Alternative	Number of Elderberry Shrubs Effected	Compensation Ratio (Non-Riparian)	Number of Conservation Credits Required
1	3	1:1	3
1A	3	1:1	3
2	4	1:1	4

The relocation of the elderberry shrubs will be conducted according to USFWS-approved procedures outlined in the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 2017). Elderberry shrubs within the project construction area that cannot be avoided will be transplanted during the plant's dormant phase (November through the first 2 weeks of February). A qualified biological monitor will remain on-site while the shrubs are being transplanted.

Swainson's Hawk

Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

Please see Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, for the description of this measure.

Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

Please see Section 2.16.4.2, *Valley Foothill Riparian Woodland*, for the description of this measure.

Tricolored Blackbird

Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

Please see Section 2.17.4.1, *Emergent Wetland*, for the description of this measure.

2.20.5 References Cited

2.20.5.1 Printed References

Barr, C. B. 1991. *The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle:* Desmocerus californicus dimorphus. U.S. Fish and Wildlife Service. Sacramento, CA.

Beedy, E. C., and W. J. Hamilton, III. 1997. *Tricolored Blackbird Status Update and Management Guidelines*. Prepared for U.S. Fish and Wildlife Service, Migratory Birds and Habitat Programs, and California Department of Fish and Game, Bird and Mammal Conservation Program.

California Department of Fish and Game. 1992. *1992 Annual Report on the Status of California State-Listed Threatened and Endangered Animals and Plants*. Sacramento, CA.

California Department of Fish and Game. 1994. *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California*. Sacramento, CA. November 1.

California Department of Fish and Wildlife. 2018. California Natural Diversity Database, RareFind 5. (September 30, 2018 update). Sacramento, CA. Search of 7.5-minute Buffalo Creek, Carmichael, Citrus Heights, Clarksville, Folsom, and Folsom SE quadrangles. Sacramento CA. Accessed: October 16, 2018.

California Department of Transportation. 2018. *Natural Environment Study. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

Eng, L. L., D. Belk and C. H. Eriksen. 1990. Californian Anostraca: Distribution, Habitat, and Status. *Journal of Crustacean Biology* 10:247–277.

Eriksen, C. H., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press. Eureka, CA.

Estep, J. A. 1989. *Biology, Movements, and Habitat Relationships of the Swainson's Hawk in the Central Valley of California, 1986–1987*. California Department of Fish and Game, Nongame Bird and Mammal Section. Sacramento, CA.

Meese, Robert J., Edward C. Beedy and William J. Hamilton, III. 2014. Tricolored Blackbird (*Agelaius tricolor*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/423. Accessed: December 23, 2015.

Moyle, P.B. 2002. *Inland Fishes of California.* Berkeley: University of California Press.

National Marine Fisheries Service. 2017. NMFSWCRCA Species List for the Hazel Avenue/U.S. 50 Interchange Project, for the Folsom, California, USGS 7.5-Minute Topographic Quadrangle Map (Quadrangle Number: 38121-F2). Obtained: April 7, 2017.

National Marine Fisheries Service. 2019. NMFSWCRCA Species List for the Hazel Avenue/U.S. 50 Interchange Project, for the Folsom, California, USGS 7.5-Minute Topographic Quadrangle Map (Quadrangle Number: 38121-F2). Obtained: July 17, 2019.

Talley, T. S. and M. Holyoak. 2009. *The Effects of Highways and Highway Construction Activities on Valley Elderberry Longhorn Beetle Habitat*. Final Report FHWA A/CA09-0925. Submitted to the California Department of Transportation. Contract Number 65A0222. March 31. Sacramento, CA.

Talley, T. S., D. Wright D, M. Holyoak. 2006a. *Assistance with the 5-Year Review of the Valley Elderberry Longhorn Beetle* (Desmocerus californicus dimorphus). United States Fish and Wildlife Service, Sacramento, CA.

Talley, T. S., M. Holyoak, and D. A. Piechnik. 2006b. *The Effects of Dust on the Federally Threatened Valley Elderberry Longhorn Beetle*. *Environmental Management* 37:647-658.

Talley, T. S., E Fleishman, M. Holyoak, D. D. Murphy, and A Ballard. 2007. *Rethinking a Rare-species Conservation Strategy in an Urban Landscape: The Case of the Valley Elderberry Longhorn Beetle*. *Biological Conservation* 35:21-32.

U.S. Fish and Wildlife Service. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle.* July 9. Sacramento, CA.

U.S. Fish and Wildlife Service. 2002. *Recovery Plan for the California Red-Legged Frog (*Rana aurora draytonii*)*. Portland, OR.

U.S. Fish and Wildlife Service. 2003. Formal Endangered Species Consultation on the Pacific Gas and Electric Company Transmission Separation Project, located in Plumas, Sequoia, and Sierra National Forests within Butte, Plumas, Madera and Fresno Counties; in Redding, Folsom, and Bakersfield Districts within Madera, Fresno, Amador, Calaveras, Tuolumne, Nevada, Placer, Butte, Yuba, Shasta, and Tehama Counties, California. June 27. Sacramento Fish and Wildlife Office. Sacramento, CA.

U.S. Fish and Wildlife Service. 2007. *Vernal Pool Fairy Shrimp* (Branchinecta lynchi) *5-Year Review: Summary and Evaluation*. September. Prepared by the Sacramento Fish and Wildlife Office. Sacramento, CA.

U.S. Fish and Wildlife Service. 2016. List of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated April 4, 2016. Sacramento, CA.

U.S. Fish and Wildlife Service. 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (Desmocerus californicus dimorphus). May. Prepared by the Sacramento Fish and Wildlife Office. Sacramento, CA.

U.S. Fish and Wildlife Service. 2019. Updated list of threatened and endangered species that may occur in your proposed project location and/or may be affected by your proposed project. Consultation Code: 08ESMF00-2016-SLI-1181. Official Species List dated July 23, 2019. Sacramento, CA.

2.20.5.2 Personal Communication

Arnold, Richard A., PhD. 2011. Entomologist. Entomological Consulting Services Ltd., Pleasant Hill, CA. August 22 and 23, 2011–Written comments on the Draft Supplemental Biological Assessment for PG&E's Valley Elderberry Longhorn Beetle Conservation Program.

2.21 Invasive Species

2.21.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed EO 13112 requiring Federal agencies to combat the introduction or spread of invasive species in the United States. The EO defines *invasive species* as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." FHWA guidance issued August 10, 1999 directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

2.21.2 Affected Environment

This section is based on the *Natural Environment Study Report* (California Department of Transportation 2018; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) prepared for the proposed project. This section presents findings of this report as it relates to invasive species within the BSA (Figure 2.16-1).

2.21.2.1 Methods

An ICF botanist/wetland ecologist conducted botanical surveys in the BSA on April 6 and May 31, 2016. The botanist/wetland ecologist walked or visually surveyed all of the BSA and compiled a list of all plant species observed (California Department of Transportation 2018; provided in Volume 3).

2.21.2.2 Invasive Plant Species in the BSA

Invasive plant species include species designated as Federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture (CDFA), and invasive plants identified by the California Invasive Plant Council (Cal-IPC). Invasive plants displace native species, change ecosystem processes, alter plant community structure, and lower wildlife habitat quality (California Invasive Plant Council 2006:1). Road, highway, and related construction projects are some of the principal dispersal pathways for invasive plants and their propagules. Table 2.21-1 lists the invasive plant species identified by CDFA and Cal-IPC that are known to occur in the BSA (California Department of Food and Agriculture 2016; California Invasive Plant Council 2016). No plant species designated as Federal noxious weeds have been identified in the BSA. Invasive plant species occur in all plant communities in the BSA, but are more prevalent in ruderal habitat.

Table 2.21-1. Invasive Plant Species Identified in the Biological Study Area

Species	CDFA	Cal-IPC
Slender wild oat (*Avena barbata*)	–	Moderate
Wild oat (*Avena fatua*)	–	Moderate
Black mustard (*Brassica nigra*)	–	Moderate
Common mustard (*Brassica rapa*)	–	Limited
Ripgut brome (*Bromus diandrus*)	–	Moderate
Soft chess (*Bromus hordeaceus*)	–	Limited
Red brome (*Bromus madritensis* ssp. *rubens*)	–	High
Italian thistle (*Carduus pycnocephalus*)	C	Moderate
Maltese star thistle (*Centaurea melitensis*)	C	Moderate
Yellow star-thistle (*Centaurea solstitialis*)	C	High
Canada thistle (*Cirsium arvense*)	B	Moderate
Poison-hemlock (*Conium maculatum*)	–	Moderate
Bindweed (*Convolvulus arvensis*)	C	–
Pampas grass (*Cortaderia jubata*)	–	High
Red-stemmed filaree (*Erodium cicutarium*)	–	Limited
Rattail fescue (*Festuca myuros*)		Moderate
Italian ryegrass (*Festuca perennis*)	–	Moderate
Edible fig (*Ficus carica*)	–	Moderate
Sweet fennel (*Foeniculum vulgare*)	–	High
Cutleaf geranium (*Geranium dissectum*)	–	Limited
Mediterranean barley (*Hordeum marinum* var. *gussoneanum*)	–	Moderate
Foxtail barley (*Hordeum murinum* ssp. *leporinum*)	–	Moderate
Smooth cat's-ear (*Hypochaeris glabra*)	–	Limited
Water iris (*Iris pseudacorus*)	–	Limited
Hyssop loosestrife (*Lythrum hyssopifolia*)	–	Limited
Horehound (*Marrubium vulgare*)	–	Limited
California burclover (*Medicago polymorpha*)	–	Limited
Harding grass (*Phalaris aquatica*)	–	Moderate
English plantain (*Plantago lanceolata*)	–	Limited
Rabbitsfoot grass (*Polypogon monspeliensis*)	–	Limited
Wild radish (*Raphanus sativus*)	–	Limited
Himalayan blackberry (*Rubus armeniacus*)	–	High
Curly dock (*Rumex crispus*)	–	Limited
Milk thistle (*Silybum marianum*)	–	Limited
Rose clover (*Trifolium hirtum*)	–	Moderate

Note: The California Department of Agriculture (CDFA) and California Invasive Plant Council (Cal-IPC) lists assign ratings that reflect the CDFA and Cal-IPC views of the statewide importance of the pest, likelihood that eradication or control efforts would be successful, and present distribution of the pest in the State. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances. The Cal-IPC species list is more inclusive than the CDFA list.

The **CDFA categories** indicated in the table are defined as follows:

B: Eradication, containment, control or other holding action at the discretion of the county agricultural commissioner.

C: State-endorsed holding action and eradication only when found in a nursery; action to retard spread outside nurseries at the discretion of the county agricultural commissioner.

The **Cal-IPC categories** indicated in the table are defined as follows:

High: Species with severe ecological impacts, high rates of dispersal and establishment, and usually widely distributed.

Moderate: Species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution.

Limited: Species with minor ecological impacts, low to moderate rates of invasion, limited distribution, and locally persistent and problematic.

2.21.3 Environmental Consequences

2.21.3.1 Invasive Plant Species

Impacts related to invasive plant species would be the same for each of the proposed build alternatives. Direct and indirect effects are discussed below.

Direct Impacts

The proposed project would create additional disturbed areas for a temporary period. Areas where temporary disturbance occurs would be more susceptible to introduction and colonization or spread of invasive plants.

Indirect Impacts

It is not anticipated that the proposed project would cause any indirect effects due to the colonization or spread of invasive plants.

Impact Conclusion

Because EO 13112 requires Federal agencies to control the introduction or spread of invasive species, the potential introduction and spread of invasive plants as a result of project construction would be an adverse impact.

2.21.4 Avoidance and Minimization Measures

2.21.4.1 Invasive Plant Species

No mitigation measures are necessary. Implementation of the environmental awareness training measure listed below and described in Section 2.16.4.1, *Fremont Cottonwood-Oak Woodland*, and the additional measure below would avoid and minimize impacts due to introduction and spread of invasive plant species in the BSA. No compensatory mitigation pertaining to invasive plants is required. Implementation of the measures below would avoid or minimize adverse impacts from the introduction and spread of invasive plant species.

Conduct Environmental Awareness Training for Construction Employees

Please see Section 2.16.4.1 for the description of this measure.

Avoid and Minimize the Spread of Invasive Plant Species during Project Construction

The County will require its contractor to avoid and minimize the introduction of new invasive plants and the spread of invasive plants previously documented in the project area. BMPs that may be used, though not limited to, include the following.

- Retain all fill material onsite to prevent the spread of invasive plants to uninfested areas.
- Use a weed-free source for project materials (e.g., straw wattles for erosion control that are weed-free or contain less than 1% weed seed).
- Prevent invasive plant contamination of project materials during transport and when stockpiling (e.g., by covering soil stockpiles with a heavy-duty, contractor-grade tarpaulin).
- Use sterile wheatgrass seed and native plant stock during revegetation.
- Revegetate or mulch disturbed soils within 30 days of completion of ground-disturbing activities to reduce the likelihood of invasive plant establishment.

The goal for implementation of these BMPs is to minimize the disturbance and transport of soil and vegetation to the greatest extent feasible to complete the work. Detailed information about implementing these BMPs is available in the Cal-IPC publication *Preventing the Spread of Invasive Plants: Best Management Practices for Transportation and Utility Corridors* (California Invasive Plant Council 2012).

2.21.5 References Cited

California Department of Food and Agriculture. 2016. *Encycloweedia: Data Sheets.* Division of Plant Health and Pest Prevention Services, Pest Exclusion Branch, Sacramento, CA. Available: https://www.cdfa.ca.gov/plant/ipc/encycloweedia/weedinfo/winfo_table-sciname.html. Accessed: July 21, 2016.

California Department of Transportation. 2018. *Natural Environment Study. Hazel Avenue/U.S. Route 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

California Invasive Plant Council. 2006. California Invasive Plant Inventory. February. (Cal-IPC Publication 2006-02.) Berkeley, CA. Available: http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf.

California Invasive Plant Council. 2012. *Preventing the Spread of Invasive Plants: Best Management Practices for Transportation and Utility Corridors.* Cal-IPC Publication 2012-1. California Invasive Plant Council, Berkeley, CA. Available: http://www.cal-ipc.org/ip/prevention/tuc.php.

California Invasive Plant Council. 2016. *California Invasive Plant Inventory Database*. Available: http://www.cal-ipc.org/paf/. Accessed: July 21, 2016.

2.22 Cumulative Impacts

2.22.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the 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 on 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 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 necessary 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 1508.7.

2.22.2 Approach to Cumulative Impact Analysis

For each resource topic, the cumulative analysis takes into consideration other past, ongoing, and reasonably foreseeable projects in the same geographic area as the proposed project, as well as planned land uses and transportation projections.

The existing, ongoing, and proposed projects listed in Table 2.22-1 have been included in this analysis because they are close to the project area or could affect regional resources. Projects not yet constructed are considered reasonably foreseeable when they are identified and planned by local agencies. This information represents the most up-to-date information available as of the date of publication of this document.

2.22.2.1 Transportation Projects

Table 2.22-1 shows anticipated projects on key nearby roadways for existing (2015) conditions, 2022, and 2042. It is assumed that roadway improvements will be implemented in the years identified in SACOG's MTP/SCS. Implementation of the following improvements would especially affect future volumes of traffic on US 50 and Hazel Avenue.

- Phased implementation of auxiliary lanes along US 50 between Sunrise Boulevard and East Bidwell Street.
- Widening of Hazel Avenue from Curragh Downs Drive to Madison Avenue.
- Construction of the Rancho Cordova Parkway interchange and the extension of Rancho Cordova Parkway from US 50 to White Rock Road.
- Phased construction of Easton Valley Parkway through the Easton/Glenborough development, the westward extension through the Westborough Specific Plan, and the eastward extension through the Folsom South of US 50 development.

Table 2.22-1. Anticipated Projects on Key Nearby Roadways

Roadway	Limits	Travel Lanes		
		2015	2022	2042
Hazel Avenue	Greenback Lane to Madison Avenue	4	4	4
	Madison Avenue to Curragh Downs Drive	4	6	6
	Curragh Downs Drive to US 50	6	6	6
	US 50 to Jug Handle	0	4	6
	Jug Handle to Easton Valley Parkway	0	4	6
Folsom Boulevard	Sunrise Boulevard to Hazel Avenue	4	4	4
	Hazel Avenue to US 50	4	4	4
Easton Valley Parkway	Rancho Cordova Parkway to Hazel Avenue	0	Partial[a]	6
	Hazel Avenue to Prairie City Road	0	Partial[a]	4
	Prairie City Road to Oak Ave Parkway	0	0	4
Rancho Cordova Parkway	Interchange with US 50	No	Yes	Yes
	US 50 to Easton Valley Parkway	0	4	6
	Easton Valley Parkway to White Rock Road	0	4	6
White Rock Road	Prairie City to Grant Line Road	4	4	4
	Grant Line Road to Sunrise Boulevard	2	4	4
US 50 EB Aux Lanes	Sunrise Avenue to Rancho Cordova Parkway	No	Yes	Yes
	Rancho Cordova Parkway to Hazel Avenue	No	Yes	Yes
	Hazel Avenue to Folsom Boulevard	No	Yes[b]	Yes[b]
	Folsom Boulevard to Prairie City Road	No	Partial[c]	Yes
US 50 WB Aux Lanes	Prairie City Road to Folsom Boulevard	No	No	Yes
	Folsom Boulevard to Hazel Avenue	No	No	Yes
	Hazel Avenue to Rancho Cordova Parkway	No	No	Yes
	Rancho Cordova Parkway to Sunrise Boulevard	No	No	Yes

Source: DKS 2016; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx

[a] Assumes partial construction of Easton Valley Parkway to provide local access, but no complete connection from Rancho Cordova Parkway to Hazel Avenue, or from Hazel Avenue to Prairie City Road.

[b] An auxiliary lane along eastbound US 50 from Hazel Avenue to the Folsom Boulevard overcrossing is part of this project.

[c] Assumes auxiliary lane extends east of Folsom Boulevard, consistent with US 50 Auxiliary Lane Project Study Report.

2.22.2.2 Other Development Projects

Development forecasts were based on the following projects.

- **Buildout of City of Folsom (both the current boundaries and the proposed Sphere of Influence)**. The sphere of influence encompasses 3,600 acres bounded by US 50, Prairie City Road, White Rock Road and the El Dorado County line. The plan will be a mixed-use community with retail, office and residential components. A major regional mall is planned for the area.
- **Buildout of the Easton Project**. This is a 6,400-acre residential and commercial development located along the south side of US 50 between Hazel Avenue and Prairie City Road.
- **City of Rancho Cordova buildout estimates**. The city of Rancho Cordova is located to the south and west of Hazel Avenue, covering approximately 33.6 square miles and 20,071 acres.
- **El Dorado County General Plan EIR estimates for the El Dorado Hills area**. El Dorado Hills is located approximately 7.25 miles east of Hazel Avenue at the western border of El Dorado County.

The Easton Project will be required to connect Glenborough Drive to the Folsom Boulevard/US 50 eastbound ramps intersection by buildout. This would provide another access point to the development, reducing the amount of traffic using the Folsom Boulevard and Birkmont Drive/Auto Mall Circle intersection, and improving operations. After implementation of either build alternative, the US 50 ramp terminal intersections at Hazel Avenue would operate at an acceptable LOS in both the AM and PM peak hour in 2022.

2.22.3 Assessment of Cumulative Impacts

The current health and historical context of the resources considered in this analysis are presented in the *Affected Environment* sections of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*. The build alternatives would not contribute to a cumulative impact in the following resource areas because the resources are not subject to a significant cumulative impact, or the build alternatives would result in beneficial impacts, no impacts, or minor impacts that would be fully mitigated. Consequently, the contribution to a cumulative impact on the following resources would not be considerable.

- **Land Use**. The project is listed in SACOG's 2017/2020 MTIP and is consistent with SACOG MTP/SCS policies. It consists of improvements to an existing road and interchange, and would not create a new community separator. The project is also consistent with Sacramento County's and Rancho Cordova's general plan goals, policies, and actions. Therefore, it would not conflict with any policy intended to protect the environment.
- **Growth**. As stated in Section 2.1.1.1, *Existing Land Uses*, there are several planned developments within the study area. Other areas of planned development are identified in Sacramento County's and Rancho Cordova's general plans and the SACOG MTP/SCS. The

proposed project would improve traffic circulation in order to accommodate this planned growth. It would not contribute to cumulative impacts of growth.

- **Community Impacts/Environmental Justice (NEPA only)**. Implementation of the proposed project would improve the roadway for all users of the transportation system, regardless of race, ethnicity, or income. Minor impacts associated with construction-period delays, noise, and air quality would not be borne disproportionately by low-income and/or minority populations.
- **Utilities/Emergency Services**. Impacts on utilities/emergency services are individual to development projects. There are no significant cumulative impacts associated with past, present, and reasonably foreseeable future projects. During construction, lane closures during non-peak traffic hours, and weekend and possible night work, ramp realignment construction, and during conditions where traffic is detoured would temporarily modify existing traffic patterns. However, any required closures would be coordinated with emergency service providers so as not to hinder or increase response times. Additionally, the project-specific TMP, as described in Chapter 1, *Proposed Project*, would require that emergency providers and travelers be notified in advance. Other projects are required to adopt similar traffic control measures either as directed by Caltrans or as a result of local traffic ordinances. Consequently, the proposed project is not expected to contribute to or create a cumulative impact related to utilities or emergency services.
- **Transit and Bicycle/Pedestrian Facilities**. There are no significant cumulative impacts associated with transit and bicycle/pedestrian facilities in the project area. The proposed project would not create a new contribution to a cumulative impact related to these facilities and would improve pedestrian and bicycle facilities in the project limits.
- **Cultural Resources**. One built environment resource, SVRR (CA-SAC-428H), is considered eligible for listing in the NRHP. Although the SVRR crosses the project area, the proposed project would not compromise the character-defining features that help define why the rail line is significant under the NRHP.

  The project area is moderately sensitive for archaeological deposits, including human remains. Past activities have disturbed archaeological deposits (including tribal cultural resources) linked to local Native American tribes, and it is possible that future projects may also disturb archaeological deposits. Other projects would be required to adhere to State and local regulations concerning cultural resources as well as California Health and Safety Code Section 7050.5 for the discovery of human remains. Implementation of measures described in Section 2.7, *Cultural Resources*, to protect cultural resources would reduce impacts, and would avoid a contribution to cumulative impacts. Therefore, the project is not expected to contribute to cumulative effects on cultural resources.
- **Hydrology and Floodplain**. The project would install pilings in the FEMA floodway for Alder Creek. Development along the creek has the significant cumulative impact of increasing the potential for flooding as a result of increased runoff and constrictions on floodwater flows through the creek. The project will be designed to avoid obstructing the Alder Creek floodplain. Further, as discussed in Section 2.8, *Hydrology and Floodplain*, hydraulic control structures would reduce any threats of flooding as a result of runoff from

the project. Therefore, the project would not contribute to a cumulative impact related to hydrology or floodplains.

- **Water Quality and Stormwater Runoff**. Alder Creek is not listed as an impaired water body on the 2010 Integrated Report (CWA 303[d] List/305[b] Report) compiled by the SWRCB. Therefore, there is not currently a cumulative water quality impact associated with the creek. Potential impacts of the project on existing water quality conditions in Alder Creek would consist of short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek generated during construction. Project design would address water quality and stormwater runoff using low impact development concepts that promote infiltration and protect water quality, and implement post-construction stormwater runoff BMPs. Other projects would be required to implement water quality BMPs including implementation of the SWPPP, Caltrans BMPs (for highway transportation projects), and stormwater guidance measures. As a result, the proposed project's contribution to water quality impacts would not be cumulatively considerable.

  Groundwater within the project area is known to be contaminated from various sources; however, groundwater extracted for dewatering would be stored in tanks and either sent off-site for recycling or treated at the existing groundwater treatment system at the Aerojet facilities. The project would not use groundwater, nor would it release substances that could infiltrate into the groundwater basin. As such, the project would not contribute pollutants to groundwater sources.

- **Geology/Soils/Seismic/Topography**. Impacts on geology related to potential seismicity are individual impacts and do not have the potential to contribute to a significant cumulative effect. The project would incorporate accepted building techniques and standards for road construction; therefore, its impacts would not contribute to making any such level of risk unacceptable. For individual projects, site-specific soil erosion would be reduced to a less-than-significant level by development and implementation of a SWPPP and adherence to the County Grading Ordinance. The proposed project's incremental contribution to cumulative impacts on geology/soils would not be cumulatively considerable.

- **Paleontology**. Two of the soil units (Riverbank Formation and Modesto Formation) in the project area are considered highly sensitive for paleontological resources. Cumulative impacts on paleontology could result from construction of other transportation and general development projects in Sacramento County. The project would result in grading and excavation of portions of the site, thereby creating the potential to contribute to the cumulative damage or destruction of important paleontological resources in the region. Therefore, combined with other past, present, and probable future projects and programs in the region, construction associated with the project could result in a cumulative impact on paleontological resources. However, implementation of the measure *Develop a Paleontological Mitigation Plan* in Section 2.11, *Paleontology*, to protect and recover paleontological resources would ensure that the project's contribution to the cumulative impact would not be considerable.

- **Hazardous Waste/Materials**. Construction of transportation and development projects requires use of heavy construction equipment, the operation and maintenance of which would involve the use and handling of hazardous materials, including diesel fuel, gasoline, lubricants, and solvents. Simultaneous construction of the proposed project and other projects

in the vicinity of the project site could potentially result in significant hazards to the public through the routine transport, use, or disposal of hazardous materials, or the release of hazardous materials into the environment. Lead and asbestos surveys would be conducted for the build alternatives to evaluate the presence of these materials in buildings slated for demolition, minimizing the risk of exposure of hazardous materials to construction workers. Compliance with BMPs, and Federal, State, and county regulations regarding hazardous materials would minimize the potential for an accidental release of hazardous materials during construction or operation and ensure that the project would not contribute to cumulative impacts.

- **Energy**. The build alternatives would require temporary energy consumption during construction, including fuel for construction and personnel equipment and vehicles, and electricity for night lighting. However, during operation of the project, the build alternatives would improve overall network performance, which would improve fuel efficiency for cars and trucks. The build alternatives would not result in direct, indirect, or unavoidable impacts on energy demand or energy resources and would therefore not contribute to a cumulative impact on energy.
- **Invasive Species**. No plant species designated as Federal noxious weeds were identified in the BSA. Most of the invasive plant species occur in ruderal habitat, along roadways, and in disturbed/graded areas. Table 2.21-1 identifies the invasive plant species that CDFA and Cal-IPC have identified as occurring in the BSA. Federal agencies are required to comply with EO 13112 (Invasive Species) as part of NEPA analyses. CEQA requires that State and local agencies identify and avoid, minimize or mitigate substantial habitat modifications, such as those that could be caused by invasive species. Through the implementation of avoidance and minimization measures described in Section 2.21.4.1, the build alternatives would not result in a substantial contribution to cumulative impacts related to the spread of invasive species.

The incremental effects of the proposed project may contribute to considerable cumulative impacts in the resource areas discussed in the following sections.

2.22.3.1 Human Environment

Traffic and Transportation

The resource study area for cumulative impacts related to traffic and transportation is the same as that used for the traffic analysis (Figure 2.5-1). Projects that would contribute to potential cumulative impacts on intersection and freeway operations include the transportation and development projects listed in Table 2.22-1. Those projects were included in the traffic modeling assumptions for the *Traffic Operations Report* (DKS 2016; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) and encompass projects and developments identified in the general plans for the Cities of Folsom and Rancho Cordova, El Dorado County General Plan EIR estimates for the El Dorado Hills area, buildout scenario for the Easton Project, and SACOG's 2035 MTP/SCS.

As discussed in Section 2.5, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, traffic forecasts for the horizon (cumulative) year (2042) analyses were developed for the three build

alternatives and the No Build Alternative. The horizon year conditions are listed in Tables 2.5-13 (intersections) and 2.5-14 (freeway segments).

Intersection Operation Impacts

Table 2.5-13 summarizes the results of the intersection operation analysis and lists the LOS and delay expected for each roadway segment without the project and under each build alternative. In some cases, the project would improve intersection operations. Alternatives 1 and 1A would improve the LOS and delay at the Hazel Avenue/US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps from LOS F to LOS E and LOS D respectively, during the PM peak hour and from LOS E to LOS C at the eastbound ramp during the AM peak hour. Alternative 2 would improve the delay at the Hazel Avenue/US 50 westbound ramp (Intersection #2) during the PM peak hour more than under Alternatives 1 and 1A. The Folsom Boulevard/Auto Mall Circle intersection (Intersection #6) would continue to operate at LOS F during the PM peak hour under all build alternatives.

Under the build alternatives, the Hazel Avenue and Gold County Boulevard (Intersection #1) would operate at a worse LOS during PM peak hour (LOS D to LOS E). However, the intersection would still operate under acceptable LOS thresholds.

Also, vehicle delays at the Folsom Boulevard and jughandle intersection (Intersection #9) during both AM and PM peak hours would increase by up to 4.2 seconds for all alternatives. However, the intersection would still operate under acceptable LOS thresholds and would not result in an increase of the average vehicle delay by 5 seconds or more.

The build alternatives would either not affect LOS or average driver delay, not deteriorate an acceptable LOS to an unacceptable LOS, or not result in an increase on average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project. Therefore, while the project does contribute to cumulative impacts on intersection operations, the contribution is less than cumulatively considerable.

Freeway Operation Impacts

Table 2.5-14 summarizes the LOS expected for each freeway segment without the project and under each build alternative. The results are the same for each build alternative. The analysis of freeway segment operation indicates that the build alternatives would not cause any adverse freeway operations as they would not deteriorate an acceptable LOS to an unacceptable LOS. As shown in Table 2.5-14, with all build alternatives, eastbound freeway operations improve compared to the No Build Alternative conditions in the vicinity of Hazel Avenue as a result of the proposed transition lane. Westbound US 50 at the Folsom Boulevard on-ramp would continue to operate at LOS F during the AM peak hour. Therefore, the project would not contribute to cumulative impacts on freeway operations.

Visual/Aesthetics

The resource study area for cumulative impacts related to aesthetics and visual changes is the *project corridor*, defined as the area of land that is visible from, adjacent to, and outside the

highway ROW, and comprised of the same four VAUs described in Section 2.6.2.2, *Visual Assessment Units* (shown in Figure 2.6-1). The specific visual changes that would result from implementation of the build alternatives are discussed in more detail in Section 2.6.3, *Environmental Consequences*, as well as in Section 3.7, *Aesthetics*.

Construction of the proposed project would result in both temporary and permanent contributions to cumulative visual changes in the area because, regardless of the build alternative, it would temporarily add construction components such as scaffolding, traffic barriers, lighting, and equipment, and it would permanently modify and add new transportation features and structures, using a modern aesthetic treatment, to the current transportation infrastructure.

All build alternatives would contribute to the existing transportation infrastructure already visible to highway and roadway users in the area. The new transportation features that would be added by the project would change the appearance of the US 50 corridor, Hazel Avenue and Folsom Boulevard, would add updated transportation facilities and new structures that would be visibly apparent, and would remove some existing buildings.

All build alternatives would also modify the view for some recreational users near the Nimbus Flat entry drive, western portions of the American River Parkway that are close to the freeway and off-ramps, and the bikeway and pedestrian overcrossing of US 50. The project's proposed new paved bike path, new ramp structures, and a low retaining wall along Hazel Avenue would be visible from some westernmost portions of the recreational area.

It is anticipated that all build alternatives would contribute to changing the visual character of the immediate area, with Alternative 1A resulting in the least change, Alternative 1 resulting in slightly more change due to a viaduct off-ramp elevated over Hazel Avenue, and Alternative 2 resulting in the most change due to a new flyover ramp that would span US 50 and the removal of the Nimbus Winery building. The Nimbus Winery building is not registered as a local historical property and it is not eligible for listing in the CRHR or the NRHP, but it is part of the character of the area and there is local interest in preserving it. Removal of the building is unavoidable for Alternative 2.

Other planned development and transportation projects would also contribute to visual changes in the area, including adding substantial new development in currently undeveloped areas in the project vicinity. For instance, the Easton Project will contribute to growth and development in and around the project area. Other areas of planned development are identified in the Sacramento County General Plan and the SACOG MTP/SCS. Implementation of these plans will contribute to visual changes as the growth and development they specify occurs. Temporary impacts would also occur during construction of the planned development, including temporary increases in nighttime light.

Because the project's proposed permanent visual changes are at an existing interchange with significant transportation-related features, and the new features would include modern aesthetic treatment, the contributions of the proposed project are generally less than cumulatively considerable. However, Alternative 2 would have a more pronounced contribution to visual impacts because it includes a new flyover spanning US 50 and removal of the Nimbus Winery building. The contribution of this alternative to visual impacts and the changes in the visual

character of the project area would be a potentially significant cumulative impact. Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce the contribution to visual changes to a less-than-cumulatively considerable level. However, the contribution is not avoided if Alternative 2 is selected. The selection of an alternative has not yet occurred. Alternatives 1 and 1A would cause less-than-cumulatively considerable contributions to cumulative visual changes. Alternative 2 would result in a significant and unavoidable contribution to a cumulative impact.

The temporary visual changes associated with construction activities for the project include the use of scaffolding, traffic barriers, and construction equipment. Construction equipment would move from location to location as the work progresses and would be consistent with temporary visual changes that occur at any construction site. All three build alternatives would also temporarily contribute to increases in nighttime light during project construction. Evening and nighttime construction activities would require the use of extremely bright lights during an approximate 6-month period. The temporary contribution to nighttime light that would result from all three build alternatives is also considered a significant cumulative impact. Implementation of the minimization measure *Minimize Fugitive Light from Portable Sources Used for Construction*, identified in Section 2.6.4, *Avoidance, Minimization, and/or Mitigation Measures* and identified as CEQA Mitigation Measure AE-1 in Section 3.7.2*, CEQA Significance Determinations for Aesthetics*, would reduce the project's temporary contribution to nighttime light to a less-than-cumulatively considerable level.

2.22.3.2 Physical Environment

Air Quality

As discussed in Section 2.13, *Air Quality*, the resource study area for air quality is the SVAB. The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada Range. The San Joaquin Valley Air Basin lies to the south.

Primary pollutants of concern in the project area are O_3 and its precursors, ROG and NO_X, as well as CO, PM2.5, and PM10. See Section 2.13 for further discussion on the existing setting related to air quality. The project falls under the jurisdiction of SMAQMD, which has established thresholds, as shown in Table 2.13-1, for regional criteria pollutants. These standards are cumulative in nature and are based on projected growth within the SVAB including land uses such as residential, commercial, and transportation.

Construction Activities

Construction emissions were estimated using the SMAQMD's Roadway Constructions Emissions Model 8.1.0. Tables 2.13-4, 2.13-5, as well as Tables 3.11-3 and 3.11-4 in Chapter 3, *California Environmental Quality Act Evaluation*, indicate that during construction of any of the build alternatives emissions of NO_X would exceed SMAQMD's threshold of significance, and during construction of Alternatives 1 and 1A PM10 emissions would exceed SMAQMD's PM10

threshold. These temporary increases in criteria pollutants would contribute to a cumulative net increase in pollutants during project construction. Implementation of Mitigation Measure AQ-1, *Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices)*, would reduce the contribution under NEPA to less-than-cumulatively-considerable levels. With the addition of Mitigation Measure AQ-2, *Utilize Model Year 2010 or Newer Engines to Reduce Construction-Related Exhaust Emissions from On-Road Vehicles*, and Mitigation Measure AQ-3, *Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related NO_X Emissions*, the project's contribution of NO_X and PM10 construction emissions under CEQA would also be less than cumulatively considerable. Therefore, with mitigation, the project's contributions to cumulative impacts on air quality during construction would be less than cumulatively considerable.

Operational Impacts

The proposed project is listed in SACOG's currently conforming 2016 MTP/SCS as SAC24255. The regional emissions modeling and analysis conducted by SACOG for the MTP/SCS considers all planned and programmed transportation projects included in the MTP and MTIP. The transportation projects listed in Table 2.22-1 have been analyzed and found not to contribute to a substantial impact on air quality. In addition, development projects are 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 result in a cumulative impact on air quality. Therefore, impacts of the proposed project on air quality are not expected to be cumulatively considerable.

Moreover, as shown in Table 2.13-3 and Table 3.11-2, operational emissions would be well below SMAQMD's thresholds. Similar to construction emissions, SMAQMD's regional criteria pollutant thresholds have been adopted to assist lead agencies in analyzing both project-level and cumulative impacts. Because emissions would not exceed SMAQMD's thresholds, operation of the project would not make a considerable contribution to cumulative air quality impacts.

Noise

The study area for noise is the area around the project containing the sensitive receptors shown on Figure 2.14-2.

Construction Impacts

Temporary increases in noise could occur during construction of the proposed project. However, compliance with applicable Caltrans standard specifications and local noise standards would minimize the temporary noise effects of construction and would ensure that temporary contributions to cumulative noise impacts would be less than cumulatively considerable. No mitigation is necessary.

Operational Impacts

For consideration of the project's contribution to cumulative noise impacts related to operation of the proposed project, this analysis examines whether implementation of the project would

make a considerable contribution to noise levels compared to existing (2015) noise levels and compared to design year (2042) No Build conditions. The analysis of noise level changes resulting from roadway operations is inherently cumulative because the traffic forecasts use build-out assumptions. The assessment of the project's contribution to changes in noise levels was conducted based on both a Federal analysis protocol (as described in Section 2.14, *Noise and Vibration*) and a local analysis, based on local noise standards.

Federal Analysis

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and associated 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 NAC that are used to determine when a noise impact would occur.

Based on the analysis presented in Section 2.14.3, *Environmental Consequences*, and the comparison of existing (2015) conditions to design year (2042) conditions, traffic noise levels are predicted to exceed the NAC at residential and recreational land uses in the project area under design year conditions. See Tables 2.14-4 through 2.14-6 for a detailed breakdown of the predicted noise levels based on the Federal analysis and the location of each receptor where the NAC would be exceeded. The project's contribution to increases in noise at those locations is considered a significant cumulative impact.

Local Analysis

The identification of the project's contribution to cumulative noise impacts based on local standards uses the following criteria.

- If the noise level increase from design year (2042) with-project conditions compared to year 2042 no-project conditions is more than 1 dB above the County Noise Element standard relative to future no-project conditions, the project would result in a cumulatively considerable significant impact. If the incremental increase caused by the project is 1 dB or less, the project's contribution would be less than cumulatively considerable.
- If noise levels already exceed 75 dB at non-industrial land uses, any increase in long-term noise exposure as a result of the project would be considered a contribution to a significant cumulative impact. If the project's incremental increase is greater than 1 dB, the project's contribution would be considered cumulatively considerable and a significant impact. If the incremental increase caused by the project is 1 dB or less, the project's contribution would be less than cumulatively considerable.

Design Year (2042) Comparison

Predicted design-year noise levels under the No Build Alternative range from 59 to 81 dBA L_{dn} (see Appendix F, *Traffic Noise Modeling Results at Receivers*, for a detailed breakdown of the predicted noise levels, and a comparison by alternative).

Under Alternative 1, predicted design year noise levels in 2042 range from 59 to 81 dBA L_{dn}. Alternative 1 would not cause an increase in noise levels above the County Noise Element standard compared to the 2042 No Build Alternative. Several of the modeled receptors would actually have decreased noise levels compared to the No Build Alternative. As a result, Alternative 1 would not contribute to cumulative noise impacts in 2042.

Under Alternative 1A, predicted design year noise levels in 2042 range from 59 to 81 dBA L_{dn}. However, under predicted 2042 conditions, Alternative 1A would not increase noise levels above the County Noise Element standard by more than 1 dB. Alternative 1A would have a less-than-cumulatively-considerable contribution to cumulative noise impacts in 2042.

Under Alternative 2, predicted design year noise levels in 2042 range from 59 to 81 dBA L_{dn}. Alternative 2 would increase noise levels by more than 1 dB at receptor location R27. The County Noise Element standard for that location is 65 dB. Noise levels in 2042 without the project are predicted to be 68 dB and Alternative 2 would increase levels by 3 dB. As a result, Alternative 2's contribution of up to 3 dB to cumulative noise levels would be considered a significant cumulative impact.

Non-Industrial Area Increase Comparison

Noise levels for the existing condition range from 58 to 80 dBA L_{dn}, with noise levels already exceeding the County standard of 75 dB at the non-industrial receptor locations of R01, R02, R25, R26, ST-3 and ST-5 (see Appendix F for a detailed breakdown of the predicted noise levels, and a comparison by alternative).

Under Alternative 1, predicted existing-plus-project noise levels range from 59 to 80 dBA L_{dn} (see Appendix F). Of the receptor locations that already have noise levels exceeding the 75 dB standard, noise levels at R01, R02, and R25 would increase by 1 dB as a result of Alternative 1. Contributions to increases in noise levels that would result from Alternative 1 would be less than cumulatively considerable.

Under Alternative 1A, predicted existing-plus-project noise levels range from 58 to 81 dBA L_{dn}. Of the receptor locations that already have noise levels exceeding the 75 dB standard, noise levels at R01, R02, R16, R18, and R25 would increase by 1 dB as a result of Alternative 1A. Contributions to increases in noise levels that would result from Alternative 1A would be less than cumulatively considerable.

Under Alternative 2, predicted existing-plus-project noise levels range from 58 to 80 dBA L_{dn}. Of the receptor locations that already have noise levels exceeding the 75 dB standard, noise levels at R01, R02, R25, and R26 would increase by 1 dB and noise levels at R27 would increase by 3 dB. Alternative 2's contribution of up to 3 dB to cumulative noise impacts would be a significant cumulative impact.

Other projects that currently or in the future contribute to cumulative noise impacts include those listed in Table 2.22-1. Those projects were included in the traffic modeling assumptions for the *Traffic Operations Report* (DKS 2016; provided in Volume 3) and encompass projects and developments identified in the general plans for the Cities of Folsom and Rancho Cordova, El

Dorado County General Plan EIR estimates for the El Dorado Hills area, buildout scenario for the Easton Project, and SACOG's 2035 MTP/SCS. Because traffic data is used to predict traffic noise levels, the modeling of future traffic noise levels takes these projects into consideration.

Noise Abatement for Contributions to Cumulative Impacts

The project's contribution to increases in operational traffic noise that exceeds the Federal NAC is considered a significant cumulative impact. All three build alternatives were shown to result in an increase that exceeded the NAC. To reduce the project's contribution to noise impacts, the use of noise abatement in the form of noise barriers was assessed. The evaluation of abatement options determined that a barrier of 14 feet at the Aerojet Road off-ramp would reduce the project's contribution to below the NAC thresholds. The barrier at the Aerojet Road off-ramp (see Figures 2.14-3, 2.14-4 and 2.14-5, depending on the alternative selected), would have respective lengths of 1,520, 1,900, and 1,960 feet and a height of 14 feet for Alternatives 1, 1A and 2 and would reduce the project's increase in traffic noise levels to below the NAC. The noise abatement evaluation is described in Section 2.14.4.2, *Noise Abatement Evaluation under 23 CFR 772*.

Alternatives 1 and 1A would not significantly contribute to operational traffic noise impacts that exceed the standards set by the County General Plan Noise Element. The cumulative noise impacts of Alternatives 1 and 1A, compared to local standards, would be less than cumulatively considerable. No mitigation is necessary.

Alternative 2 would contribute up to 3 dB to local cumulative noise impacts. The contribution would be considered a significant cumulative impact. Implementation of CEQA Mitigation Measure NO-1, *Apply Quiet Pavement or Construct Noise Barrier along Aerojet Road*, described in Section 3.12.2, *CEQA Significance Determinations for Noise*, would reduce the impact to a less than cumulatively considerable level. As further discussed in Section 3.12.2, the County would implement one of two mitigation options described in Mitigation Measure NO-1, either apply quiet pavement to the US 50 mainline or construct a noise barrier at a height of 14 feet along Aerojet Road. Quiet pavement is expected to result in up to 4 dB of noise reduction, while a noise barrier is expected to result in up to 12 dB of noise reduction. Implementation of either of these options is expected to result in a reduction in traffic noise levels such that noise levels would be in compliance with local noise standards, reducing the project's contribution to a cumulative impact to less-than-cumulatively considerable levels.

2.22.3.3 Biological Environment

The resource study area for the biological environment is the BSA. As described in Sections 2.16, *Natural Communities*, through 2.21, *Invasive Species*, the BSA generally comprises the limits of disturbance (including areas to accommodate temporary construction activities and staging) and undeveloped habitats within 100 feet of these limits to account for potential indirect effects on nearby aquatic resources and elderberry shrubs. The extent of the BSA is shown in Figure 2.16-1. Overall, the BSA consists of highway, local roads, commercial development, and residential areas. The BSA has a relatively high level of historical and ongoing disturbance. Construction of other transportation and general development projects in Sacramento County

that result in the loss of biological resources contribute to significant cumulative biological impacts. Construction of the proposed project would add to those cumulative impacts.

Natural Communities

There are 11 land cover types in the BSA, and 6 of these are considered natural communities of special concern—Fremont cottonwood-oak woodland, valley foothill riparian woodland, emergent wetland, seasonal wetland, perennial drainage, and ephemeral drainage. Construction of other transportation and general development projects in Sacramento County that result in the removal of these natural communities contribute to the cumulative loss of the communities. Construction of the proposed project would add to the cumulative loss. All build alternatives would result in the same permanent and temporary impacts on Fremont cottonwood-oak woodland vegetation and valley foothill riparian woodland vegetation, respectively. Construction of the proposed project under any build alternative would result in the permanent loss of up to 2.97 acres of Fremont cottonwood-oak woodland. Construction of the jughandle road for the proposed project would result in trimming or removal of Fremont cottonwood-oak woodland vegetation. Construction of the proposed project under any build alternative would result in the permanent loss of up to 0.03 acre of valley foothill riparian woodland vegetation. Temporary disturbance of up to 0.19 acre of Fremont cottonwood-oak woodland and 0.03 acre of valley foothill riparian woodland vegetation would occur during construction of the proposed project. The net impact of the proposed project on Fremont cottonwood-oak woodland would be 0.85 acre of permanent impact and 0.05 acre of temporary impact, because 2.26 acres of the affected habitat under all three alternatives was already mitigated for in Phase 2 of the Glenborough at Easton and Easton Place Project (County of Sacramento 2008). The loss of these communities of special concern would be considered a potentially significant cumulative impact. With implementation of the compensatory mitigation described in Section 2.16.4.1 and described in Section 3.15.2, *CEQA Significance Determinations for Biological Resources*, as Mitigation Measure BIO-7, *Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland*, and Mitigation Measure BIO-11, *Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland*, construction of the proposed project would not add to the cumulative loss of communities of special concern and would not result in cumulatively adverse effects. Wetlands and other waters are discussed below. The project's contribution to a cumulative impact on natural communities would be less-than-cumulatively considerable with mitigation incorporated.

Wetlands and Other Waters

Cumulative impacts on wetlands and other waters have or would result from construction of other transportation and general development projects in Sacramento County. Construction of the proposed project would add to the cumulative loss of wetlands. Direct impacts can result from the placement of fill within a wetland or drainage. Indirect impacts can be caused by the accumulation of sediment in wetlands and drainages resulting from adjacent disturbances. Both direct and indirect impacts can add to the cumulative loss of wetland and drainage habitat.

Under any of the alternatives, the project would result in direct impacts and permanent loss of up to 0.08 acre of wetland habitat and up to 0.24 acre of non-wetland waters habitat. The contribution to the loss of wetlands and other waters would be considered a significant

cumulative impact. Indirect impacts associated with the proposed project would be minimized through avoidance and minimization measures discussed in Section 2.17, *Wetlands and Other Waters*, and through implementation of BMPs required under Section 404 permit conditions. Most projects are required to comply with similar requirements under Section 404 of the CWA. These laws require no net loss of the function or value of the nation's or State's wetlands. Although this may not be achieved on every project, regulations ensure that, on the whole, cumulative impacts on wetlands under State and Federal jurisdiction are reduced, and even improved, over time. While the project's contribution to the loss of wetlands and non-wetland waters is potentially significant, implementation of the compensatory mitigation described in Section 2.17.4.1 and described in Section 3.15.2, *CEQA Significance Determinations for Biological Resources*, as Mitigation Measure BIO-8, *Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State*, would reduce the impact to a less than cumulatively considerable level.

Animal Species

Based on a review of the CNDDB search results; the USFWS list of endangered, threatened, and proposed species within the project region; and species' distribution and habitat data, eight special-status wildlife species were determined to have the potential to occur in the project region (see Table 2.19-1). After completion of the field survey, the biologists determined that suitable habitat exists for all of these species in the project area.

Construction and Operational Impacts Summary

Any of the build alternatives could result in direct and indirect impacts on animal species. These potential impacts are discussed in detail in Section 2.19.3, *Environmental Consequences*.

Midvalley Fairy Shrimp

The project would contribute to cumulative impacts on midvalley fairy shrimp through potential temporary direct impacts from construction equipment driving through pools when they are dry or other short-term construction-related disturbance that does not alter the pool or its hydrology. Fuel or oil leaks or spills from construction equipment adjacent to the pools that could result in injury or mortality of midvalley fairy shrimp and degradation of habitat would also contribute to the impact. Potential indirect effects on midvalley fairy shrimp could occur during construction with changes in hydrology and increased contaminants from runoff containing fuel, oil, and other pollutants. These effects are considered a potentially significant contribution to the cumulative impact on this species.

Western Pond Turtle

Construction of the proposed project, under any build alternative, would contribute a total of 0.18 acre of permanent impacts and 0.80 acre of temporary impacts on suitable aquatic (Alder Creek) and upland habitat (riparian and ruderal areas) habitat for western pond turtle. Aquatic habitat impacts would result from construction of piers within the creek and from construction of abutments, removal of riparian vegetation, and paving over and/or fencing of ruderal habitat near the creek. Construction activities could also result in the injury or mortality of western pond

turtle from being struck or crushed by construction equipment or becoming entrapped in open trenches. These effects are considered a potentially significant contribution to the cumulative impact on this species.

White-Tailed Kite

Construction of the proposed project, under any build alternative, would result in a total of up to 3.00 acres of permanent impacts and up to 0.36 acre of temporary impacts on suitable nesting habitat (trees) for white-tailed kite, contributing to the cumulative loss of habitat for this species. Trees that provide suitable nesting habitat for white-tailed kite would be removed to construct the proposed project. Construction disturbance (noise and/or activity) during the breeding season could also result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. These effects are considered a potentially significant contribution to the cumulative impact on this species.

Yellow-Breasted Chat

Construction of the proposed project, under any build alternative, would contribute a total of 0.03 acre of permanent impacts and 0.03 acre of temporary impacts on suitable nesting habitat (valley foothill riparian woodland) for yellow-breasted chat. Construction noise and activities could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. These effects are considered a potentially significant contribution to the cumulative impact on this species.

Song Sparrow

Construction of the proposed project, under any build alternative, would contribute a total of up to 0.09 acre of permanent impact and up to 0.31 acre of temporary impact on suitable nesting habitat (emergent wetland)) for song sparrow. Construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. These effects are considered a potentially significant contribution to the cumulative impact on this species.

Special-Status Bats and Roosting Colonies of Non-Special-Status Bats

Construction of the proposed project, under any build alternative, would contribute to the removal or disturbance of trees that provide suitable roosting habitat (cavities, crevices, furrowed bark, and foliage) for special-status bats. Implementation of Alternative 2 would result in the removal (permanent impact) of more trees that provide suitable roosting habitat for bats than Alternatives 1 and 1a. Disturbance (temporary impact) of trees that provide suitable roosting habitat would be the same for all alternatives. Under Alternatives 1 and 1A, the Hazel Avenue bridge structure would be disturbed but not removed and would still provide suitable roosting habitat for bats. The Hazel Avenue bridge would not be disturbed under Alternative 2. The disturbance or removal of trees suitable for roosting bats could result in bat displacement, injury, or mortality. These effects are considered a potentially significant contribution to the cumulative impact on this species.

Migratory Birds

Regardless of alternative, tree removal and trimming is expected to occur for construction of the proposed project and would contribute to the loss of nesting habitat for migratory birds. Clearing of ruderal habitat, where ground-nesting birds may be present, may also occur. Additionally, the Alder Creek box culvert that provides suitable nesting substrate for swallows and black phoebes would be disturbed when the new bridge is constructed next to the culvert. Construction activities could result in the possible injury or mortality of nesting birds. Removal or destruction of nests or construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. These effects are considered a potentially significant contribution to the cumulative impact on these species.

Cumulative Impacts Conclusion

The BSA adequately describes the area of cumulative impact for animal species. Other than the proposed project, future highway projects and development projects, particularly the buildout of the Folsom Sphere of Influence and the Easton Project would likely contribute to additional loss of habitats for the species listed above. While the project's contribution to the loss of habitat is considered a potentially significant cumulative impact, implementation of the avoidance and minimization efforts and compensatory mitigation described in Sections 2.16.4.1 and 2.19.4, and described in Section 3.15.2, *CEQA Significance Determinations for Biological Resources*, would reduce the impact to a less than cumulatively considerable level. In Section 3.15.2, the specific mitigation measures are Mitigation Measure BIO-1, *Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources*, Mitigation Measure BIO-2, *Conduct Environmental Awareness Training for Construction Employees*, Mitigation Measure BIO-3, *Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats*, Mitigation Measure BIO-4, *Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat*, Mitigation Measure BIO-7, *Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland*, *BIO-8, Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State*, Mitigation Measure BIO-9, *Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work*, Mitigation Measure BIO-10, *Restore Temporarily Disturbed Ruderal Habitat,* Mitigation Measure BIO-11, *Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland*, Mitigation Measure BIO-12, *Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds*, Mitigation Measure BIO-14, *Conduct Preconstruction Surveys for Nesting Migratory Birds*, Mitigation Measure BIO-15, *Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures*, *Mitigation* Measure BIO-16, *Protect Native Trees during Construction*, Mitigation Measure BIO-17, *Compensate for the Loss of Protected Trees.*

Threatened and Endangered Species

As discussed in Section 2.20, *Threatened and Endangered Species*, four Federal or State-listed species (vernal pool fairy shrimp, valley elderberry longhorn beetle, Swainson's hawk, and tricolored blackbird) could occupy the BSA based on the presence of suitable habitat. Under any of the build alternatives, direct and indirect impacts on these species could result. The project's

contribution to effects on threatened and endangered species is considered a potentially significant cumulative impact. Avoidance, minimization, and/or mitigation measures to reduce effects on these species are identified in Section 2.20.4 and in Section 3.15.2, *CEQA Significance Determinations for Biological Resources.*

In addition, as part of consultation with USFWS under Section 7 of the FESA, the project impacts on vernal pool fairy shrimp and valley elderberry longhorn beetle would be addressed. Other projects in the vicinity of the proposed project (i.e., the buildout of the Folsom Sphere of Influence and the Easton Project) would also be required to comply with FESA and implement protective measures and/or provide compensation for effects on threatened and endangered species. With implementation of protective and compensatory measures for these projects, as well as those that would be implemented for the proposed project, the project's contribution to cumulative impacts on threatened and endangered species would not be cumulatively considerable. In Section 3.15.2, the specific mitigation measures are Mitigation Measure BIO-1, *Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources*, Mitigation Measure BIO-2, *Conduct Environmental Awareness Training for Construction Employees*, Mitigation Measure BIO-3, *Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats*, Mitigation Measure BIO-4, *Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat*, Mitigation Measure BIO-5, *Fence Elderberry Shrubs to be Protected*, Mitigation Measure BIO-6, *Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat*, Mitigation Measure BIO-7, *Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland*, *BIO-8, Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State*, Mitigation Measure BIO-10, *Restore Temporarily Disturbed Ruderal Habitat*, Mitigation Measure BIO-11, *Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland*, Mitigation Measure BIO-12, *Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds*, Mitigation Measure BIO-14, *Conduct Preconstruction Surveys for Nesting Migratory Birds.*

2.22.4 References Cited

California Department of Transportation. 2017. *Community Impact Assessment for Hazel Avenue/U.S. Route 50 Interchange Project*. *City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. County Control Number: 2011-70062. January. Sacramento, CA. Prepared by ICF.

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128.

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. March. Sacramento, CA. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company.

Chapter 3 California Environmental Quality Act Evaluation

3.1 Differences between CEQA and NEPA

The Hazel Avenue/U.S. Route 50 (US 50) Interchange Project (proposed project) is subject to Federal, as well as County of Sacramento (County) and State environmental review requirements because the County proposes the use of Federal funds from the Federal Highway Administration (FHWA) and/or the project requires an approval from FHWA. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The County is the project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the California Department of Transportation (Caltrans) pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed Federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the County to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. Each and every significant effect on the environment must be disclosed in the Environmental Impact Report (EIR) and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the mandatory findings of significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

For most resource topics, the information in this chapter is summarized from information contained in Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, in order to provide a rationale for CEQA significance determinations. Chapter 2 also contains a detailed discussion of applicable regulations and existing environmental conditions. Where needed, specific references to more detailed discussions of a resource topic or impact in Chapter 2 are provided in this chapter.

3.2 Existing Conditions and the No Build Alternative

The CEQA Guidelines (Section 15125[a]) state that existing conditions at the time environmental review begins "normally" constitutes the baseline for environmental analysis. Determining the significance of an impact by comparing anticipated project conditions to existing conditions in the area affected by a project is a relatively straightforward analysis for most resources and is done in this chapter. The *Affected Environment* sections included under each resource topic in Chapter 2 describe existing conditions in the project area and are incorporated into this CEQA evaluation by reference. The assessment of the project's contribution to cumulative impacts, when combined with the contributions of other past, current and future reasonably foreseeable projects, is included in Section 2.22, *Cumulative Impacts*.

To estimate operational traffic impacts (and traffic-related air quality, greenhouse gas [GHG], and noise impacts) existing conditions do not generally represent the level of traffic at the time a project becomes operational and do not take into account both expected road improvements that may reduce traffic congestion and expected new development that may worsen it. Because the traffic operations analysis assumes the proposed project is scheduled to be constructed starting in 2020, be open to traffic in 2022, and be operational in a horizon (or cumulative) year of 2042, a comparison of forecasted conditions in those future years without and with the project is also used to determine the significance of impacts related to transportation/traffic, air quality, GHG, and noise emissions.

3.3 Terminology Used in This Chapter

Consistent with the terminology used in previous chapters, this chapter refers to the "no project" alternative as the No Build Alternative. "No build" means the existing environmental setting (or the future forecasted setting, as described in Section 3.2, *Existing Conditions and the No Build Alternative*) is maintained.

This chapter uses the following terminology to describe environmental effects of the proposed project.

- **Significance Criteria**. A set of criteria used by the lead agency (the County) to determine at what level, or "threshold," an impact would be considered significant. Significance criteria used in this EIR include those that are set forth in the CEQA Guidelines or can be discerned from the CEQA Guidelines; criteria based on factual or scientific information; criteria based on regulatory standards of local, State, and Federal agencies; and criteria based on goals and policies identified in the Sacramento County General Plan.
- **No Impact**. A project does not affect the particular resource.
- **Less-than-Significant Impact**. A project impact is considered less than significant when it does not reach the standard of significance and would therefore cause no substantial change in the environment. No mitigation is required for less-than-significant impacts.

- **Potentially Significant Impact**. A potentially significant impact is a substantial, or potentially substantial, adverse change in the environment. Physical conditions in the area would be directly or indirectly affected by the proposed project. Impacts may also be short-term or long-term. A project impact is considered significant if it reaches the threshold of significance identified in the EIR. Mitigation measures may reduce a potentially significant impact to less than significant.
- **Significant and Unavoidable Impact**. A project impact is considered significant and unavoidable if it is significant and cannot be avoided or mitigated to a less-than-significant level once the project is implemented.
- **Mitigation**. Mitigation measures are revisions to the project that would minimize, avoid, or reduce a significant effect on the environment. CEQA Guidelines Section 15370 identifies five types of mitigation:
  a. Avoiding the impact altogether by not taking a certain action or parts of an action.
  b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
  c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
  d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
  e. Compensating for the impact by replacing or providing substitute resources or environments.

3.4 Land Use

3.4.1 Criteria for Determining Significant Impacts

An impact related to land use would be considered significant if the project would result in the following.

- A conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to a general plan, specific plan or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- A physical disruption or division of an established community.

3.4.2 CEQA Significance Determinations for Land Use

Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to a general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

All Build Alternatives

Each build alternative for the proposed project is consistent with the Sacramento County General Plan, Rancho Cordova General Plan, and the Sacramento Area Council of Governments (SACOG) 2016 Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS). The proposed project is needed to accommodate planned and approved developments identified by the adopted Sacramento County General Plan and the 2016 MTP/SCS. The Sacramento County Board of Supervisors also approved a General Plan Amendment, Zoning Ordinance, Tentative Subdivision Map and Affordable Housing Plan for the Easton Project: Easton Place and Glenborough at Easton development project (Easton Project). As described in Section 1.2.2.3, *Easton Project Mitigation,* the County's proposed improvements at the Hazel Avenue/US 50 interchange are consistent with Mitigation Measure TC-2c in the Easton Project Final EIR, which requires roadway improvements at the interchange to avoid significant transportation effects.

The proposed project's build alternatives would not conflict with land use plans, policies, or regulations. A more detailed discussion of policies that are relevant to the proposed project is included in Section 2.1.2, *Consistency with State, Regional, and Local Plans and Programs*. There would be **no impact**.

No Build Alternative

The No Build Alternative would not improve the interchange. Congestion would continue to increase and traffic operations would not be improved. The proposed project is identified in the County General Plan Circulation Element and is programmed in the 2016 MTP/SCS. Selection of the No Build Alternative would be inconsistent with those regional planning documents, would not support the land use goals, policies, and actions identified in the County General Plan and could result in significant impacts related to land use planning as well as transportation operations. The No Build Alternative also conflicts with the adopted mitigation for the Easton Project.

Would the project physically disrupt or divide an established community?

All Build Alternatives

The new roadway features that would be constructed with implementation of the build alternatives would not physically divide an established community. The existing interchange includes the Hazel Avenue overcrossing, which provides connectivity between communities and businesses north and south of US 50. All build alternatives would retain and improve the Hazel Avenue overcrossing and the interchange would continue to serve these communities and businesses. All build alternatives would extend Hazel Avenue to the south of Folsom Boulevard via a new overcrossing that follows the alignment of an existing roadway. No new division or disruption would occur.

Alternative 1 would introduce an elevated viaduct at the south side of the interchange that would be adjacent and parallel to US 50, passing over Hazel Avenue, without creating a physical barrier

to the neighboring communities. Alternative 1A would introduce an undercrossing connector adjacent and parallel to US 50 instead of the viaduct proposed by Alternative 1. Alternative 2 would introduce a flyover structure that would generally be above US 50 and would not be in a location that would disrupt or divide established communities. There would be **no impact**.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed, and no new features would result in division of a community.

3.5 Population/Housing

3.5.1 Criteria for Determining Significant Impacts

An impact related to population and housing would be considered significant if the project would result in the following.

- An induced substantial unplanned population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of infrastructure).
- The displacement of substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere.

3.5.2 CEQA Significance Determinations for Population and Housing

Would the project induce substantial unplanned population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of infrastructure)?

Impact PH-1 (All Build Alternatives): Indirect growth inducement (less than significant)

The build alternatives are designed to provide portions of the transportation infrastructure needs for planned and approved developments identified by the adopted Sacramento County General Plan and SACOG's MTP/SCS. As discussed in Section 1.2.2, *Need*, the proposed project is, in part, needed in order to reduce the significant transportation impacts that the approved Easton Project would create. Since the proposed project is designed to alleviate effects of planned growth, including approved development projects, it would not result in substantial unplanned population growth, either directly or indirectly. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed. Because the improvements are necessary to allow full buildout of the Easton Project,

development at that project site would continue only to the limits and number of dwelling units allowed without the interchange improvements. The No Build Alternative would not induce growth either directly or indirectly because it does not propose new development and it would limit already approved development. There would be **no impact**.

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

All Alternatives

None of the project alternatives, including the No Build Alternative, would displace existing housing or necessitate the construction of replacement housing. There would be **no impact**.

3.6 Agricultural Resources

3.6.1 Criteria for Determining Significant Impacts

An impact related to agricultural resources would be considered significant if the project would result in the following.

- Conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance or areas containing prime soils to uses not conducive to agricultural production.
- A conflict with any existing Williamson Act contract.
- Introduction of incompatible uses in the vicinity of existing agricultural uses.

3.6.2 CEQA Significance Determinations for Agricultural Resources

Would the project convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance or areas containing prime soils to uses not conducive to agricultural production?

All Alternatives

No land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or prime soils are located in the project area. There would be **no impact**.

Would the project conflict with any existing Williamson Act contract?

All Alternatives

No land in the project area is under an existing Williamson Act contract. There would be **no impact**.

Would the project introduce incompatible uses in the vicinity of existing agricultural uses?

All Alternatives

The project area is developed with a variety of land uses, but none are agricultural. Land uses in the project area are described in detail in Section 2.1.1, *Existing Land Uses and Development Trends*. No agricultural uses are in the vicinity of the proposed project. There would be **no impact**.

3.7 Aesthetics

3.7.1 Criteria for Determining Significant Impacts

An impact related to aesthetics would be considered significant if the project would result in the following.

- A substantial alteration of existing viewsheds such as scenic highways, corridors, or vistas.
- A substantial degradation of the existing visual character or quality of the site and its surroundings.
- The creation of a new source of substantial light, glare, or shadow that would result in safety hazards or adversely affect day or nighttime views in the area.

3.7.2 CEQA Significance Determinations for Aesthetics

Would the project substantially alter existing viewsheds such as scenic highways, corridors, or vistas?

Impact AE-1 (All Build Alternatives): Alteration of the viewshed of a designated scenic highway (less than significant)

While there are no Federal- or State-designated scenic highways, corridors, or routes (California Department of Transportation 2017) or scenic vistas in or near the project area, and the portion of US 50 affected by the proposed project is not a classified Landscaped Freeway (California Department of Transportation 2016), the Sacramento County General Plan Circulation Element applies scenic corridor protections to freeway corridors in the County, which includes the portion of US 50 affected by the project (County of Sacramento 2017).

All alternatives would alter the appearance of the US 50 highway corridor by introducing new or modified transportation infrastructure features including modified eastbound on- and off-ramps, ramp improvements, and new retaining wall structures. These features would result in vegetation removal and changes to the immediate visual surroundings. Photo simulations were created to help visualize the impacts on the viewshed (Figure 2.6). The existing Hazel Avenue overcrossing was built in 1994 and consists of grey concrete structures monotone in color and lacking texture.

While project features would change the appearance of the US 50 corridor, all build alternatives would result in an updated facility with modern aesthetic treatments.

Alternatives 1 and 1A would replace the Hazel Avenue overcrossing with a wider structure over US 50 to accommodate additional lanes. The new structure would be approximately the same height as the existing overcrossing and would not result in a significant visual change to the scenic corridor from the perspective of highway users. Although the overcrossing would be widened, all of the features associated with the proposed replacement overcrossing are visual elements of the existing overcrossing.

Alternative 1 would also create a new elevated eastbound off-ramp viaduct that would parallel the south side of US 50 and be visible from the US 50 scenic corridor. However, the new structure would not block eastbound views toward the Sierra Nevada foothills and mountains or significantly affect the US 50 viewshed.

Alternative 2 would not change the width of the Hazel Avenue overcrossing and the structure would remain approximately the same height. Alternative 2 would also create a new flyover ramp structure over US 50. The new structure would carry vehicles travelling from eastbound US 50 to northbound Hazel Avenue over the freeway to join with the westbound off-ramp. This new structure would be visible briefly to users of US 50 as they pass through the interchange and would add to the visible transportation infrastructure. Alternative 2 would also require more construction and vegetation removal at the westbound off-ramp than under Alternatives 1 and 1A.

All alternatives would widen eastbound US 50 by adding an auxiliary lane from Hazel Avenue to the Folsom Boulevard off-ramp. None of the alternatives would widen westbound US 50.

As described in Section 1.3.1.1, *Common Design Features of the Build Alternatives*, the project would implement landscaping, visual buffers, and project design aesthetics that would be an improvement over the current interchange which has no aesthetic treatments. For improvements within US 50 in Caltrans jurisdiction, the project would be required to comply with the aesthetic and landscaping requirements identified in *Caltrans Highway Design Manual* (California Department of Transportation 2018). A more detailed description of these requirements is included in Section 2.6.3.1, *Visual Character and Visual Quality, including Scenic Vistas*. Because the proposed changes are at an existing interchange with significant transportation-related features, and the new features would include modern aesthetic treatment, the changes to transportation infrastructure would not significantly affect the scenic nature of the US 50 corridor. The impact would be **less than significant.** No mitigation is required.

No Build Alternative

Under the No Build Alternative, no changes would be made to the existing facilities, and there would be no change to the scenic corridor.

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Impact AE-2 (Alternatives 1 and 1A): Visual introduction of new transportation infrastructure and change in visual character (less than significant)

The proposed project would modify existing transportation infrastructure and introduce new infrastructure features to the existing roadway system that would be visible from several locations within the project area. Visual simulations of the build alternatives were prepared to show representative views from Hazel Avenue, the American River Parkway and Lake Natoma area, Nimbus Winery, and Folsom Boulevard with and without each alternative. The simulations are provided in Figures 2.6-2 through 2.6-8. A discussion of the effects of the project from the viewpoint depicted in each simulation follows.

View facing south on Hazel Avenue (Figure 2.6-2 and Figure 2.6-3)

For Alternatives 1 and 1A, motorists on Hazel Avenue would be able to see the widened Hazel Avenue roadway, re-paved and re-striped roadway surfaces, a change in height of Hazel Avenue where it transitions to a new overhead structure above Folsom Boulevard and the railroad, new ramp connections, and a hardscaped median. The main new element in this view would be the result of Alternative 1 and the off-ramp viaduct structure that would span over Hazel Avenue. Alternative 1A would not have a viaduct in the view.

View facing southwest from Folsom Lake Recreational Area (Figure 2.6-4 and Figure 2.6-5)

For Alternatives 1 and 1A, recreational users at the American River Parkway and Lake Natoma area would be able to see a new paved bike path, a new structure carrying the westbound off-ramp to Hazel Avenue, and a low retaining wall along Hazel Avenue. The main new element in this view under Alternative 1 would be the eastbound off-ramp viaduct in the background spanning above Hazel Avenue. Alternative 1A would not have a viaduct in the view.

View facing east from Folsom Boulevard (Figure 2.6-6)

For Alternatives 1 and 1A, motorists driving east on Folsom Boulevard would be able to see a new low median on the roadway, a new sidewalk and fencing parallel to the railroad, the new overhead structure carrying Hazel Avenue over Folsom Boulevard and the railroad tracks, and a less cluttered viewshed as a result of utility lines being moved underground. The new overhead roadway structure would largely hinder views of the Nimbus Winery building from Folsom Boulevard south of Hazel Avenue. From this viewpoint, there would be no difference between Alternatives 1 and 1A.

View facing northwest from Nimbus Winery Village Parking Lot (Figure 2.6-7 and Figure 2.6-8)

For both Alternatives 1 and 1A, people would be able to see a new retaining wall with aesthetic treatment along Hazel Avenue and the eastbound US 50 on-ramp, and no trees bordering the parking lot. The most prominent new element in this view under Alternative 1 would be the viaduct in the background spanning over Hazel Avenue. Alternative 1A would not construct a new viaduct.

The existing interchange consists of grey concrete surfaces that do not include aesthetic treatments. As described in the project description in Section 1.3.1.1, the project would have an aesthetic motif and its design elements would be a visual improvement over the aesthetics of the current interchange. Alternative 1 would result in a greater visual change to the project area than Alternative 1A due to its addition of a viaduct off-ramp that would be elevated over Hazel Avenue and parallel eastbound US 50. Although the project would result in the removal of some existing trees and other vegetation, and some views of, and from, the Nimbus Winery building would change, the visual character of the project area would still be defined by views of an interchange, local roadways and businesses. For improvements within US 50 in Caltrans jurisdiction, the project would be required to comply with the aesthetic and landscaping requirements identified in *Caltrans Highway Design Manual* (California Department of Transportation 2018). A more detailed description of these requirements is included in Section 2.6.3.1. Because the project is at an existing interchange and because the new project features would include modern aesthetic treatments, the proposed project would not substantially change the visual quality or character of the area. This impact is considered **less than significant**. No mitigation is required.

Impact AE-3 (Alternative 2): Visual introduction of new transportation infrastructure and change in visual character (significant and unavoidable)

Some of the visual changes that would result from construction of Alternative 2 would be similar to those that would occur with Alternatives 1 and 1A (reference Figures 2.6-2 through 2.6-8). Alternative 2 would modify the view for southbound travelers on Hazel Avenue by restriping the roadway, changing the height of Hazel Avenue where it transitions to a new overhead structure above Folsom Boulevard and the railroad, adding new ramp connections, and adding a hardscaped median. Views would also include the connection of the new eastbound off-ramp flyover structure that would span over US 50 to connect the westbound US 50 off-ramp to northbound Hazel Avenue.

Alternative 2 would also modify the view for some recreational users near the Nimbus Flat entry drive, western portions of the American River Parkway that are close to the freeway and off-ramps, and the bikeway and pedestrian overcrossing of US 50. The project's proposed new paved bike path, portions of the eastbound off-ramp flyover structure, the new westbound off-ramp to Hazel Avenue, and a low retaining wall along Hazel Avenue would be visible from some western-most portions of the recreational area. These visual changes are similar in intensity to Alternatives 1 and 1A and would not significantly alter the visual quality or character of the area.

Alternative 2 is, however, anticipated to significantly change the visual character of the area immediately south of US 50. The new flyover ramp that would span over US 50 to connect the new eastbound off-ramp to the westbound US 50 off-ramp and northbound Hazel Avenue would remove the Nimbus Winery building. The building is not registered as a local historical property and it is not eligible for listing in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP), but it is part of the character of the area and there is local interest in preserving it. Removal of the building is an unavoidable impact of this alternative. The aesthetic and landscaping requirements of *Caltrans Highway Design Manual* (California Department of Transportation 2018) that would apply to project elements in Caltrans' right-of-way (ROW) and the aesthetic treatments that are already incorporated into the project would not fully alleviate the visual impacts of Alternative 2 or reduce the degradation in the visual character of the area south of US 50. This impact is considered **potentially significant**. Selection of a build alternative that does not remove the Nimbus Winery building (either Alternative 1 or Alternative 1A), allowing it to remain and presumably retain its current retail use, would reduce this impact to a less-than-significant level. However, the impact is not avoided if Alternative 2 is selected. The selection of an alternative has not yet occurred. Therefore, this impact would remain **significant and unavoidable**.

No Build Alternative

No changes would be made to existing facilities under the No Build Alternative, so it would not degrade the existing visual character or quality of the area.

Would the project create a new source of substantial light, glare, or shadow that would result in safety hazards or adversely affect day or nighttime views in the area?

Impact AE-4 (All Build Alternatives): Creation of a temporary new source of nighttime light (significant and unavoidable)

Impacts related to light and glare would be the same or very similar under all build alternatives. Evening and nighttime construction activities would require the use of extremely bright lights, which would negatively affect highway users and nighttime views of and from the work area. Construction is anticipated to last 2 years but during an approximate 6-month period work at night could periodically occur. This temporary impact is considered **potentially significant**. With implementation of the measures below, the impact would be reduced. However, it may not be possible in all cases to reduce the effects of temporary lighting to levels considered less than significant. Therefore, after mitigation, this impact would remain **significant and unavoidable**.

Mitigation Measure AE-1: Minimize Fugitive Light from Portable Sources Used for Construction

At a minimum, the construction contractor will minimize project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights will be used. Portable lights will be operated at the lowest allowable wattage and height and will be raised to a height no greater than 20 feet. All lights will be screened and directed downward toward work activities and away from the night sky and roadway users and highway neighbors to the maximum extent possible. Lights will not be directed toward residential land uses after 10 p.m. The number of nighttime lights used will be minimized to the greatest extent possible.

Impact AE-5 (All Build Alternatives): Creation of new nighttime street lighting (less than significant)

Street lighting would be installed or replaced along new and modified roadways and ramps, as is typical for transportation infrastructure in the area. Street lighting could include light-emitting diode (LED) lighting for security and safety purposes. LED lights can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if shielding is not provided and blue-rich white light lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). However, lighting added or replaced as part of the project would conform to Caltrans and County standards consistent with the lighting used on nearby roadways and ramps, and would therefore not result in a substantial new source of nighttime light. This impact is considered **less than significant**. No mitigation is required.

Impact AE-6 (All Build Alternatives): Creation of new daytime glare source (less than significant)

All build alternatives would result in a nominal increase in daytime glare by constructing additional paved area, retaining walls, and elevated structures that would reflect light. The project's aesthetic design would reduce this effect by implementing a design motif that would soften the appearance of new structures. The project's landscaping would create visual buffers that would replace existing sources and introduce new sources of shade that would help reduce glare. The project's aesthetics and landscaping are expected to minimize glare sources. Although project features would remove some of the existing roadside vegetation, the overall effect would be a nominal increase in light and glare. This impact would be **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed. Existing sources of light and glare would remain and no new sources would be created.

3.7.3 References Cited

California Department of Transportation. 2016. *Classified "Landscaped Freeways" January 12, 2018*. Available: http://www.dot.ca.gov/design/lap/livability/docs/class_ls_fwy_01122018_.pdf. Accessed: July 3, 2018.

California Department of Transportation. 2017. *List of Eligible and Officially Designated State Scenic Highways*. Available: http://www.dot.ca.gov/design/lap/livability/scenic-highways/index.html. Accessed: July 3, 2018. List last updated: March 2017.

California Department of Transportation. 2018. *Caltrans Highway Design Manual*. Available: http://www.dot.ca.gov/design/manuals/hdm.html. Last updated: July 2, 2018.

County of Sacramento. 2017. *General Plan Circulation Element.* Adopted December 15, 1993. Last amended December 13, 2017. Available: http://www.per.saccounty.net/PlansandProjectsIn-Progress/Documents/6.%20Circulation%20Element%20Amended%2012-13-17.pdf.

International Dark-Sky Association. 2010a. Seeing Blue. April 2010. *Nightscape Issue #80:* 8-12.

International Dark-Sky Association. 2010b. *Visibility, Environmental, and Astronomical Issues Associated with Blue-Rich White Outdoor Lighting*. May 4.

International Dark-Sky Association. 2015. IDA Issues New Standards on Blue Light at Night. April 2015. *Nightscape Issue #94*: 10.

3.8 Airports

3.8.1 Criteria for Determining Significant Impacts

An impact related to airports would be considered significant if the project would result in the following.

- A safety hazard for people residing or working in the vicinity of an airport/airstrip.
- Exposure of people residing or working in the project area to aircraft noise levels in excess of applicable standards.
- A substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft.
- A change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

3.8.2 CEQA Significance Determinations

Would the project result in impacts related to proximity to an airport/airstrip, aircraft noise, use of airspace, or changes in air traffic patterns?

All Alternatives

The nearest public use airport is Sacramento Mather Airport, located approximately 5.33 miles southwest of the project. The nearest private airport is the Van Vleck Airport, located in Rancho Murieta approximately 11.08 miles southeast of the project. The project is not within any airport land use plan or safety zone. The project would not result in a change in aircraft noise levels or change the use of navigable airspace. The transportation structures proposed by the build alternatives are below navigable airspace elevations. The project would also not affect air travel patterns. There would be **no impact**.

3.9 Public Services

3.9.1 Criteria for Determining Significant Impacts

An impact related to public services would be considered significant if the project would result in the following.

- Inadequate water supply for full buildout of the project.
- Inadequate wastewater treatment and disposal facilities for full buildout of the project.
- Served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- A substantial adverse physical impact associated with the construction of new water supply or wastewater treatment and disposal facilities or expansion of existing facilities.
- A substantial adverse physical impact associated with the provision of stormwater drainage facilities.
- A substantial adverse physical impact associated with the provision of electric or natural gas service.
- A substantial adverse physical impact associated with the provision of emergency services.
- A substantial adverse physical impact associated with the provision of public school services.
- A substantial adverse physical impact associated with the provision of park and recreation services.

3.9.2 CEQA Significance Determinations for Public Services

Would the project have adequate public services for full buildout of the project or result in substantial adverse physical impacts associated with the provision of public services?

Impact PS-1 (All Build Alternatives): Possible temporary effects on public services, including emergency services (less than significant)

No schools are in the immediate project vicinity. School facilities would not be affected.

The build alternatives do not create a new source of demand for water supply, solid waste disposal, wastewater treatment, natural gas or electricity. The build alternatives include creation of stormwater drainage facilities adequate for the project design and would not negatively affect other stormwater facilities.

The build alternatives could result in temporary traffic delays during construction that could potentially affect the deployment of emergency services. To prevent significant impacts, the project includes preparation and implementation of a Traffic Management Plan, standard practice for roadway construction projects. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

The No Build Alternative would result in no construction activities at the interchange that would disrupt public services.

Impact PS-2 (All Build Alternatives): Potential for temporary access delays and impacts at recreational facilities (less than significant with mitigation incorporated)

During the construction period, recreationists traveling to the Lake Natoma via US 50 or Hazel Avenue could experience short-term, intermittent delays or traffic detours over a period of 24 months, depending on the sequence of construction activities. Lane closures would be required and are proposed during non-peak traffic hours. Weekend and night work would be required for the widening of the Hazel Avenue overcrossing over US 50 for Alternatives 1 and 1A and for the new flyover structure over US 50 for Alternative 2. Folsom Boulevard and the US 50/Folsom Boulevard interchange may be used for detours when ramp closures are required. While temporary construction-related traffic delays could affect access to recreational areas, a Traffic Management Plan would be implemented as part of the project to maintain access and ensure the project does not cause adverse effects related to access to the recreational facilities in the area.

None of the build alternatives would require temporary detours or other changes to the Jedediah Smith Memorial Trail; access to the trail would be maintained during the construction period. The portion of the trail in the study area is alongside US 50 and Hazel Avenue, which are both busy transportation corridors.

A small Caltrans park-and-ride lot near Lake Natoma at the corner of Tributary Point Drive and Hazel Avenue would be reconfigured under all of the build alternatives. Parking at the lot is intended for those leaving their passenger vehicle to transfer to a bus, carpool, or rideshare. California State Parks, however, has observed recreational users parking in the lot especially during the weekends. Due to the proposed reconfiguration of the lot, there may be less parking available during construction. Based on other parking opportunities in the area, such as the Sacramento State Aquatic Center and just east of the aquatic center, temporary construction activities would not affect recreational access to those who need parking.

California State Parks expressed a need to prevent unauthorized placement of construction equipment or staging outside of pre-determined areas of the project. Unauthorized placement of equipment or staging within park facilities could damage the park or its facilities. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure PS-1: Prevent Unauthorized Use of State Parks Land

Construction-related staging, equipment, and worker parking will be kept within the approved project limits. The project boundary adjacent to State Parks Land will be delineated with Environmentally Sensitive Area fencing or other visible means. No unauthorized use of State Parks land will be allowed.

No Build Alternative

The No Build Alternative would result in no improvements or construction activities at the interchange.

3.10 Transportation/Traffic

3.10.1 Criteria for Determining Significant Impacts

An impact related to transportation or traffic would be considered significant if the project would result in the following.

- A substantial increase in vehicle trips that would exceed, either individually or cumulatively, a level of service (LOS) standard established by the County or other jurisdiction with policies that apply to the project.
- A substantial adverse impact on access and/or circulation.
- A substantial adverse impact on public safety on area roadways.
- A conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

To measure the operational status of the local roadway network, transportation engineers and planners use the LOS grading system. The project has the potential to affect traffic operations across multiple jurisdictions. Each affected agency has established policies and thresholds related to LOS expectations.

An effect is considered significant if traffic that would be generated by a project degrades the LOS on a roadway segment or intersection from an acceptable to an unacceptable level compared to the adopted standard for that roadway. If the LOS is already unacceptable, an effect is considered adverse if the traffic that would be generated by a project would increase the average vehicle delay by 5 seconds or more. Where two jurisdictions operate different portions of the same intersection, the more restrictive LOS is used as the standard for measurement. The policies from which these thresholds are derived are described in more detail in Section 2.5.2.4, *Acceptable Traffic Operating Conditions*. The project's traffic study (DKS 2016) uses a methodology that differs from the County's Traffic Impact Analysis Guidelines (County of Sacramento 2004). Instead of Circular 212 methodology (which bases LOS on volume/capacity ratio), the traffic study uses Highway Capacity Manual (HCM) intersection methodology for identifying significant impacts at signalized intersections that are operating at LOS F without the project. With the HCM methodology, a significant impact is considered to be an increase in average delay by more than five seconds. This methodology is acceptable and widely used. According to John Long of DKS Associates (Long 2019) the methodology is more precise and follows best practices. The County's Department of Transportation considers this methodology justifiable and preferable for the proposed project. The minimum acceptable traffic operating conditions and thresholds for determining the significance of traffic impacts for each jurisdiction in the study area are described in Table 3.10-1.

Table 3.10-1. Minimum Acceptable Operating Conditions by Jurisdiction and Mode

Standard by Jurisdiction, or Mode	Threshold
State of California State highways in the project area have a target between LOS C and LOS D.	Deterioration of an acceptable LOS to an unacceptable LOS.
County of Sacramento Roadways in the project area have a minimum acceptable LOS of E.	Deterioration of an acceptable LOS to an unacceptable LOS. Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project. For intersections shared between Sacramento County and the City of Folsom, the City of Folsom's policy was used.
City of Folsom Roadways and intersections in the project area have a minimum acceptable LOS of either D or E, depending on the type and location of the intersection.	Deterioration of an acceptable LOS to an unacceptable LOS. Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project. For intersections shared between Sacramento County and the City of Folsom, the City of Folsom's policy was used.
City of Rancho Cordova Roadways in the project area have a minimum acceptable LOS of D.	Deterioration of an acceptable LOS to an unacceptable LOS. Increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.
Transit System	Impacts on the transit system were considered adverse if the proposed project would generate ridership that exceeds the available or planned system capacity, or disrupts an existing facility or service.
Bicycle Facilities	Impacts on bicycle facilities were considered adverse if the proposed project would disrupt an existing facility or interfere with a planned facility.
Pedestrian Facilities	Impacts on pedestrian circulation were considered adverse if the proposed project would disrupt an existing facility or interfere with a planned facility.

3.10.2 CEQA Significance Determinations for Transportation/Traffic

Would the project result in a substantial increase in vehicle trips that would exceed, either individually or cumulatively, a level of service standard established by the County or other jurisdiction with policies that apply to the project?

Impact TR-1 (All Build Alternatives): Changes in volumes of traffic at peak hours (less than significant)

The proposed project is assumed to be constructed and open to traffic by 2022. Traffic forecasts were developed for the study area for 2022 and 2042 (horizon, or cumulative) conditions with and without the project. Existing (2015) traffic conditions and forecasted opening year (2022) and horizon year (2042) conditions were evaluated without and with each of the project alternatives and the results documented in the *Traffic Operations Report for Hazel Avenue/Route 50* (DKS 2016; provided in Volume 3, *Technical Studies*, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

The changes in traffic volumes and resulting effects on LOS by each alternative at local roadway intersections and on analyzed freeway segments were compared to the impact thresholds. The results of the analysis are summarized below. Detailed tables that include each analyzed location are included in the *Traffic and Transportation/Pedestrian and Bicycle Facilities* discussion in Section 2.5.3, *Environmental Consequences*.

Intersection Operations

A detailed breakdown of intersection operations are shown by alternative in three tables in Section 2.5.3, Table 2.5-9 (existing), Table 2.5-13 (opening year), and Table 2.5-17 (horizon year). None of the build alternatives would deteriorate an acceptable LOS to an unacceptable LOS or increase an average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project.

In 2015, implementation of all build alternatives would improve intersection operations at two study locations (Intersections #1 and #2). Alternatives 1 and 1A show greater improvements in the PM peak hour at Intersection #1 (Hazel Avenue and Gold County Boulevard), and greater improvements in both the AM and PM hours at Intersection #2 (Hazel Avenue & US 50 Westbound Ramps/Tributary Point Drive), compared to Alternative 2 (see the LOS and delay in Table 2.5-9). Alternatives 1 and 1A would also improve operations at Intersection #3 (Hazel Avenue & US 50 Eastbound Ramps) compared to the No Build Alternative. Alternative 2 would change the Hazel Avenue and US 50 eastbound ramps intersection (Intersection #3) to a free movement. Implementation of the build alternatives would not change operations at Intersection #6 (Folsom Boulevard & Auto Mall Circle [West]) which would remain at an unacceptable LOS.

In 2022, Alternatives 1 and 1A would improve LOS at Intersection #3, the eastbound ramps at the US 50/Hazel Avenue interchange, during both the AM and PM peak hours and the intersection would operate at an acceptable LOS. Under Alternative 2, Intersection #3 would be changed to operate with free movement.

In 2022 under all build alternatives, the Hazel Avenue/Folsom Boulevard intersection (Intersection #4) would be removed. A new street, the jughandle, would intersect Folsom Boulevard west of Hazel Avenue and Hazel Avenue south of Folsom Boulevard, creating two new intersections. Both new intersections would operate at an acceptable LOS under all build alternatives.

By 2042, Alternatives 1 and 1A would improve the LOS and delay at the Hazel Avenue/US 50 westbound (Intersection #2) and eastbound (Intersection #3) ramps from LOS F to LOS E and LOS D respectively, during the PM peak hour and from LOS E to LOS C at the eastbound ramp during the AM peak hour. Alternative 2 would improve the delay at the Hazel Avenue/US 50 westbound ramp (Intersection #2) during the PM peak hour more than under Alternatives 1 and 1A. The Folsom Boulevard/Auto Mall Circle intersection (Intersection #6) would continue to operate at LOS F during the PM peak hour under all build alternatives.

Freeway Operations

The project's effects on freeway operations are the same for each build alternative. See Tables 2.5-10 (existing), 2.5-14 (opening year) and 2.5-18 (horizon year) for a detailed breakdown of freeway operations by year and analyzed segment. None of the build alternatives would deteriorate an acceptable LOS to an unacceptable LOS.

In 2015, implementation of the build alternatives would maintain or improve existing freeway operation conditions with the exception of changes at the eastbound Hazel Avenue off-ramp segment. At that location, LOS would change from A to B in the AM peak hour and delay would increase very slightly during both the AM and PM peak hours. The build alternatives would also change the northbound Hazel Avenue slip on-ramp, and eastbound Aerojet Road and Folsom Boulevard off-ramps, with improved LOS and reduced delays.

In 2022, at the eastbound Folsom Boulevard off-ramp freeway operations would improve from LOS F to LOS B compared to the No Build Alternative as a result of the proposed transition lane. Westbound US 50 at the Folsom Boulevard on-ramp would continue to operate at LOS F during the AM peak hour.

By 2042, the build alternatives would not cause any adverse freeway operations as they would not deteriorate an acceptable LOS to an unacceptable LOS. With all build alternatives, eastbound freeway operations in the vicinity of Hazel Avenue are still improved compared to the No Build Alternative as a result of the proposed transition lane. Westbound US 50 at the Folsom Boulevard on-ramp would continue to operate at LOS F during the AM peak hour.

None of the build alternatives would result in significant impacts on intersection or freeway operations in existing (2015), opening year (2022) or horizon year (2042) conditions. The build alternatives would either not affect LOS or average driver delay, not deteriorate an acceptable LOS to an unacceptable LOS, or not result in an increase in average driver delay by more than 5 seconds at an intersection that already operated at an unacceptable LOS without the project. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

The No Build Alternative would not improve the interchange. Congestion would continue to increase, and traffic operations would not be improved. Existing (2015) traffic conditions and forecasted opening year (2022) and horizon year (2042) conditions were evaluated and the results documented in the *Traffic Operations Report for Hazel Avenue/Route 50* (DKS 2016; provided in Volume 3). Detailed tables that include each analyzed location are included in the *Traffic and Transportation/Pedestrian and Bicycle Facilities* discussion in Section 2.5.3.

Intersection Operations

A detailed breakdown of intersection operations for the No Build Alternative are shown in three tables in Section 2.5.3—Table 2.5-9 (existing), Table 2.5-13 (opening year), and Table 2.5-17 (horizon year). Under the No Build Alternative, intersection operations at several locations would deteriorate from an acceptable LOS to an unacceptable LOS or the average driver delay would increase by more than 5 seconds at intersections that already operated at an unacceptable LOS.

Unacceptable LOS occurs at two intersections in the study area under existing conditions. The western intersection of Folsom Boulevard and Auto Mall Circle (West) operates at LOS E during the AM peak hour and LOS D during the PM peak hour. In addition, Folsom Boulevard and the US 50 westbound ramps operate at LOS D during the PM peak hour. Traffic on US 50 operates at an acceptable LOS during the AM and PM peak hours in both directions.

By 2022, five intersections would operate at an unacceptable LOS during AM or PM peak hours under the No Build Alternative compared to three under the build alternatives. The improvements in LOS and delay achieved by the build alternatives, as described under Impact TR-1, would not occur.

By 2042, four intersections would not operate at an acceptable LOS, compared to just one under the build alternatives.

Freeway Operations

The existing and forecasted freeway operations for the No Build Alternative are shown in detail in Section 2.5.3, Tables 2.5-10 (existing), 2.5-14 (opening year), and 2.5-18 (horizon year). No improvements in freeway operations would occur under the No Build Alternative.

Under existing conditions, traffic on US 50 operates at an acceptable LOS during the AM and PM peak hours in both directions.

In 2022, two freeway segments would operate at unacceptable conditions under the No Build Alternative, compared to one under the build alternatives.

By 2042, 10 freeway segments would operate at unacceptable LOS during the AM or PM peak hours, compared with 8 under the build alternatives. No improvement in eastbound freeway operations would occur.

In addition to resulting in significant impacts related to transportation operations, as listed above, selection of the No Build Alternative would be inconsistent with regional planning documents. As described in Section 3.4, *Land Use*, the proposed project is identified in the County General Plan Circulation Element and is programmed in the 2016 MTP/SCS. Selection of the No Build Alternative would be inconsistent with those approved documents. The No Build Alternative also conflicts with the adopted mitigation for the Easton Project.

Would the project result in a substantial adverse impact on access and/or circulation?

Impact TR-2 (All Build Alternatives): Temporary and permanent changes in access and circulation (less than significant)

Project construction activities would temporarily affect accessibility and routes for vehicles, transit service, bicycles, and pedestrians. Travel lane and sidewalk closures may occur during various phases of construction, resulting in detours and temporary traffic delays. Local streets would be temporarily affected during construction to allow for contractor access and construction tasks. Travelers may experience delays during periods of active construction that would require temporary lane closures. These delays could discourage some travelers from using these access routes, but lane closures would be temporary, and implementation of the project's transportation management plan (TMP) (see Chapter 1, *Proposed Project*) would ensure that access to adjacent properties would be provided during construction and that delays would be minimized as much as possible. During periods of non-construction activity, roadways in the project area would remain open with unrestricted travel. Therefore, this impact is considered less than significant.

None of the build alternatives would require temporary detours or other changes to the American River Bike Trail; access to the trail would be maintained during the construction period. Access to Sacramento Regional Transit (SacRT) light rail and Union Pacific Railroad (UPRR) tracks would also be maintained during construction.

Once construction is complete and the project is open for operation, the roadway and route changes that would result from the build alternatives would not adversely affect access and circulation. While the project would change access routes through the extension of Hazel Avenue south over Folsom Boulevard, construction of a new roadway that would connect Folsom Boulevard and the southern extension of Hazel Avenue, and through modification to freeway off- and on-ramp configurations, the build alternatives would maintain or improve LOS and reduce traffic delays. Pedestrian access would be maintained on the east side of Hazel Avenue. Roadway improvements on Folsom Boulevard would include the installation of sidewalks, street lighting, and landscaping along the north side of Folsom Boulevard and lighting along the south. The reconstructed westbound US 50 loop on-ramp would include a squared-up, pedestrian-friendly entrance. The new separated bicycle/pedestrian route along Hazel Avenue between Folsom Boulevard and the American River Bike Trail would modify circulation for those modes

across US 50. Bicycles may continue to use the Sacramento County standard 7-foot shoulders as well as the Class I overcrossing east of the Hazel Avenue interchange.

This impact is considered **less than significant**. No mitigation is necessary.

No Build Alternative

Under the No Build Alternative, no improvements and route changes for bicycle or pedestrian facilities would occur and the roadway configurations and connections to US 50, Hazel Avenue and Folsom Boulevard would remain the same as existing conditions. The Easton Project's identified circulation changes at Folsom Boulevard and Hazel Avenue—the jughandle connection and the extension of Hazel Avenue over Folsom Boulevard, as shown in the Easton Project's Final EIR (County of Sacramento 2008:Plate PD-6)—which are necessary for the approved development in the area south of Folsom Boulevard would not be constructed. Therefore, the No Build Alternative could result in significant impacts by not implementing roadway changes approved as part of adopted land use plans and policies to improve access and circulation. Also, the No Build Alternative conflicts with the adopted mitigation for the Easton Project.

Would the project result in a substantial adverse impact on public safety on area roadways?

All Build Alternatives

Each build alternative proposed is designed consistent with Caltrans and County engineering and safety design standards. Further, the traffic analysis prepared for the project shows that each of the build alternatives would either improve or not change traffic operations at the study intersections and freeway segments in existing (2015), opening year (2022) and horizon year (2042). Both roadway geometrics and traffic operations contribute to collision rates. Because each of the build alternatives would either improve, or not affect, existing conditions, they would not result in, or substantially increase, roadway hazards due to a design feature or incompatible use. There would be **no impact**.

No Build Alternative

Under the No Build Alternative, no improvement in public safety on area roadways is expected to occur. The existing conditions would remain. For instance, the collision history described in Chapter 1 would likely continue. Out of 15 US 50 mainline and ramp locations analyzed, 7 locations were found to have higher total collision rates than the average total rates for similar State facilities (DKS 2016). The No Build Alternative would not improve public safety.

Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

All Build Alternatives

The proposed project would not affect current or future access or planned improvements to alternative modes of transportation. The improvements to bicycle or pedestrian facilities proposed are consistent with existing adopted policies and programs. Bus turnouts, bicycle racks and use of or access to other infrastructure for alternative transportation would either not be affected or would be improved by the build alternatives. There would be **no impact**.

No Build Alternative

Under the No Build Alternative, the area would continue to have sub-standard bicycle and pedestrian facilities. Access to light rail, bus, and bicycle facilities would remain as-is and would not be consistent with the County's adopted Bicycle Master Plan.

3.10.3 References Cited

DKS. 2016. *Traffic Operations Report for Hazel Avenue/Route 50*. Prepared for Sacramento County Department of Transportation and Mark Thomas & Company. March.

California Department of Transportation. 2015. *Transportation Management Plan Guidelines.* Division of Traffic Operations, Office of Traffic Management. November.

County of Sacramento. 2004. *Traffic Impact Guidelines*. July.

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128. Plate PD-6.

Long, John. 2019. Principal. DKS Associates, Sacramento, CA. March 14, 2019–Email regarding the precision of the HCM intersection methodology and current best practices for identification of significant traffic impacts.

3.11 Air Quality

3.11.1 Criteria for Determining Significant Impacts

An impact related to air quality would be considered significant if the project would result in the following.

- A cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard.
- Exposure of sensitive receptors to pollutant concentrations in excess of standards.

- Creation of objectionable odors affecting a substantial number of people.

3.11.2 CEQA Significance Determinations

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard?

Impact AQ-1 (All Build Alternatives): Cumulatively considerable temporary net increase of criteria pollutants (less than significant with mitigation incorporated)

The U.S. Environmental Protection Agency (EPA) has classified the portion of Sacramento County including the project area as nonattainment for the Federal 8-hour ozone (O_3) and particulate matter of 2.5 micrometers or smaller (PM2.5) standards and maintenance for the Federal particulate matter of 10 micrometers or smaller (PM10) standard (U.S. Environmental Protection Agency 2019). The California Air Resources Board (CARB) has classified Sacramento County as a nonattainment area for the State 8-hour O_3 and PM10 standards, and an attainment area for the State PM2.5 and carbon monoxide (CO) standards (California Air Resources Board 2017). Federal and State attainment status information for the project area is summarized in Table 3.11-1.

Table 3.11-1. Federal and State Air Quality Standard Attainment Status for Project Area

Pollutant	Attainment Status	
	Federal	State
8-hour O_3	Moderate Nonattainment	Nonattainment
CO	Attainment	Attainment
PM10	Moderate Maintenance	Nonattainment
PM2.5	Moderate Nonattainment	Attainment

Sources: U.S. Environmental Protection Agency 2019; California Air Resources Board 2017.

Operational Impacts

From a traffic operations perspective, the build alternatives differ only in terms of how traffic is routed through the interchange area. Traffic volumes, speeds, and other operational conditions under the alternatives are therefore identical (Shew pers. comm. C). Accordingly, the operational impact assessment is based on a single set of traffic conditions, which is representative of all of the build alternatives. Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of O_3 precursors (reactive organic gases [ROG], nitrogen oxides [NO_X], CO), PM10, and PM2.5 for existing (2015), opening (2022), and design (2042) year conditions were evaluated through modeling conducted using Caltrans' CT-EMFAC model. Table 3.11-2 summarizes the modeled emissions of criteria pollutants and compares build emissions to no build conditions. Emissions are also compared to existing conditions for informational purposes.

As shown in Table 3.11-2, compared to the existing conditions, pollutant emissions would decrease for most pollutants, except particulate matter. Particulate matter emissions would increase in certain conditions due to re-entrained dust, brake wear, and tire wear emissions. These emissions are directly correlated to the growth in regional vehicle miles traveled (VMT). Implementation of the build alternatives would result in a negligible change compared to the No Build Alternative for O_3 precursors (ROG, NO_X), CO, PM10, and PM2.5. The reduction in emissions relative to the No Build Alternative is considered a long-term air quality benefit. All emission increases would be below Sacramento Metropolitan Air Quality Management District (SMAQMD) thresholds. This impact would be **less than significant.**

Table 3.11-2. Estimated Criteria Pollutant Emissions from Operation of Project (pounds per day)

Condition	Daily VMT	ROG	NO_X	CO	PM10	PM2.5
2015 Existing	61,985,819	374,575	65,326	231,039	7,740	3,542
2015 Build	61,996,499	374,637	65,332	231,049	7,741	3,542
2022 No Build	67,848,968	260,126	34,159	124,862	7,889	3,349
2022 Build	67,840,557	260,093	34,153	124,835	7,888	3,349
2042 No Build	82,208,326	134,334	13,692	70,743	9,185	3,733
2042 Build	82,228,698	134,366	13,687	70,755	9,187	3,734
Comparison to Existing						
2015 Build	10,680	62	7	10	1	0
% change between 2015 Build and Existing	0.02%	0.02%	0.01%	0.004%	0.01%	0%
2022 Build	5,854,738	-114,482	-31,173	-106,204	147	-193
% change between 2022 Build and Existing	9%	-31%	-48%	-46%	2%	-5%
2042 Build	20,242,879	-240,209	-51,639	-160,284	1,447	192
% change between 2042 Build and Existing	33%	-64%	-79%	-69%	19%	5%
Comparison to No Build						
2015 Build	10,680	62	7	10	1	0
% change between 2015 Build and 2015 No Build	0.02%	0.02%	0.01%	0.004%	0.01%	0%
2022 Build	-8,410	-33	-6	-28	-1	<0
% change between 2022 Build and 2022 No Build	-0.01%	-0.01%	-0.02%	-0.02%	-0.01%	–
2042 Build	20,372	32	-5	12	2	1
% change between 2042 Build and 2042 No Build	0.02%	0.02%	-0.04%	0.02%	0.02%	0.03%
SMAQMD Threshold	–	*65*	*65*	–	*80*	*82*

SMAQMD = Sacramento Metropolitan Air Quality Management District
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
VMT = vehicle miles travelled

Construction Impacts

Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge and wall erection, and

construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather. The SMAQMD's Road Construction Emissions Model (RCEM) (Version 8.1.0) and information provided by the project engineers were used to estimate construction-related emissions. Tables 3.11-3 and 3.11-4 summarize the unmitigated maximum daily emissions levels for Alternatives 1, 1A, and 2. Exceedances of SMAQMD's thresholds are shown in **bold**.

Table 3.11-3. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternatives 1 and 1A (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	18	**195**	126	76	9	**83**	16	8	22
2021	11	**113**	79	58	5	62	12	5	16
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80**	*BMPs*	–	*82**

BMP = best management practice
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District

* SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of BMPs (Sacramento Metropolitan Air Quality Management District 2015).

Bold values indicate emissions in excess of SMAQMD's threshold.

Table 3.11-4. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 2 (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	18	**193**	124	44	9	52	9	8	17
2021	11	**115**	77	67	5	73	14	5	19
2022	2	26	19	<1	1	1	<1	1	1
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80**	*BMPs*	–	*82**

BMP = best management practice
CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District

* SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of BMPs (Sacramento Metropolitan Air Quality Management District 2015).

Bold values indicate emissions in excess of SMAQMD's threshold.

Tables 3.11-3 and 3.11-4 indicate that during construction of any of the build alternatives emissions of NO_X would exceed SMAQMD's threshold of significance, and during construction of Alternatives 1 and 1A PM10 emissions would exceed SMAQMD's PM10 threshold. These temporary increases in criteria pollutants would contribute to a cumulative net increase in pollutants during project construction. This impact is considered **potentially significant**. As shown in Tables 3.11-5 and 3.11-6, with implementation of the measures below, the impact

would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Table 3.11-5. Estimated Mitigated Criteria Pollutant Emissions from Construction of Alternatives 1 and 1A (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	8	19	150	57	1	58	12	1	13
2021	5	11	97	43	1	44	9	1	9
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80**	*BMPs*	–	*82**

CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District

* SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of BMPs (Sacramento Metropolitan Air Quality Management District 2015).

Table 3.11-6. Estimated Mitigated Criteria Pollutant Emissions from Construction of Alternative 2 (pounds per day)

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	7	18	148	34	1	35	7	1	8
2021	5	12	96	51	1	51	11	1	11
2022	1	3	23	<1	<1	<1	<1	<1	<1
SMAQMD Threshold	–	*85*	–	*BMPs*	–	*80**	*BMPs*	–	*82**

CO = carbon monoxide
NO_X = nitrogen oxides
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District

* SMAQMD's CEQA Guide Thresholds of Significance Table only consider PM10 and PM2.5 emissions below their 82 and 80 pound per day thresholds, respectively, to be less than significant with application of BMPs (Sacramento Metropolitan Air Quality Management District 2015).

Mitigation Measure AQ-1: Implement SMAQMD's Basic Construction Emission Control Practices (Best Management Practices)

Measures to control and reduce fugitive dust from SMAQMD's Basic Construction Emission Control Practices (Sacramento Metropolitan Air Quality Management District 2017) will be implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of Caltrans' Standard Specifications, Special Provisions, the National Pollutant Discharge Elimination System (NPDES) permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water Act Section 401 Certification, and other permits issued for the project. The project-proponent will implement SMAQMD's basic construction emission control practices, including but not limited to the following measures.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- Pave all roadways, driveways, sidewalks, and parking lots as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Mitigation Measure AQ-2: Utilize Model Year 2010 or Newer Engines to Reduce Construction-Related Exhaust Emissions from On-Road Vehicles

All on-road trucks will consist of model year 2010 or newer engines. Construction contractors will provide documentation to the County of efforts to secure such a fleet. The contractors will keep a written record of equipment usage during project construction for each piece of equipment and provide the County with annual reports documenting compliance. These reports will be submitted to SMAQMD.

Mitigation Measure AQ-3: Utilize Clean Diesel-Powered Equipment during Construction to Control Construction-Related NOX Emissions

The County will ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines. The County will submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 8 or more hours during any phase of the construction project. The inventory will include the following:

- CARB equipment identification number, equipment type, horsepower rating, engine model year (Tier 4 Final), and projected hours of use for each piece of off-road equipment.

- Current Certificate of Reported Compliance for CARB's In-Use Off-Road Regulation for each construction company working on the project.
- Anticipated construction timeline including start date, and name, phone number and email address of the project manager and on-site foreman.

The construction inventory will be submitted to the SMAQMD at least 4 business days prior to the use of subject equipment.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed, and no associated emissions would result. Long-term air quality emissions would result in a negligible difference compared to the build alternatives as detailed in Table 3.11-2.

Would the project expose sensitive receptors to pollutant concentrations in excess of standards?

Impact AQ-2 (All Build Alternatives). Expose sensitive receptors to pollutant concentrations in excess of standards (less than significant with mitigation incorporated)

Sensitive receptors include users at the Sacramento State Aquatic Center and Nimbus Flat Recreational Area, located north of US 50 and east of Hazel Avenue; Oak Brook Apartments located between US 50 and Folsom Boulevard; Twilight RV and Mobile Home Park, also located between US 50 and Folsom Boulevard; Cobble Oak Apartments, located north of US 50 and west of Hazel Avenue; and single-family homes, located north of US 50 and west of Hazel Avenue, as shown on Figure 2.13-2. While all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation), significant health impacts are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character [such as age or gender] of exposed individuals). In particular, because O_3 precursors (ROGs and NO_X, including nitrogen dioxide [NO_2]) affect air quality on a regional scale, associated health effects are the product of emissions generated by numerous sources throughout a region. Minor increases in regional air pollution from project-generated ROGs and NO_X would therefore have nominal or negligible impacts on human health.

As such, impacts on human health associated with project-generated ROG and NO_X (including NO_2) are not included in this analysis. Rather, consistent with the current state of practice and published guidance by SMAQMD (2016) and other State air quality management agencies, the analysis of project-related impacts on human health and exposure of sensitive receptors focuses only on those pollutants with the greatest potential to result in a significant, material impacts on human health, which are: (1) diesel particulate matter (DPM), (2) localized CO concentrations, and (3) asbestos and lead-based paint (LBP).

Diesel Particulate Matter

Heavy-duty equipment would generate DPM during roadway-widening activities. As shown in Tables 3.11-5 and 3.11-6, construction DPM emissions would be minor and occur only over a period of 2 years. PM10 exhaust emissions are used as a surrogate for DPM based on Office of Environmental Health Hazard Assessment guidance (Office of Environmental Health Hazard Assessment 2015). The short-term construction period is well below the 30-year exposure period typically associated with increased cancer risks. Moreover, DPM from construction equipment would be transitory and spread throughout the entire project area, as opposed to being concentrated at a single location. Accordingly, construction of the proposed project would not expose sensitive populations to substantial concentrations of DPM. With respect to long-term operation, because the project is reconfiguring an existing interchange, it would not significantly increase truck volumes within the project area. The proposed project would increase design (2042) year truck volumes on US 50 by approximately 1%, relative to the No Build Alternative (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). This increase is predominantly a result of redistributed traffic—the build alternatives would redistribute traffic, and associated emissions, from Folsom Boulevard to the US 50/Aerojet Road off-ramp, which are north of the receptors. In addition, Table 3.11-7 indicates operational DPM emissions associated with the project would decrease over time. As such, even though traffic and truck volumes between US 50 and Folsom Boulevard would remain similar under Build and No Build conditions, the effect of moving traffic north of the existing residential receptors (Oakbrook Apartments and the Twilight RV and Mobile Home Park) would likely lower particulate matter concentrations as a result of the southerly winds in the project area. This impact is considered **less than significant**. No mitigation is required.

Table 3.11-7. Estimated Diesel Particulate Matter Emissions from Project Operation (pounds per day)

Condition	DPM
2015 Existing	591
2015 Build	591
2022 No Build	155
2022 Build	155
2042 No Build	50
2042 Build	50
Comparison to Existing	
2015 Build	0
2022 Build	-436
2042 Build	-541
Comparison to No Build	
2015 Build	<0
2022 Build	<0
2042 Build	<1

Localized Carbon Monoxide Concentrations

Heavy traffic congestion can contribute to high levels of CO. Individuals exposed to these CO "hot spots" may have a greater likelihood of developing significant health effects, including headaches and nausea. Existing year (2015), opening year (2022), and design year (2042) conditions were modeled to evaluate CO concentrations relative to the national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS). CO concentrations were estimated at four roadway intersections within the project area. These roadway intersections were modeled because they represent the intersections that would have the worst LOS and/or highest traffic volumes. Table 3.11-8 summarizes the results of the intersection CO modeling.

As shown in Table 3.11-8, CO concentrations are not anticipated to exceed the 1-hour or 8-hour NAAQS and CAAQS under all alternatives. This impact is considered **less than significant**. No mitigation is required.

Table 3.11-8. Carbon Monoxide Modeling Concentration Results (parts per million)

Intersection	Receptor[a]	Existing (2015) No Build/Alt 11A/Alt2		Opening Year (2022)				Design Year (2042)			
				No Build & Alt 1/1A		Alt 2		No Build & Alt 1/1A		Alt 2	
		1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]
Hazel Avenue & Gold Country Boulevard	1	4.0	3.0	4.0	3.0	Same as No Build		4.0	3.0	Same as No Build	
	2	3.7	2.8	3.6	2.7			3.6	2.7		
	3	3.5	2.6	3.8	2.8			3.7	2.8		
	4	4.6	3.4	4.3	3.2			4.2	3.1		
Hazel Avenue & US 50 Westbound Ramps/ Tributary Point Drive	5	5.3	3.9	5.0	3.7	4.9	3.6	5.1	3.8	5.0	3.7
	6	5.0	3.7	4.7	3.5	4.7	3.5	4.7	3.5	4.7	3.5
	7	7.0	5.1	6.2	4.5	5.9	4.3	5.9	4.3	5.7	4.2
	8	6.8	4.9	6.1	4.5	6.0	4.4	5.8	4.2	5.8	4.2
Folsom Boulevard & Auto Mall Circle (East)	9	2.8	2.1	2.9	2.2	Same as No Build		3.0	2.3	Same as No Build	
	10	2.7	2.1	2.8	2.1			2.9	2.2		
	11	2.9	2.2	2.9	2.2			2.9	2.2		
	12	3.1	2.4	3.1	2.4			3.1	2.4		
Folsom Boulevard & US 50 Westbound Ramps	13	4.2	3.1	3.7	2.8	Same as No Build		3.9	2.9	Same as No Build	
	14	4.1	3.1	3.7	2.8			3.9	2.9		
	15	3.5	2.6	3.2	2.4			3.3	2.5		
	16	4.0	3.0	3.5	2.6			3.6	2.7		
State Standard (ppm)	–	20	9	20	9	20	9	20	9	20	9
Federal Standard (ppm)	–	35	9	35	9	35	9	35	9	35	9

CO = carbon monoxide
ppm = parts per million

[a] Consistent with Caltrans CO Protocol, receptors are located at 3 meters from the intersection, at each of the four corners to represent the nearest location in which a receptor could potentially be located adjacent to a traveled roadway. The modeled receptors (Receptors 1-16) are not representative of the actual sensitive receptors indicated in Figure 2.13-2. All intersections modeled have two intersecting roadways.

[b] Average 1-hour background concentration between 2014 and 2016 was 2.1 ppm (California Air Resources Board 2017).

[c] Average 8-hour background concentration between 2014 and 2016 was 1.9 ppm (U.S. Environmental Protection Agency 2017)

Asbestos and Lead-Based Paint

According to the California Department of Conservation's 2000 publication, A General Location Guide for Ultramafic Rocks in California, no geologic features normally associated with naturally occurring asbestos (i.e., serpentine rock or ultramafic rock near fault zones) are in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to naturally occurring asbestos emissions during construction activities. With respect to exposure to, or release of, structural asbestos and lead, there is the potential for these pollutants to be encountered during the demolition and removal of structures required as part of project construction. Exposure to, or release of, these pollutants could be hazardous to human health. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure AQ-4: Prepare and Implement a Lead and Asbestos Abatement Plan**
>
> Following the requirements of SMAQMD Rule 902 and Sacramento County Standard Construction Specification Section 12-1.01.C, Task Specific Safety Plan (TSSP), the County or its contractor will prepare a plan for the abatement of asbestos during demolition and removal of structures. The plan will also address abatement of structural lead. The contents of the plan will conform to Federal, State and local regulations regarding preventing environmental exposure and ensuring worker health and safety standards are implemented, including for the proper handling, removal, and disposal of the pollutants.

No Build Alternative

Diesel Particulate Matter

With respect to long-term operation, the No Build Alternative would have similar truck volumes within the project area as the build alternatives. The No Build Alternative would not redistribute traffic to US 50, and particulate matter concentrations exposed to existing residential receptors (Oakbrook Apartments and the Twilight RV and Mobile Home Park) would likely be higher.

Under the No Build Alternative, the interchange improvements would not be constructed, and no construction DPM emissions would result.

Localized Carbon Monoxide Concentrations

With respect to long-term operation, the No Build Alternative would have similar traffic volumes within the project area as the build alternatives. The No Build Alternative would not redistribute traffic to US 50, and CO concentrations exposed to existing residential receptors (Oakbrook Apartments and the Twilight RV and Mobile Home Park) would likely be higher. However, CO

concentrations would decrease over time and are not anticipated to exceed the 1-hour or 8- hour NAAQS or CAAQS.

Asbestos and Lead-Based Paint

Under the No Build Alternative, the interchange improvements would not be constructed, and there would be no disturbance to asbestos or LBP.

Would the project create objectionable odors affecting a substantial number of people?

Impact AQ-3 (All Build Alternatives). Create objectionable odors affecting a substantial number of people (less than significant)

Minor sources of odors would be present during construction of the proposed project. Diesel engines are the predominant source of power for construction equipment. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving, may be considered offensive to some individuals. However, because odors would be temporary and would disperse rapidly with distance from the source, construction-generated odors are not anticipated to result in the adverse exposure of receptors to objectionable odorous emissions. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed, and there would be no potential for constructed-generated odors.

3.11.3 References Cited

California Air Resources Board. 2018. Area Designations Maps/State and National. Last Revised: December 28, 2018. Available: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed: August 7, 2019.

California Department of Conservation. 2000. *A General Location Guide for Ultramafic Rocks in California*. OPEN-FILE REPORT 2000-19. August.

California Department of Transportation. 2017. *Air Quality Study Report. U.S. 50 / Hazel Avenue Interchange Project. Sacramento County*. 03-SAC-50/PM 15.1-17.4. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program: Risk Assessment Guidelines and Guidance Manual for Preparation of Health Risk Assessments*. February. Available: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed: October 2, 2018.

Sacramento Metropolitan Air Quality Management District. 2015. SMAQMD thresholds of Significance Table. Available: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable5-2015.pdf. Accessed: August 7, 2019.

Sacramento Metropolitan Air Quality Management District. 2017. *Guide to Air Quality Assessment in Sacramento County (CEQA Guide).* Chapter 3 Appendix: Basic Construction Emission Control Practices (Best Management Practices). Revised May 2017.

Shew, Cameron. (C) Associate Transportation Engineer. DKS Associates, Sacramento, CA. March 9, 2016—email message to Laura Yoon regarding alternatives analysis for Hazel Ave.

U.S. Environmental Protection Agency. 2018. Monitor Values Report. Last Revised: July 31, 2018. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed: August 7, 2019.

U.S. Environmental Protection Agency. 2019. The Green Book Nonattainment Areas for Criteria Pollutants. Last Revised: July 31, 2019. Available: https://www.epa.gov/green-book. Accessed: August 7, 2019

3.12 Noise

3.12.1 Criteria for Determining Significant Impacts

An impact related to noise would be considered significant if the project would result in the following.

- Exposure of persons to, or generation of, noise levels in excess of standards established by the local general plan, noise ordinance, or applicable standards of other agencies.
- A substantial temporary increase in ambient noise levels in the project vicinity.
- Excessive groundborne vibration within residences adjacent to construction areas.

3.12.1.1 Sacramento County General Plan Noise Element

Sacramento County is the CEQA lead agency for the proposed project; as such, the significance of noise impacts under CEQA are based on noise standards found in the County Noise Ordinance (Sacramento County Municipal Code Chapter 6.68) and the County General Plan Noise Element.

The Noise Element of the Sacramento County General Plan designates compatible noise levels for noise-sensitive areas of new uses affected by traffic or railroad noise sources in Sacramento County. These compatibility standards are shown in Table 3.12-1.

Table 3.12-1. Noise Standards for New Uses Affected by Traffic and Railroad Noise Sacramento County Noise Element

New Land Use	Sensitive[1] Outdoor Area L_{dn}	Sensitive Interior[2] Area L_{dn}	Notes
All Residential	65	45	5
Transient Lodging	65	45	3,5
Hospitals and Nursing Homes	65	45	3,4,5
Theaters and Auditoriums	–	35	3
Churches and Meeting Halls	65	40	3
Schools, Libraries, etc.	65	40	3
Office Buildings	65	45	3
Commercial Buildings	–	50	3
Playgrounds, Parks, etc.	70	–	
Industry	65	50	3

[1] Sensitive areas are defined in acoustic terminology section.
[2] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
[3] Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard applies.
[4] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
[5] If this use is affected by railroad noise, a maximum (L_{max}) noise level standard of 70 dB will be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

However, the General Plan also specifically discusses transportation projects, and states the following in General Plan Policy NO-9.

- If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 3.12-1, then feasible methods of reducing noise to levels consistent with the Table 3.12-1 standards will be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas will be mitigated to 60 decibels (dB), when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.
- If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 3.12-1 and the increase is significant as defined in Table 3.12-2, feasible methods of reducing noise to levels consistent with the Table 3.12-1 standards should be applied. In no case will the long-term noise exposure for non-industrial uses be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss. A significant increase is defined in Table 3.12-2.

Table 3.12-2. Allowable Increase Thresholds for Transportation Noise Greater than Thresholds

Pre-Project Noise Environment (L_{dn})	Significant Increase
Less than 60 dB	5+ dB
60–65 dB	3+ dB
Greater than 65 dB	1.5+ dB

Source: County of Sacramento 2017.

Section 2.14, *Noise*, presents noise impacts and abatement evaluation consistent with the requirements of NEPA and 23 Code of Federal Regulations (CFR) Section 772. In Chapter 2 traffic noise impacts are evaluated based on the worst noise hour equivalent sound level (L_{eq}). Sacramento County uses the day-night level (L_{dn}), which is a 24-hour weighted average. The significance determinations of noise impacts under CEQA are based on Sacramento County noise standards identified in Tables 3.12-1 and 3.12-2 in this chapter, and General Plan Policy NO-9. The traffic noise levels presented in Section 2.14 were converted from 1-hour average L_{eq} noise levels to 24-hour L_{dn} noise levels so that traffic noise levels could be directly compared to County noise standards expressed in L_{dn}. Continuous 24-hour measurements conducted in the project area indicated that L_{dn} values during the long-term measurements were on average 1.3 dB greater than the worst noise hour L_{eq}. As such, a 1.3-dB conversion factor was added to modeled 1-hour L_{eq} noise levels to express existing and predicted traffic noise levels in terms of L_{dn}. Traffic noise modeling results for existing, design-year no-build and design-year build conditions for all receivers under each alternative (Alternatives 1, 1A, 2 and No Build) are shown in Appendix F, *Traffic Noise Modeling Results at Receivers*.

Noise levels under design-year build conditions are compared to the applicable General Plan Compatibility Standard (Table 3.12-1). For this analysis, it is assumed that existing residential buildings in the project vicinity attain a minimum standard exterior-to-interior noise reduction of 20 dB; which means that compliance with the exterior standards (65 L_{dn} for residential land uses) would also be indicative of compliance with interior standards.

The significance of traffic noise impacts was evaluated as follows:

- If the pre-project noise level is within the applicable noise standard in Table 3.12-1 and the project causes noise levels to increase to above the noise standard, the impact would be considered potentially significant.
- If the pre-project existing noise level (i.e., 2015 noise level) already exceeds the applicable noise standard in Table 3.12-1, the increase caused by the proposed project is considered to be potentially significant if it is greater than the allowed increase show in the sliding scale in Table 3.12-2.
- If the projected future pre-project noise level (i.e., year 2042) already exceeds the applicable noise standard in Table 3.12-1, the noise increase caused by the proposed project is considered to be potentially significant if it is greater than the allowed increase show in the sliding scale in Table 3.12-2.

3.12.1.2 Sacramento County Noise Ordinance

Chapter 6.68 of the Sacramento County Noise Ordinance sets noise standards for exterior use areas of noise-sensitive land uses. These standards typically apply to non-transportation noise sources. Refer to Table 3.12-3, below, for noise standards of outdoor use areas in the County.

Table 3.12-3. Exterior Noise Standards for Residential Land Uses

Time Period	Exterior Noise Standard
7:00 a.m.–10:00 p.m.	55 dBA
10:00 p.m.–7:00 a.m.	50 dBA

In addition to designating allowable exterior noise levels, the County Noise Ordinance also sets limits on the amount of time the applicable standards may be exceeded, and by how much, within a given hour. Table 3.12-4 provides these standards.

Table 3.12-4. Sacramento County Noise Ordinance Standards

Cumulative Duration of the Intrusive Sound	Allowance Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time per hour	+20

It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth above, the specified exterior noise standards in any one hour by the amounts set forth above.

Each of the noise limits specified shall be reduced by 5 dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

If the ambient noise level exceeds that permitted by any of the first four noise-limit categories, the allowable noise limit will be increased in 5-dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level will be the noise limit for that category. (SCC 490 § 2, 1981; SCC 254 § 1, 1976.)

The County Noise Ordinance includes exemptions for certain activities. As described in Section 6.68.090, noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property are considered exempt, provided said activities take place between the hours of 6:00 a.m. and 8:00 p.m. on weekdays and 7:00 a.m. and 8:00 p.m. on Saturdays and Sundays.

3.12.2 CEQA Significance Determinations for Noise

Would the project result in exposure of persons to, or generation of, noise levels in excess of standards established by the local general plan, noise ordinance or applicable standards of other agencies?

Operation of the project would potentially result in increased levels of ambient noise at noise-sensitive receiver locations adjacent to the project. Noise impacts due to operation of the project are discussed below by project alternative. A summary of impacts for each alternative is shown in Table 3.12-5. A detailed table of modeling results by receptor location is included in Appendix F.

Table 3.12-5. Summary of Operation Noise Impacts by Project Alternative

Year	Operation Noise Impact	Alternative		
		1	1A	2
Existing 2015	Number of receptors exceeding General Plan Compatibility Standard pre-project (No Build)	15	15	15
	Number of receptors exceeding General Plan Compatibility Standard with-project	13	13	14
	Number of receptors exceeding allowable increase in project noise levels relative to No Build Alternative	0	0	1
	Significant impact?	No	No	Yes
	Number/type of receptors affected	None	None	1 residential
Horizon Year 2042	Number of receptors exceeding General Plan Compatibility Standard pre-project (No Build)	18	18	18
	Number of receptors exceeding General Plan Compatibility Standard with-project	14	17	16
	Number of receptors exceeding allowable increase in project noise levels relative to No Build Alternative	0	0	1
	Significant impact?	No	No	Yes
	Number/type of receptors affected	None	None	1 residential

Impact NO-1 (Alternatives 1 and 1A): Permanent increases in traffic noise levels (less than significant)

Noise modeling for Alternatives 1 and 1A indicates that residential, hotel, and park receptors adjacent to the project would have noise levels exceeding the County General Plan noise compatibility standard. Noise levels at residential uses would be up to 80 L_{dn} under the existing plus project condition, and 81 L_{dn} under the horizon year plus project condition. Under Alternative 1, with-project noise levels would increase up to 1 dB at several locations; however, terrain shielding by the proposed reconfiguration of Aerojet Road would result in a decrease of up to 9 dB under existing plus project conditions and 10 dB under horizon year plus project conditions. No receptors under Alternative 1 would have with-project levels that exceed County allowable increase thresholds.

Under Alternative 1A, with-project noise levels would increase up to 2 dB at residential locations. Terrain shielding under this alternative would result in a decrease of up to 2 dB under existing plus project conditions and 3 dB under horizon year plus project conditions. However, both of these locations had with-project noise levels within General Plan noise compatibility standards. Also, no receptors under Alternative 1A would have with-project levels that exceed County allowable increase thresholds.

This impact is considered **less than significant**. No mitigation is required.

Impact NO-2 (Alternative 2): Permanent increases in traffic noise levels above acceptable thresholds (less than significant with mitigation incorporated)

Noise modeling for Alternative 2 indicates that residential, hotel, and park receptors adjacent to the project would have noise levels exceeding the County General Plan noise compatibility

standard. Noise levels at residential uses would be up to 80 L_{dn} under the existing plus project condition, and 81 L_{dn} under the horizon year plus project condition. Under Alternative 2, with-project noise levels would increase up to 3 dB at one residential receptor, a location at Oak Brook Apartment Homes on Folsom Boulevard. Terrain shielding by the proposed reconfiguration of Aerojet Road and ramps would result in a decrease of up to 5 dB under existing plus project conditions and 6 dB under horizon year plus project conditions. However, the residential receptor at Oak Brook Apartment Homes under Alternative 2 would have with-project levels that exceed County allowable increase thresholds. Receptor R27 as shown in Appendix F would have an increase of 3 dB under with-project conditions for both existing year and horizon year. This is higher than the allowable increase of 1.5 dB for this receptor based on the level of exceedance of the County noise compatibility standard.

This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure NO-1: Apply Quiet Pavement or Construct Noise Barrier along Aerojet Road

The County will implement one of two mitigation options.

Option 1. Apply quiet pavement to the US 50 mainline from just west of Hazel Avenue to 0.25 mile east of Aerojet Road, at a minimum. The pavement will be designed to provide a minimum of 4 dB of noise reduction relative to standard pavement that would otherwise be used. Applying quiet pavement to the off-ramp only and exclusive of US 50 would have no noise-reducing effect. As such, quiet pavement will be applied to both the US 50 mainline and Aerojet Road to achieve the required noise level reduction.

Option 2. Construct a noise barrier at a height of 14 feet along Aerojet Road in the location shown on EIR/EA Figure 2.14-5.

It may not be possible to apply quiet pavement to the US 50 mainline given that it is located within State ROWs and regulated by Caltrans. Therefore, if Option 1 is determined not to be feasible, the County will implement Option 2.

No Build Alternative

Under the No Build Alternative, noise levels would increase in the horizon year due to background growth in traffic volumes. Noise modeling for the No Build Alternative indicates that residential, hotel, and park receptors adjacent to the project would have noise levels exceeding the County General Plan noise compatibility standard. Noise levels at residential uses would be up to 80 L_{dn} under the existing no build condition, and 81 L_{dn} under the horizon year no build condition. Noise levels would increase by up to 2 dB at sensitive receptor locations in the horizon year, which would not be considered a perceptible increase. A greater number of receptors would exceed noise compatibility standards in the horizon year (18 compared to 15 under existing conditions); however, the allowable increase threshold would not apply because the project would not be built. Under the No Build Alternative, impacts from transportation noise

on sensitive receptors would be significant and greater than Alternatives 1 and 1A and similar to and in some locations worse than Alternative 2.

Would the project result in a substantial temporary increase in ambient noise levels in the project vicinity?

Impact NO-3 (All Build Alternatives): Temporary increase in noise levels during construction (less than significant with mitigation incorporated)

Potential noise levels resulting from construction of the proposed project were evaluated by summing the noise levels of the three loudest pieces of equipment that would likely operate at the same time—impact pile driver, crane, and truck—and multiplying by a usage factor (percent of time equipment is in operation). The combined noise level is 95 A-weighted decibels (dBA) at 50 feet. Table 3.12-6 shows the estimated sound levels from construction activities as a function of distance, based on calculated point-source attenuation over hard (i.e., acoustically reflective) ground.

Residential land uses and outdoor activity areas are located adjacent to construction and staging areas, and construction activities are expected to occur in close proximity to noise-sensitive receivers at these locations. Impact and/or vibratory pile-driving would result in a temporary substantial increase in ambient noise levels at residential and recreational outdoor use areas. Construction is exempt from the County noise ordinance between the hours of 6:00 a.m. and 8:00 p.m. on weekdays and 7:00 a.m. and 8:00 p.m. on Saturdays and Sundays. As such, mitigation is not necessary for construction noise levels during these hours. However, because noise levels are anticipated to exceed the FTA daytime construction noise threshold, implementation of best practices to reduce construction noise is recommended where feasible to reduce the potential for adverse community reaction to construction noise. According to social surveys and case studies of community reaction to noise, a new noise source sustained over several days has been shown to result in a high probability of adverse community reaction when ambient noise levels increase by 10 to 20 dB (Schultz 1978).

Table 3.12-6. Predicted Noise Levels from Construction Activities

Distance Between Source and Receiver (feet)	Calculated L_{eq} (1 hour)
50	95
100	89
200	83
275	80
300	79
400	77
500	75
750	71
1,000	69
1,500	65

Notes: Calculations are based on Federal Transit Administration 2018. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.

L_{eq} (1 hour) = hourly-equivalent sound level (over 1 hour)

Nighttime construction work would be required for certain activities such as paving and the erection of falsework over US 50. This may be done intermittently over the course of 6 months. No pile driving would be done during nighttime hours.

Construction work done outside of county exempt hours would exceed the County ordinance standard of 55 dBA between the hours of 8:00 p.m. and 10:00 p.m. and 50 dBA between the hours of 10:00 p.m. and 6:00 a.m. at a distance of over 1,500 feet from construction sites. This impact is considered **potentially significant**. With implementation of mitigation measures, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure NO-2: Employ Noise-Reducing Construction Practices during Construction

During construction, the contractor will employ best practices to reduce construction noise at noise-sensitive land uses. Where possible, noise levels should not exceed 55 dBA during evening hours (8:00 p.m. to 10:00 p.m.) and 50 dBA during nighttime hours (10:00 p.m. to 6:00 a.m.)

Measures used to limit construction noise include the following.

- Limit noise-generating construction operations to daytime hours.
- Locate stationary equipment (e.g., generators, compressors, cement mixers, idling trucks) as far as possible from noise-sensitive land uses.
- Prevent excessive noise by shutting down idle vehicles or equipment.
- During use of pile drivers, include noise control measures such as pile cushions or noise shrouds.
- Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.
- Use noise-reducing enclosures around noise-generating equipment.
- Construct barriers to block sound transmission from construction equipment to noise-sensitive land uses. The barriers will be designed to obstruct the line of sight from the noise-sensitive land uses to on-site construction equipment.

Mitigation Measure NO-3: Initiate a Noise Control Plan for Mitigation of Construction Noise during Evening/Nighttime Hours

A construction noise control plan will be prepared by the County or its contractor that describes the specific methods the contractor will use to minimize construction equipment noise levels at nearby residences. The plan will include provisions for giving advance notification of construction activity schedules to occupants of potentially affected buildings.

Prior to construction, the contractor will make a construction schedule available to residents living in the vicinity of the construction areas, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

In the event of complaints by affected residents due to on-site construction noise generated during evening/nighttime hours, the contractor will monitor noise levels intermittently (between 8:00 p.m. and 6:00 a.m.) at or near the residence of the person lodging the complaint. If measured construction noise at the monitor location during nighttime hours exceeds 55 dBA L_{eq} between the hours of 8:00 p.m. to 10:00 p.m. or 50 dBA L_{eq} during nighttime hours (10:00 p.m. to 6:00 a.m.), the construction contractor will implement sound-attenuating mitigation measures where site conditions allow, such as limitations on use of noise-generating equipment or installation of additional temporary barriers or enclosures.

If these measures are ineffective in reducing noise to the identified levels, or site conditions prohibit implementation of the measures, the affected residents will be offered short-term relocation assistance for the duration of the time that nighttime noise levels are expected to exceed the specified levels.

No Build Alternative

Under the No Build Alternative, there would be no noise from project-related construction. Ambient sources of noise from vehicles would continue.

Would the project result in excessive groundborne vibration within residences adjacent to construction areas?

Impact NO-4 (All Build Alternatives): Temporary increase in groundborne vibration (less than significant)

Typical outdoor sources of perceptible groundborne noise and vibration are construction equipment, steel-wheeled trains, and heavy vehicles crossing over bumps. In general, light-duty vehicles with rubber tires are not a significant source of vibration. As such, project operations (vehicles traveling on roadway segments associated with the project) are not expected to generate perceptible levels of vibration.

The use of heavy-duty construction equipment may generate localized groundborne vibration in areas immediately adjacent to construction areas. Criteria for annoyance potential from groundborne vibration is shown in Table 3.12-7 in terms of inch per second (in/sec) peak particle velocity (PPV). Although temporary, construction of project would involve the use of frequent intermittent sources such as impact or vibratory pile drivers. The potential for distinctly

perceptible vibration may occur at a level of 0.04 in/sec PPV. At higher levels, vibration has the potential result in building damage. The impact criteria for building damage due to vibration at non-engineered timber and masonry buildings is considered to occur at a level of 0.20 in/sec PPV.

Table 3.12-7. Vibration Annoyance Potential Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources[a]	Continuous/Frequent Intermittent Sources[b]
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Source: California Department of Transportation 2013:38.
PPV = Peak Particle Velocity
[a] Transient sources create a single, isolated vibration event (e.g., blasting or drop balls).
[b] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 3.12-8 summarizes typical vibration velocity levels for the various types of construction equipment that may be used for the project. The vibration levels in the table indicate that pile driving generates a much greater level of vibration than the other heavy equipment. Apart from pile driving, other types of equipment anticipated for use in project construction would generate vibration levels below the distinctly perceptible level of 0.04 in/sec PPV at a distance of 50 feet or more.

Table 3.12-8. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 100 Feet	PPV at 174 Feet	PPV at 282 Feet
Pile driver (impact)	1.518	0.5370	0.1900	0.0827	0.0400
Pile driver (sonic/vibratory)	0.734	0.2595	0.0918	0.0400	0.0194
Hoe ram	0.089	0.0315	0.0111	0.0048	0.0023
Large bulldozer	0.089	0.0315	0.0111	0.0048	0.0023
Loaded trucks	0.076	0.0269	0.0095	0.0041	0.0020
Jackhammer	0.035	0.0124	0.0044	0.0019	0.0009
Small bulldozer	0.003	0.0011	0.0004	0.0002	0.0001

Source: Federal Transit Administration 2018.

Construction activities would not occur within 50 feet of an existing sensitive land use, so apart from the use of impact equipment, the use of heavy equipment during construction would not result in the exposure of persons to excessive vibration levels.

According to modeling using source levels in Table 3.12-8 indicates impact pile driving would result in vibration levels in excess of the threshold of 0.04 in/sec PPV at a distance of 282 feet. Vibratory pile driving would result in vibration levels greater than the distinctly perceptible level of 0.04 in/sec PPV at a distance of 174 feet. Pile driving may potentially be used as near as 100 feet from sensitive land uses. At this distance, vibration during pile driving is not expected to exceed the building damage criteria of 0.2 in/sec PPV. However, pile driving activities may intermittently result in vibration levels greater than 0.04 in/sec PPV at sensitive receptor

locations. While vibration above a level of 0.04 in/sec PPV would potentially result in distinctly perceptible levels of vibration at sensitive receptor locations, vibration would be intermittent and short-term, and would only occur for the period of time that nearby piles are driven from the vantage point of a given receptor. Pile driving would be done during daytime hours and would not be expected to cause sleep disturbance, nor would it likely result in adverse community reaction.

This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, there would be no project-related construction. Ambient sources of groundborne vibration from vehicles would continue, which would generally not result in perceptible vibration inside structures.

3.12.3 References Cited

California Department of Transportation. 2013. *Transportation and Construction Vibration Guidance Manual*. September.

County of Sacramento. 2017. General Plan Noise Element. Amended December 13, 2017. Available: http://www.per.saccounty.net/LandUseRegulationDocuments/Documents/General-Plan/Noise%20Element%20-%20Amended%2012-13-17.pdf.

Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*. September.

Schultz, Theodore J. 1978. *Synthesis of social surveys on noise annoyance*. Journal of the Acoustical Society of America. August. 64(2):377–405.

3.13 Hydrology and Water Quality

3.13.1 Criteria for Determining Significant Impacts

An impact related to hydrology and water quality would be considered significant if the project would result in the following.

- Substantial depletion of groundwater supplies or substantially interfere with groundwater recharge.
- Substantial alteration of the existing drainage pattern of the project area and/or increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- Development within a 100-year floodplain as mapped on a Federal Flood Insurance Rate Map (FIRM) or within a local flood hazard area.

- Placement of structures that would impede or redirect flood flows within a 100-year floodplain.
- Development in an area that is subject to 200-year urban levels of flood protection (ULOP)
- Exposure of people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Creation or contribution of runoff that would exceed the capacity of existing or planned stormwater drainage systems.
- Creation of substantial sources of polluted runoff or otherwise substantially degrade groundwater or surface water quality.

3.13.2 CEQA Significance Determinations

Would the project substantially deplete groundwater supplies or substantially interfere with groundwater recharge?

Impact HY-1 (All Build Alternatives): Potential for effects on groundwater supplies or recharge (less than significant)

Construction dewatering in areas of shallow groundwater may be required during excavation activities for any of the build alternatives, and could result in a temporary reduction in shallow groundwater volumes. Dewatering is most likely to be needed during construction of the undercrossing connector ramp if Alternative 1A is selected. The area between the abutments would be excavated down to the final roadway surface. In the event that groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Groundwater recharge of the South American groundwater subbasin occurs primarily from infiltration of rainfall, landscape irrigation, and natural and applied water recharge. Increased impervious areas can reduce infiltration capacities so that more precipitation runs off into storm sewers or nearby surface waters instead of infiltrating and recharging the underlying aquifer. The proposed project would result in new impervious surfaces, as listed in Table 3.13-1. A total area of 8.4 acres, 8.6 acres, and 9.6 acres of new impervious surfaces would result from Alternatives 1, 1A, and 2, respectively.

Table 3.13-1. Existing and New Impervious Surface by Alternative

Alternative	Impervious Area (acre)		Disturbed Soil Area (acre)
	Existing	New	
1	26.6	8.4	44.7
1A		8.6	45.2
2		9.6	54.6

Source: California Department of Transportation 2016:12.

The proposed project would not substantially interfere with groundwater recharge because it would not increase groundwater demand or decrease the size of groundwater recharge areas. Recharge in the area would continue to occur through infiltration into streambeds and canals and through infiltration of precipitation. The increase in impervious surface caused by the project is a very small percentage of groundwater recharge areas and would not affect streambed or canal infiltration or substantially affect overall groundwater recharge of the project area. This impact is considered less than significant. Retention of stormwater runoff as part of the project's stormwater management design would also promote groundwater infiltration. Operation of the proposed project would not utilize groundwater supplies and therefore would not substantially deplete groundwater supplies. This impact is considered less than significant. No mitigation is required.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed and there would be no effects on groundwater supplies or recharge.

Would the project substantially alter the existing drainage pattern of the project area and/or increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?

Impact HY-2 (All Build Alternatives): Risk of flooding on- or off-site due to changes in drainage patterns and increased surface runoff (less than significant with mitigation incorporated)

All build alternatives would include the modification, removal/replacement, or construction of drainage features. Widened and modified roadways would likely require dikes and curbs, resulting in more inlets and culverts to convey concentrated runoff flows.

The proposed project would result in 8.4 acres, 8.6 acres, and 9.6 acres of new impervious surfaces from Alternatives 1, 1A, and 2, respectively (see Table 3.13-1). The added impervious surfaces would increase the quantity of runoff from the facility. Projects resulting in an increase in impervious surface area are subject to the SWMP. To comply with the SWMP, the project will implement measures to ensure treatment, detention, and infiltration of the increased quantity of runoff from the added impervious area.

To address the increases in flow the proposed design would need to include low impact development concepts that promote infiltration and post-construction stormwater runoff BMPs.

These measures would collect and retain or detain the additional flows within the project limits, as required by the Caltrans and County NPDES MS4 permits and the SWMPs/SQIPs.

Temporary in-water work for the new bridge structure and supports at Alder Creek would require excavation, mobilization, and grading within the creek and its banks, temporarily affecting drainage patterns. To prevent increased runoff or the possibility of flooding, the project would implement temporary diversion systems and dewatering operations, as appropriate. Once construction is completed, water flows would be restored, and drainage patterns would return to existing conditions.

This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and Stormwater Quality Design Manual

As part of the final design process prior to project construction, the project engineers will develop and incorporate design features or BMPs into the project design. The features selected will comply with the Sacramento County SQIP and the Sacramento Region SQDM for project areas outside of Caltrans ROW, and Caltrans SWMP and Standard Specifications for project areas within Caltrans ROW. The features will be designed to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan.

For project areas outside of Caltrans ROW, the project engineers will follow the guidance in the SQDM including selecting measures from SQDM Table 3-3, Stormwater Quality Control Measure Selection Matrix, for street/road projects with new impervious areas larger than 5 acres. Measures that could be selected and implemented include source control, hydromodification control, treatment control, and low impact development measures such as vegetated swales, water quality detention basins, and bioretention planters.

The project engineers and construction contractor will ensure compliance with the requirements of Caltrans and County NPDES MS4 permits to control stormwater and non-stormwater discharges associated with project construction activities and discharges within the jurisdiction of each permit. Temporary diversion systems and dewatering operations will be implemented, as appropriate. The controls required by all applicable permits will be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate.

The project engineers and the construction contractor will ensure that the requirements of the County SQIP will be followed to reduce the discharge of pollutants to the MS4. The project engineers and construction contractor will also ensure construction activities and

project implementation complies with Section 401 (Water Quality Certification) from the Central Valley Regional Water Quality Control Board and the Section 404 Permit from the Sacramento District U.S. Army Corps of Engineers (USACE).

No Build Alternative

Under the No Build Alternative, drainage patterns and stormwater runoff at the interchange would not change, and there would be no changes to flooding potential.

Would the project develop an area within a 100-year floodplain as mapped on a Federal Flood Insurance Rate Map or within a local flood hazard area?

Impact HY-3: (All Build Alternatives): Development within a 100-year floodplain (less than significant)

Other than the transportation improvements proposed and the land use changes necessary to accommodate those improvements, no new development would occur as part of the proposed project. All build alternatives include construction of a bridge and auxiliary lane on US 50 over Alder Creek within an area mapped as the 100-year floodplain (Federal Emergency Management Agency 2012a and 2012b). A Location Hydraulic Study (WRECO 2017; provided in Volume 3) was prepared to determine whether the project would negatively affect the 100-year floodplain. The study determined that the project would have negligible effect on the Federal Emergency Management Agency (FEMA) Base Flood Elevation (BFE). The results of the analysis are discussed further under Impact HY-4 as they relate to the placement of structures within a 100-year floodplain. This impact is considered **less than significant**. No mitigation is required.

Would the project place structures that would impede or redirect flood flows within a 100-year floodplain?

Impact HY-4 (All Build Alternatives): Placement of structures within a 100-year floodplain (less than significant)

Construction of the bridge at Alder Creek to add an auxiliary lane to US 50 would occur in the 100-year floodplain. A Location Hydraulic Study (WRECO 2017; provided in Volume 3) prepared for the project analyzed the effects of the proposed bridge at this location for all three build alternatives. Currently, Alder Creek flows under US 50 through a 228-foot-long double 10-foot-by-10-foot reinforced boxed culvert and into Lake Natoma. All build alternatives would include the addition of piles within Alder Creek to support the proposed new auxiliary lane on US 50.

The Nimbus Dam manages both Lake Natoma on the American River and the Alder Creek pond at the mouth of Alder Creek and creates a backwater condition. The impoundment restricts flow and greatly reduces velocities in the FEMA floodway in Lake Natoma and along Alder Creek through the project area. The Alder Creek Miners Dam just upstream of Folsom Avenue also acts to control high flows on lower Alder Creek. As a result of these hydraulic control structures, the

FEMA BFE in Lake Natoma and Alder Creek pond are characterized by a static backwater condition with relatively low velocities during flooding. Therefore, the hydraulic force of flood waters was not considered a threat to structures in the project area (WRECO 2017).

Analysis Based on Effective FEMA Floodplains

The soffit elevation of the culvert slab at the proposed auxiliary lane extension over Alder Creek, elevation 128.9 feet, is 0.5 feet above the BFE of 128.4 feet. Therefore, the only change being proposed to the FEMA floodway by the project at Alder Creek is the addition of the piles to support the widened culvert on the eastbound (south) side of the highway. The proposed widening of the culvert under US 50 at Alder Creek would require installation of 10 piles with 18-inch diameters and the footprint of the auxiliary lane extension would account for approximately 4,000 square feet of encroachment within the 100-year floodway/floodplain. This encroachment represents approximately 0.98% (less than 1%) encroachment into the existing area of the Alder Creek pond floodway/floodplain upstream of the US 50 cross culvert. Analysis of topographic survey data indicates that the extent of floodplain of Alder Creek on the southern side of US 50 is equal to the distance between the toes of the abutments. This indicates that the culvert carrying US 50 and the proposed widened culvert for the auxiliary lane extension would not encroach upon the floodplain.

Considering the effective FEMA floodplain, the Location Hydraulic Study concluded that because of the relatively large storage volume of Alder Creek pond upstream of US 50, the build alternatives would have a negligible impact on the height of water surface elevation during the base flood. The proposed fill associated with the piles was considered to represent no significant impact on the floodway/floodplain. Further, the proposed project would be in compliance with County General Plan goals and objectives related to flood protection and hazards.

Analysis Based on Future FEMA Floodplains

Potential project impacts on the floodplain based on a pending Letter of Map Revision/Physical Map Revision were also assessed. Although revisions to FIRMs and Flood Insurance Studies have not yet been incorporated as effective data, the revisions will ultimately be incorporated. Hydraulic modeling using HEC-RAS showed that US 50 is overtopped during a 100-year storm event for both existing and all build alternative conditions.

Considering the future FEMA floodplain/physical map revision, the results of the Location Hydraulic Study indicated that the build alternatives would not result in increases in water surface elevation along Alder Creek. Proposed piles would be within ineffective flow areas, and there would be no impact on the cross-sectional area. There would be no increase in the 100-year water surface elevation based on the analysis of future FEMA floodplains.

Summary

As discussed in the Location Hydraulic Study, due to the hydraulic control structures on Alder Creek and the American River and the static backwater condition, the proposed project would not impede or redirect flood flows. And, the build alternatives would have a negligible impact on

the height of water surface elevation during the base flood. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, no structures would be constructed.

Would the project develop an area that is subject to 200-year urban levels of flood protection?

Impact HY-5 (All Build Alternatives): Develop an area subject to 200-year urban levels of flood protection (less than significant)

All build alternatives include work within an area subject to 200-year ULOP at the Alder Creek area. Work includes a bridge at Alder Creek and an auxiliary lane on US 50. The Location Hydraulic Study (WRECO 2017; provided in Volume 3) analyzed the bridge piles that would be placed within Alder Creek and the increase in impervious surfaces resulting from the project. The encroachment from the bridge pilings would be small and insignificant in relation to the existing floodplain on the south side of US 50 and would not pose a threat of impeding flood flows or causing backwater conditions upstream. The Location Hydraulic Study found that the build alternatives would have negligible effect on the 100-year floodplain BFE of 128.4 feet (see Impact HY-4 and HY-6); based on this, the build alternatives would also have a negligible effect on the 200-year floodplain. This impact is considered **less than significant**. No mitigation is required.

Would the project expose people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact HY-6 (All Build Alternatives): Potential to expose people or structures to a substantial flood-related risk of loss, injury or death (less than significant)

There are no levees within the project area. To the west of the project area, levees line the north and south banks of the Lower American River for approximately 13 miles. The Nimbus Dam is less than 0.25 mile from the project area, and the Folsom Dam is 7 miles upstream. In addition, the Alder Creek Miners Dam is located on Alder Creek approximately 2,000 feet upstream of Folsom Boulevard. These hydraulic control structures result in the FEMA BFE in Lake Natoma and Alder Creek pond to form a static backwater condition with relatively low velocities during flooding. Therefore, the hydraulic force of flood waters are not considered a threat to structures or people in the project area. In addition, FEMA performed a hydraulic analysis of the American River for the 1% annual chance flood. Controlled releases from Nimbus Dam and flow over the dam spillway determined the BFEs in Lake Natoma and were estimated as being +128.4 feet (normal flood stage pool elevation) extending from Nimbus Dam upstream past the Willow Creek confluence (WRECO 2017). The soffit elevation of the culvert slab over Alder Creek at the proposed auxiliary lane extension is 128.9 feet, 0.5 feet above the BFE of 128.4 feet. The proposed project would add piles to Alder Creek to support the widened culvert which would

result in a negligible impact on the height of water surface elevation during the base flood. Further, the continuous maintenance program by the Bureau of Reclamation and the State Department of Parks and Recreation mitigates the risk of a dam breach. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed and exposure to flooding would not change.

Would the project create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems?

Impact HY-7 (All Build Alternatives): Changes in runoff volumes that could exceed stormwater drainage system capacity (less than significant with mitigation incorporated)

The increase in impervious surfaces that would result from construction of the proposed project would increase the quantity of runoff from roadways (see Table 3.13-1 for the quantities of new impervious surface by build alternative). Each of the build alternatives would modify, remove/replace, or construct drainage features and would be designed to direct and control stormwater flows such that the existing stormwater drainage system would not need modification. Further, to comply with the SWMP, the project would implement measures to ensure treatment, detention, and infiltration of the increased quantity of runoff from the added impervious area. The project design would also include low impact development concepts that promote infiltration and post-construction stormwater runoff BMPs. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and Stormwater Quality Design Manual**
>
> The full text of this measure is included under Impact HY-2.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed, and runoff volumes would not change.

Would the project create substantial sources of polluted runoff or otherwise substantially degrade ground or surface water quality?

Impact HY-8 (All Build Alternatives): Potential source of polluted runoff and degradation of groundwater or surface water quality (less than significant with mitigation incorporated)

Construction

During construction, polluted runoff that could degrade water quality conditions could result from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment, including into nearby storm drains or Alder Creek. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the project area and transported to and from the area during construction. Accidental releases of small quantities of these substances could degrade the quality of surface water and groundwater. Runoff from impervious surfaces could also contain nonpoint pollution sources associated with automobiles and landscaped areas. Turbidity, pollutants associated with sediments, and potential accidental discharge of pollutants associated with construction equipment and materials may be introduced into storm drains or other water bodies. The handling and disposal of hazardous materials commonly used during construction activities would be compliant with regulations enforced by the Certified Unified Program Agency (CUPA) and the California Division of Occupational Safety and Health (Cal-OSHA).

Groundwater at the project area is affected by chlorinated solvents, including tricholorethene (TCE), tetrachloroethene, and perchlorate as a result of historical operations at the Aerojet facility (see Figure 2.12-2) and could be encountered during excavation for construction of the proposed project, and especially during construction of the direct tunnel ramp under Hazel Avenue proposed as part of Alternative 1A. Measured groundwater was found approximately 17.7 to 25.3 feet below existing groundline (Parikh 2013). According to GeoTracker, there is an open military cleanup site at the northeast corner of Folsom Boulevard and Hazel Avenue and several open cleanup sites resulting from past Aerojet practices within 500 feet of the project site along Folsom Boulevard. Potential groundwater contaminants include metals, non-petroleum hydrocarbons, mercury, diesel, chlorinated hydrocarbons, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs) (State Water Resources Control Board 2018). If construction requires drilled piles, they could be 50–80 feet below surface and would encounter groundwater. Due to potential groundwater contamination, drilling would be performed by Occupational Safety and Health (OSHA) trained contractors. In addition, potential accidental spills in the Chevron fuel dispenser areas and materials stored in facilities and commercial buildings in the project area may have affected groundwater quality. As part of the purchase of the ROW needed for the proposed project, the underground storage tanks (USTs) would be removed and closed; however, residual contamination is often encountered during UST closure activities (Parikh Consultants 2017; provided in Volume 3, *Technical Studies*, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx).

Encountering contaminated groundwater has the potential to degrade surface water if the contaminants are not contained and properly handled. The contamination is also discussed further in Section 3.17, *Hazards and Hazardous Materials*. To prevent the possibility of contaminated groundwater from reaching the ground surface at the direct tunnel ramp proposed under Alternative 1A, the ramp would be designed to include waterproofing within the proposed soldier pile wall and a thicker concrete roadway section.

Due to known groundwater contamination within the project area, any groundwater encountered during construction would be tested. Groundwater extracted due to dewatering would be handled, tested, and disposed of according to local, State, and Federal laws and requirements. The groundwater would be stored in tanks, characterized for chlorinated solvents, and either sent off-site for recycling or treated at the existing groundwater treatment system at the Aerojet facilities (Mark Thomas and Company 2014).

Construction activities resulting in an increase in impervious surface area are subject to the Caltrans Stormwater Management Plan (SWMP) and the Sacramento Region Stormwater Quality Design Manual (SQDM) (City of Citrus Heights et al. 2018). As a result, BMPs required by and consistent with the SWMP, the Construction General Permit, and the SQDM would need to be implemented to ensure treatment, detention, and infiltration of the increased quantity of runoff from the added impervious area. In addition, the project would need to comply with the Sacramento County Stormwater Management Program's Stormwater Quality Improvement Plan (SQIP), to reduce the discharge of pollutants to the Municipal Separate Storm Sewer System (MS4). As required by the SQIP, erosion and sediment control BMPs would need to be implemented during construction to reduce potential water quality impacts. Further, the requirements of local grading and erosion control codes would be followed (Sacramento County Code 16.44.050; City of Rancho Cordova 16.44.050).

The proposed project would be required to meet all applicable water quality objectives for surface waters and groundwater contained in the Basin Plan. Also, work proposed in waters of the U.S. or waters of the State would be scheduled according to the appropriate regulatory agency requirements to reduce impacts on water resources. In addition, implementation of standard BMPs required under the Stormwater Pollution Prevention Plan (SWPPP) would be necessary to reduce the potential of an accidental release and any effects on groundwater or surface water quality during construction of the project.

Operation

Long-term impacts on water quality could occur as a result of regular use of the roadway, maintenance activities such as bridge construction maintenance and inspections, and discharges of sediments and other pollutants collected in stormwater runoff. All build alternatives would result in additional impervious surfaces, which would increase the quantity of runoff from the facility. An increase in impervious surface could result in the potential for additional roadway contaminants to affect water quality. Potential sources of pollutants from the roadway include total suspended sediments, nutrients, volatile and semivolatile organics, pesticides, metals, and litter. Projects resulting in an increase in impervious surface area must be in compliance with the SWMP and SWDM. Implementation of measures would be required to ensure treatment,

detention, and infiltration of surface runoff to prevent degradation of both surface and groundwater quality as a result of the proposed project.

Summary

During construction, the potential for short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or Alder Creek and runoff from impervious surfaces could result in a degradation of water quality. The potential for release of contaminated groundwater during construction and operation is greatest for Alternative 1A. Waterproofing is included in the project design of that alternative to prevent contaminated water from reaching the ground surface. Exposure to contaminated groundwater is also addressed under Impact HZ-4 in Section 3.17. All build alternatives have the potential to cause an increase in polluted runoff during construction and operation of the project that could result in a degradation of surface water quality. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure HY-1: Implement Best Management Practices to Control Runoff and Discharge of Pollutants During Project Construction and Operation and Follow Requirements of Permitting Agencies and Stormwater Quality Design Manual**
>
> The full text of this measure is included under Impact HY-2.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed, and there would be no increase in impervious surfaces at the interchange to contribute to additional roadway contaminants such as total suspended sediments, nutrients, volatile and semivolatile organics, pesticides, metals, and litter. Construction activities such as excavation, grading, and paving would not take place, eliminating the potential for eroded soil or suspended solids to be temporarily introduced into waterways.

3.13.3 References Cited

California Department of Transportation. 2016. *Water Quality Assessment Report. U.S. 50/Hazel Avenue Interchange Project*. Sacramento County, California *03-SAC-50-PM 15.1/17.5*. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. August. Walnut Creek, California. Prepared by WRECO.

City of Citrus Heights, City of Elk Grove, City of Folsom, City of Galt, City of Rancho Cordova, City of Sacramento, and County of Sacramento. 2018. *Sacramento Region Stormwater Quality Design Manual*. July. http://www.beriverfriendly.net/docs/files/File/SWQ_Design%20Manual_FINAL%202018_w%20Fig_w%20App.pdf.

Federal Emergency Management Agency. 2012a. Flood Insurance Rate Map Sacramento County, California and Incorporated Areas. Map Number 06067C0113H Panel 113 of 705. August 16.

Federal Emergency Management Agency. 2012b. Flood Insurance Rate Map Sacramento County, California and Incorporated Areas. Map Number 06067C0114H Panel 114 of 705. August 16.

Mark Thomas and Company, Inc. 2014. U.S. 50/Hazel Avenue Interchange Project Study Report June.

Parikh Consultants, Inc. 2013. Preliminary Geotechnical Report-Hazel Avenue/US-50 Interchange, Sacramento County, California. Job No. 2011-135-PGR. January.

Parikh Consultants, Inc. 2017. *Phase I Initial Site Assessment. Hazel Avenue/U.S. 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5.* Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. October. Sacramento, CA. Prepared for ICF International on behalf of California Department of Transportation.

State Water Resources Control Board. 2018. GeoTracker Search for Hazel Avenue Sacramento (Project Site). Available: http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Hazel+Avenue+Sacramento. Accessed: March 21, 2018.

WRECO. 2017. *Location Hydraulic Study Report. U.S. 50/Hazel Avenue Interchange Project. Sacramento County, California 03-SAC-50-PM 15.1/17.5* Federal Project No.: EA 03-3E380 E-FIS 0300020439. County Control Number 2011-70062. June. Prepared for California Department of Transportation and County of Sacramento.

3.14 Geology and Soils

3.14.1 Criteria for Determining Significant Impacts

An impact related to geology and soils would be considered significant if the project would result in the following.

- Exposure of people or structures to substantial risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
- Substantial soil erosion, siltation, or loss of topsoil.
- The project being 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-site or off-site landslide, lateral spreading, subsidence, soil expansion, liquefaction, or collapse.

- Soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available.
- A substantial loss of an important mineral resource.
- Direct or indirect destruction of a unique paleontological resource or site.

3.14.2 CEQA Significance Determinations

Would the project expose people or structures to substantial risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Impact GS-1 (All Build Alternatives): Expose people or structures to risk of loss, injury, or death involving rupture of an earthquake fault (less than significant)

The project area is not in an Alquist-Priolo Earthquake Fault Zone, and no known active or potentially active faults cross the project area. The project is located in a region of California characterized by a generally low to moderate ground-shaking hazard compared to other regions of the State (Parikh 2013). The project must be designed according to County seismic design standards and Caltrans' *Highway Design Manual* (California Department of Transportation 2018), minimizing the risk to construction workers or the traveling public from strong seismic ground shaking and seismic-related ground failure. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, there would be no new risk created related to fault rupture. Because the existing facility meets Caltrans and County seismic construction standards and would not be modified there no change in risk related to ground shaking and secondary seismic hazards.

Would the project result in substantial soil erosion, siltation or loss of topsoil?

Impact GS-2 (All Build Alternatives): Result in soil erosion, siltation, or loss of topsoil (less than significant)

Ground disturbance caused by construction activities under all build alternatives has the potential to increase erosion and sedimentation rates above existing conditions. Soil characteristics are summarized in Table 3.14-1.

Table 3.14-1. Erosion Hazard for Soils in the Project Area

Map Unit Symbol	Map Unit Name	Slope (%)	Erosion Hazard (Off-Road, Off-Trail)
181	Natomas loam	0 to 2	Slight
182	Natomas, Xerorthents, dredge tailings complex	0 to 50	Not rated
227	Urban land	–	Not rated
228	Urban land-Natomas complex	0 to 2	Not rated
245	Xerorthents, dredge tailings	2 to 50	Severe

Source: Natural Resources Conservation Service 2017.

The soils of concern for road construction-related erosion are the soils with unknown erosion hazard and the Xerorthents, dredge tailings, which have a severe rating for soil erosion hazard. Section 2.10.2.6, *Soils*, lists the other soils in the project area. Measures implemented in compliance with the NPDES permit requirements during construction would address erosion, stormwater runoff, sedimentation, and other construction-related pollutants during construction until all areas disturbed during construction have been permanently stabilized. After completion of construction activities, temporary facilities would be removed and disturbed areas would be restored and reclaimed as appropriate. BMPs to be implemented for the build alternatives described in further detail in Section 2.8, *Hydrology and Floodplain*, and Section 2.9, *Water Quality and Stormwater Runoff*, would reduce the potential for erosion and sedimentation associated with construction activities. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Because no construction would occur under the No Build Alternative, there would be no change in risk of soil erosion, siltation, or the loss of topsoil.

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, soil expansion, liquefaction or collapse?

Impact GS-3 (All Build Alternatives): Construction on geologic unit or soil that is unstable, or that would become unstable as a result of the project (less than significant)

The soils in the project area are generally well-drained, silty, sandy, or gravelly soils (Parikh 2013) that developed over alluvium (Natural Resources Conservation Service 2017). Much of the project area has been modified by gold dredging, resulting in extensive mounds of dredge tailings. Based on the as-built log of test borings (Parikh 2013) and the Natural Resources Conservation Service soils report data (2017), the soils in the project area are not known to be expansive.

The constructed slopes in the project area could become unstable during excavation if the project were not designed and constructed properly. In addition, deep excavation in native material could also cause instability. All build alternatives would require extensive and deep excavation

for road widening, retaining walls, and the railroad overhead. This excavation could range in depth from approximately 5 to 30 feet. Alternative 1A would require the greatest amount of excavation because of the extensive deep excavation required for the ramp tunnel. Alternative 1 would require excavation for the footings of the viaduct structure, and Alternative 2 would require excavation for footings of the flyover ramp. The project must be designed according to County design standards and Caltrans' *Highway Design Manual* (California Department of Transportation 2012), and would be specific to the site geology. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, no construction would occur at the interchange so it would not result in on- or off-site landslide, lateral spreading, subsidence, soil expansion, liquefaction, or collapse.

Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available?

All Alternatives

The use or modification of septic systems or alternative wastewater disposal systems is not part of the proposed project. There would be **no impact**.

Would the project result in a substantial loss of an important mineral resource?

All Alternatives

Mineral Lands Classification Maps (California Department of Conservation 1984) do not indicate mineral resources or Mineral Resource Zone categories within the project site and there are no permitted mineral resource extraction mines in the project area. The project site is largely paved and consists of the existing interchange and commercial, residential, and industrial development. There would be **no impact.**

Would the project directly or indirectly destroy a unique paleontological resource or site?

Impact GS-4 (All Build Alternatives): Potential for destruction of a unique paleontological resource or site (less than significant with mitigation incorporated)

The geologic units immediately underlying the project area, as detailed in Section 2.11, *Paleontology*, and on Figure 2.11-1, are Pleistocene Riverbank and Modesto Formations and disturbed areas underlain by dredge tailings. The Riverbank Formation and Modesto Formation are known to have vertebrate fossil content and as a result have a high potential or high sensitivity for paleontological resources, though past projects in the county have not unearthed important paleontological resources from these formations. Nevertheless, earth-disturbing

activities proposed during construction could potentially damage paleontological resources if they exist at the project site. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated.**

Mitigation Measure GS-1: Prepare and Implement a Paleontological Mitigation Plan

A non-standard special provision for paleontology mitigation will be included in the construction contract special provisions section to advise the construction contractor of the requirement to cooperate with paleontological salvage. The following items will be part of the provisions.

- A qualified principal paleontologist, as defined by the Caltrans Standard Environmental Reference, will be retained to prepare and implement a final Paleontological Mitigation Plan (PMP) prior to construction. If the qualified paleontologist is not a licensed professional geologist in the State of California, then a licensed professional geologist will need to be retained to review and approve the PMP prior to construction. The preliminary PMP prepared for the project (California Department of Transportation 2017; provided in Volume 3, *Technical Studies*, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx) will be updated based on final engineering design and geotechnical information.
- The geotechnical investigation conducted to support final engineering design will identify the depth and location of sensitives areas and will be used by the qualified principal paleontologist to identify locations that warrant monitoring for paleontological resources during construction.
- The final PMP will list the proposed staff and professional qualifications.
- The qualified principal paleontologist will attend a task order meeting and conduct a site visit to review task order requirements; review plans, maps, initial site reports, and mitigation requirements; review geotechnical data, site geology and paleontological sensitivity; prepare a mitigation work plan; and prepare a Code of Safe Practices.
- The qualified principal paleontologist will schedule coordination and supervision for paleontological monitors of any salvage. Monthly progress reports will be prepared for lead agency review and comment.
- The qualified principal paleontologist may designate a paleontological monitor to be present during earthmoving activities. According to preliminary engineering, excavations could occur throughout the proposed project area; therefore, paleontological monitoring is recommended during any earthmoving activities/excavations. The qualified principal paleontologist will identify locations that warrant monitoring during construction.

- The paleontological monitor will have a college degree in paleontology or geology and at least 2 years of paleontological monitoring experience or other qualifications described by the Society of Vertebrate Paleontology (2010).
- The qualified principal paleontologist and paleontological monitor will be notified by the resident engineer or lead agency in advance of starting construction activity and will attend any safety training programs for the proposed project. Paleontological monitoring may be full-time during excavation for undercrossings, in-ground structural elements such as bridge substructures and culverts, and any other project elements requiring deep excavation. If, after 50% of the grading/excavation is completed at a particular location for the proposed project, it can be demonstrated that the level of monitoring should be reduced for that site, the qualified principal paleontologist will amend the mitigation program (Society of Vertebrate Paleontology 2010). If pieces of heavy equipment are in use simultaneously at different locations, each location may be individually monitored.
- The qualified principal paleontologist will meet with the resident engineer and construction contractor at a preconstruction conference to develop an agreed-upon communication plan and to discuss provisions for worker safety. All project personnel will receive paleontological awareness training prior to commencement of work by the qualified principal paleontologist.
- If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work within a 60-foot radius of the find and notify the resident engineer and the Sacramento County Office of Planning and Environmental Review. In the event paleontological resources are discovered, fossil specimens will be properly collected and sufficiently documented to be of scientific value.
- The collection and treatment actions described in the PMP will occur during the grading and construction process and after recovery of specimens if fossils are found, including sampling for microfossils, conducting paleomagnetic analysis, identifying and preparing fossils, arranging for a repository, and preparing a final report.

No Build Alternative

Paleontological resources would not be affected because no ground disturbance would occur under the No Build Alternative.

3.14.3 References Cited

California Department of Transportation. 2017. *Paleontological Evaluation Report and Preliminary Paleontological Mitigation Plan, Hazel Avenue/U.S. Route 50 Interchange Project, City of Rancho Cordova, Sacramento County*. February. 03-SAC-50/PM 15.1-17.5, Federal Project No.: EA 03-3E380/E-FIS 0300020439. Sacramento, CA. Prepared by ICF.

California Department of Transportation. 2018. *Caltrans Highway Design Manual*. Available: http://www.dot.ca.gov/design/manuals/hdm.html. Last updated: July 2, 2018.

California Department of Conservation. 1984. *Mineral Land Classification of the Folsom 15-minute Quadrangle, Sacramento, El Dorado, Placer, and Amador Counties, California*. Division of Mines and Geology Open-File Report 84-50. Available: https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc.

Natural Resources Conservation Service. 2017. Web Soil Survey.

Parikh Consultants, Inc. 2013. Preliminary Geotechnical Report-Hazel Avenue/US-50 Interchange, Sacramento County, California. Job No. 2011-135-PGR. January.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Last revised 2010. Available: http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx

3.15 Biological Resources

3.15.1 Criteria for Determining Significant Impacts

An impact related to biological resources would be considered significant if the project would result in the following.

- A substantial adverse effect on any special-status species, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community.
- A substantial adverse effect on riparian habitat or other sensitive natural communities.
- A substantial adverse effect on streams, wetlands, or other surface waters that are protected by Federal, State, or local regulations and policies.
- A substantial adverse effect on the movement of any native resident or migratory fish or wildlife species.
- An adverse effect on or result in the removal of native or landmark trees.
- A conflict with any local policies or ordinances protecting biological resources.
- A conflict with the provisions of an adopted habitat conservation plan or other approved local, regional, State or Federal plan for the conservation of habitat.

3.15.2 CEQA Significance Determinations

Would the project have a substantial adverse effect on any special-status species, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community?

All Alternatives

There is no suitable habitat for any of the seven special-status plant species in the biological study area (BSA) (Table 2.20-1) and none were observed during the April and May 2016 botanical surveys, which were conducted during the reported identification periods of these species. Therefore, Federal- and/or State-listed plants were presumed to be absent from the BSA, and there would be **no impact**.

Impact BIO-1 (All Build Alternatives): Temporary disturbance of habitat for vernal pool fairy shrimp and midvalley fairy shrimp (less than significant with mitigation incorporated)

Potential habitat for vernal pool fairy shrimp (*Branchinecta lynchi*) and midvalley fairy shrimp (*Branchinecta mesovallensis*) would not be removed or filled as a result of construction of any of the build alternatives; however, potential habitat could be temporarily disturbed during construction and potential indirect impacts could occur as a result of changes in hydrology and increased contaminants entering habitat (*Hazel Avenue/U.S. 50 Interchange Project Aquatic Resources Delineation Report*; provided in Volume 3, *Technical Studies*, or on the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). Because habitat for these species has declined substantially in the project region, these impacts are considered **potentially significant**. With implementation of the measures below, the impacts on vernal pool fairy shrimp and midvalley fairy shrimp would be reduced to a less-than-significant level. The impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources**
>
> The County and/or their contractor will install orange construction fencing between the construction area and adjacent sensitive biological resource areas. Sensitive biological resources that occur adjacent to the construction area that could be directly affected by the project include natural communities of special concern; fairy shrimp, valley elderberry longhorn beetle and western pond turtle habitats; nest sites of Swainson's hawk, yellow-breasted chat, tricolored blackbird, song sparrow, and other migratory birds; roosting bats; and protected trees to be avoided.
>
> Barrier fencing around sensitive areas will be installed as one of the first orders of work and prior to equipment staging. Preliminary fencing locations are included in the draft project design drawings and labeled as Environmentally Sensitive Areas. The preliminary fencing locations area also shown on EIR/EA Figure 3-1. The locations of the fencing

will be updated or confirmed as part of final design, prior to construction. Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the orange construction fencing, and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans and described in the specifications. Barrier fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The County or their contractor will retain a qualified biologist to conduct environmental awareness training for construction crews before project implementation. The awareness training will be provided to all construction personnel and will brief them on the need to avoid effects on sensitive biological resources (e.g., native trees, natural communities of special concern, and special-status species habitats in and adjacent to the construction area). The education program will include a brief review of the special-status species with the potential to occur in the BSA (including their life history, habitat requirements, and photographs of the species). The training will identify the portions of the BSA in which the species may occur, as well as their legal status and protection. The program also will cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. This will include the steps to be taken if a sensitive species is found within the construction area (i.e., notifying the crew foreman, who will call a designated biologist). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each crew member. The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The County or their contractor will retain a qualified biologist to monitor all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, road construction) within or adjacent to environmentally sensitive areas (e.g., wetlands, streams, riparian vegetation, special-status species habitat, active bird nests, and adjacent areas within 250-feet or where indirect effects are possible). The purpose of the monitoring is to ensure that avoidance and minimization measures are properly implemented to protect sensitive biological resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. The biologist will regularly inspect the fencing around environmentally sensitive areas (see EIR/EA Figure 3-1) and will communicate any issues to the resident engineer or construction foreman. The contractor will be responsible for maintaining the fence during

construction and ensuring that no construction personnel, equipment, or runoff/sediment from the construction area enters environmentally sensitive areas. The monitor will complete daily logs, and a final monitoring report will be prepared at the end of each construction season that will be submitted to the County and other overseeing agencies (i.e., California Department of Fish and Wildlife [CDFW], U.S. Fish and Wildlife Service [USFWS], and USACE), as appropriate.

Mitigation Measure BIO-4: Design and Implement Water Conveyance Systems that Maintain Hydrology of and Prevent Contaminants from Entering Suitable Vernal Pool Branchiopod Habitat

Concentrated flow conveyance systems identified for the proposed project may include roadside ditches, biofiltration swales, curb and gutters, dikes, overside drains, and culverts. Water conveyance systems surrounding suitable vernal pool branchiopod habitat in the project area will be evaluated, designed, and installed to maintain the existing hydrology of the four seasonal wetlands (see EIR/EA Figure 2.16-1, Sheet 2) that provide potential habitat for vernal pool branchiopods.

Impact BIO-2 (All Build Alternatives): Direct loss of habitat for valley elderberry longhorn beetle (less than significant with mitigation incorporated)

Direct impacts on valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) would consist of removing certain elderberry shrubs located in non-riparian habitat. The locations of elderberry shrubs are shown on Figure 2.16-1 and results of surveys for elderberry shrubs are listed in Table 2.20-3. Figures 2.16-2 and 2.16-3 show the locations of elderberry shrubs that would be removed. As part of the Federal Endangered Species Act consultation conducted for the Easton Project, elderberry #5 was documented as affected. As such, impacts on this shrub have already been permitted and mitigated for by the Easton Project and no impacts from the proposed project would occur. Elderberry #5 is not discussed further. Construction of any of the build alternatives would result in the removal of elderberry #1, elderberry #3 and elderberry #4. Construction of Alternative 2 would also result in the removal of elderberry #2. No indirect effects on valley elderberry longhorn beetle from any of the build alternatives are expected to occur.

Table 3.15-1. Valley Elderberry Longhorn Beetle Impact Summary by Alternative

Habitat Type	Alternative 1	Alternative 1A	Alternative 2
Elderberry shrubs	Direct effect: removal of three shrubs #1, 3, and 4 Indirect effect: none	Direct effect: removal of three shrubs #1, 3, and 4 Indirect effect: none	Direct effect: removal of four shrubs #1, 2, 3, and 4 Indirect effect: none

Because the removal of elderberry shrubs could reduce the local population size of a Federally listed species through direct mortality or habitat loss, this direct impact is considered **potentially significant**. While the terms and conditions under which the project would proceed ultimately will be determined by the USFWS Biological Opinion for the proposed project, mitigation to reduce project impacts to a less-than-significant level is proposed below. With implementation of standardized measures and the measures below, the impacts on valley elderberry longhorn beetle

would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-5: Fence Elderberry Shrubs to be Protected

Elderberry shrubs/clusters within 165 feet of the construction area that will not be removed will be protected during construction. A qualified biologist (i.e., with elderberry/valley elderberry longhorn beetle experience) will mark the elderberry shrubs and clusters that will be protected during construction. Orange construction barrier fencing will be placed at the edge of the buffer areas established for each shrub or cluster. The buffer area distances will be proposed by the biologist and approved by USFWS. No construction activities will be permitted in the buffer zone other than those activities necessary to erect the fencing. Signs will be posted along fencing for the duration of construction and will contain the following information.

> This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

Temporary fences around the elderberry shrubs will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. Temporary fencing will be 4 feet high, commercial-quality woven polypropylene, and orange in color.

Buffer area fences around elderberry shrubs will be inspected periodically by a qualified biologist until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The contractor will be responsible for maintaining the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to the County and USFWS.

Mitigation Measure BIO-6: Compensate for Direct Effects on Valley Elderberry Longhorn Beetle and its Habitat

Before construction begins, the County will compensate for direct effects on valley elderberry longhorn beetle by transplanting shrubs that cannot be avoided to a USFWS-

approved conservation bank. The County will also purchase credits at a USWFS-approved conservation bank in accordance with ratios shown in Table 3.15-2 for the alternative that is selected. Compensation ratios shown are for shrub-level impact compensation (U.S. Fish and Wildlife Service 2017).

Table 3.15-2. Compensation for Direct Effects on Elderberry Shrubs by Alternative

Alternative	Number of Elderberry Shrubs Affected	Compensation Ratio (non-riparian)	Number of Conservation Credits Required
1	3	1:1	3
1A	3	1:1	3
2	4	1:1	4

The relocation of the elderberry shrubs will be conducted according to USFWS-approved procedures outlined in the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 2017). Elderberry shrubs within the project construction area that cannot be avoided will be transplanted during the plant's dormant phase (November through the first 2 weeks of February). A qualified biological monitor will remain on-site while the shrubs are being transplanted.

Impact BIO-3 (All Build Alternatives): Direct impacts on western pond turtle habitat (less than significant with mitigation incorporated)

Construction of any of the build alternatives would result in direct permanent and temporary impacts on suitable aquatic (Alder Creek) and upland (riparian and ruderal) habitats for western pond turtle (*Actinemys marmorata*) (see Figure 2.19-2). Construction activities could also result in the injury or mortality of western pond turtle from being struck or crushed by construction equipment or becoming entrapped in open trenches. Fuel or oil leaks, or spills into suitable aquatic habitat, also have the potential to result in sickness or mortality of western pond turtle and degradation of habitat. Habitat adjacent to the additional roadway could be indirectly affected if it becomes degraded by weedy plant species that colonize this area.

Table 3.15-3. Impacts on Western Pond Turtle Habitat

Habitat Type	All Build Alternatives	
	Permanent (acres)	Temporary (acres)
Aquatic (Perennial drainage and emergent wetland)	0.16	0.24
Upland (ruderal and valley foothill riparian woodland)	0.18	0.24

Loss of habitat and potential mortality of individuals as a result of the project could diminish the local population and lower reproductive potential. These impacts are **potentially significant**. With implementation of the measures below, the impacts on western pond turtle would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The County will compensate for the permanent and temporary loss of valley foothill riparian habitat (as shown on EIR/EA Figures 2.16-2 and 2.16-3, Sheet 4) by planting a minimum of 0.06 acre of valley foothill riparian woodland species (a minimum ratio of 1:1 [1 acre planted for every 1 acre permanently and temporarily affected]) on-site or off-site and/or purchasing mitigation bank credits equivalent to a minimum of 0.06 acre of valley foothill riparian habitat.

On-site compensation will be used to the maximum extent practicable, but off-site compensation and/or purchase of mitigation bank credits may be needed to achieve no net loss of existing in-kind riparian habitat. Each of these options is discussed below.

- Riparian habitat restoration and/or enhancement on-site or off-site should occur in the same year construction is completed. For on-site or off-site plantings, the County will prepare a mitigation planting plan, including a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those in and adjacent to the project area and will include native species, such as white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), valley oak (*Quercus lobata*), black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), boxelder (*Acer negundo*), and black willow (*Salix gooddingii*). All plantings will be fitted with exclusion cages or other suitable protection from herbivory until plantings are established. Plantings will be irrigated for up to 3 years or until established. Plantings will be monitored annually for 3 years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.
- The County will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The County will pay

the cost of mitigation credits in effect at the time the credits are purchased. Replacement riparian habitat will include tree species that would support nesting Swainson's hawk (*Buteo swainsoni*) (i.e., oak, cottonwood) and will occur within the range of nesting Swainson's hawk within the Sacramento Valley.

Mitigation Measure BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The County will compensate for the permanent fill of waters of the United States/waters of the State (a direct impact associated with roadway and interchange construction) in two wetland habitat types—emergent wetland and seasonal wetland—and in two non-wetland waters type—perennial drainage and ephemeral drainage. The minimum wetland compensation ratio to ensure no net loss of wetland or drainage functions and values will be 1:1 (1 acre of habitat credit for every 1 acre of permanent impact). The final compensation ratio will be approved by USACE. The County will compensate for permanent loss of wetlands and non-wetland waters through one or more of the following mitigation options:

- Purchase habitat credits from a USACE-approved mitigation bank with service areas for Sacramento County, such as the Cosumnes Floodplain Mitigation Bank or Elsie Gridley Mitigation Bank, and provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The County will pay the cost of mitigation credits in effect at the time the credits are purchased. The mitigation will be approved by USACE and may be modified during the permitting process.
- Pay into the National Fish and Wildlife Foundation Sacramento District In-Lieu Fee Program.

Temporarily disturbed wetlands and non-wetland waters will be returned to preconstruction condition following construction. The County also will implement the conditions and requirements of State and Federal permits that will be obtained for the proposed project.

Mitigation Measure BIO-9: Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work

To avoid potential injury or mortality of western pond turtles, the County will retain a qualified wildlife biologist who is CDFW-approved to capture and relocate turtles. The biologist will conduct a preconstruction survey for western pond turtles within 24 hours of the start of construction and will survey Alder Creek and the adjacent riparian and ruderal habitat within the construction area. If in-water work does not start immediately, the biologist will return to the construction site immediately prior to the start of in-water work (i.e., dewatering, vegetation removal, or any other activities in the creek) to conduct another preconstruction survey. The biologist will remain on-site until initial in-water work is complete. If a turtle becomes trapped during initial in-water work, the biologist will relocate the individual to suitable aquatic habitat upstream of the construction area (the area downstream of the construction area is not accessible because of US 50). For the

remainder of construction, the biologist will remain on-call in case a turtle is discovered. The construction crew will be instructed to notify the crew foreman, who will contact the biologist if a turtle is found trapped within the construction area. Work in the area where the turtle is trapped will stop until the biologist arrives and removes and relocates the turtle. The biologist will report their activities to the County and CDFW within 1 day of relocating any turtle.

Mitigation Measure BIO-10: Restore Temporarily Disturbed Ruderal Habitat

Upon project completion, the County will restore all temporarily disturbed ruderal habitat (1.92 acres under all alternatives) (as shown on EIR/EA Figures 2.16-2 and 2.16-3) to pre-project or better conditions. To the extent feasible, native grasses and forbs will be used to reseed disturbed areas.

Impact BIO-4 (All Build Alternatives): Direct impacts on Swainson's hawk and white-tailed kite nesting season and habitat (less than significant with mitigation incorporated)

Construction of any of the build alternatives would result in disturbance (noise and/or activity) during the Swainson's hawk and white-tailed kite (*Elanus leucurus*) nesting seasons and could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Trees that provide suitable nesting habitat for Swainson's hawk and white-tailed kite would be removed to construct the proposed project. Removing trees would reduce the amount of available nesting habitat for these species and a temporal loss of nesting habitat would continue until replacement trees mature. No indirect effects are anticipated to occur.

Table 3.15-4. Impacts on Swainson's Hawk and White-Tailed Kite Nesting Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Fremont cottonwood-oak woodland	2.97	0.19	2.97	0.19	2.97	0.19
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Total Nesting Habitat Impacts	**3.00**	**0.22**	**3.00**	**0.22**	**3.00**	**0.22**

Because direct impacts from the project could affect the local populations of these species, including reduced reproductive potentials, these impacts are considered **potentially significant**. With implementation of the measures below, the impacts on Swainson's hawk and white-tailed kite would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-10: Restore Temporarily Disturbed Ruderal Habitat

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

The County and/or Easton will compensate for the permanent loss of 2.97 acres and temporary loss of .19 acres of Fremont cottonwood-oak woodland at a minimum ratio of 1:1 (1 acre planted for every 1 acre permanently affected). The loss of most of the Fremont cottonwood-oak woodland habitat in the project area, which is located near the intersection of Folsom Boulevard and Nimbus Road, has been previously mitigated as part of Phase 2 of the Easton Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the areas of effect and the area that has been previously mitigated for Phase 2 of the Easton Project. For the proposed project, compensation would only be required for 0.90 acre of the direct impacts (see Section 2.16, *Natural Communities*, for further details).

As part of the woodland mitigation, compensation may include either compensation for the woodland habitat at a minimum ratio or 1:1 as indicated above and/or compliance with Mitigation Measure BIO-17 and/or Mitigation Measure BIO-18.

Mitigation Measure BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

To the maximum extent feasible, vegetation removal (trees, shrubs, and ground vegetation) will occur during the non-breeding season for most migratory birds (generally between September 16 and January 31). This timing is highly preferable because if an active nest is found during preconstruction surveys in a tree (or other vegetation) that would be removed by project construction, the tree (or other vegetation) cannot be removed until the end of the nesting season, which could delay construction. If vegetation cannot be removed between September and January, or if ground cover re-establishes in

areas where vegetation has been removed, the affected area must be surveyed for nesting birds, as discussed in Mitigation Measures BIO-13: Conduct Focused Survey for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction and BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds. To minimize potential impacts on roosting bats, tree trimming and removal should be conducted from September 1 through October 15 (see Mitigation Measure BIO-15: Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures). Tree trimming and removal during this timeframe would avoid or minimize impacts on nesting birds and roosting bats.

Mitigation Measure BIO-13: Conduct Focused Survey for Nesting Swainson's Hawk and White-Tailed Kite Prior to Construction

If construction, grading, or project-related improvements are to commence between March 1 and September 15, a focused survey for Swainson's hawk and white-tailed kite nests on the site and within 0.25 mile of the site will be conducted by a qualified biologist no later than 30 days prior to the start of construction work (including clearing and grubbing). If active nests are found, CDFW will be contacted to determine appropriate protective measures, and these measures will be implemented prior to the start of any ground-disturbing activities. If no active nests are found during the focused survey, no further mitigation will be required.

Mitigation Measure BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds

If vegetation removal would occur during the breeding season (generally February 1 through September 15), the County or Contractor will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys 15 days or less before the start of construction. Surveys will include a search of all trees and shrubs, marsh, wetland, and ruderal vegetation that provide suitable nesting habitat in the project area. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site until the end of the breeding season (September 15) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Impact BIO-5 (All Build Alternatives): Direct impacts on yellow-breasted chat nesting habitat (less than significant with mitigation incorporated)

Construction of any of the project build alternatives would result in direct permanent and temporary impacts on suitable nesting habitat (valley foothill riparian woodland) for yellow-breasted chat (*Icteria virens*) (Table 3.15-5; Figures 2.19-3 and 2.19-4). Additionally,

construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. No indirect effects are anticipated to occur.

Table 3.15-5. Impacts on Yellow-Breasted Chat Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03

Because direct impacts from the project could affect the local populations of this species, including reduced reproductive potential, these impacts are considered **potentially significant**. With implementation of the measures below, the impacts on yellow-breasted chat would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Impact BIO-6 (All Build Alternatives): Direct impacts on tricolored blackbird nesting habitat (less than significant with mitigation incorporated)

Construction of the any of the project build alternatives would result in direct permanent and temporary impacts on suitable nesting (emergent wetland) habitat for tricolored blackbird (*Agelaius tricolor*) (Table 3.15-6; Figures 2.19-3 and 2.19-4). Additionally, construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. No indirect effects are anticipated to occur.

Table 3.15-6. Impacts on Suitable Tricolored Blackbird Nesting Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06

Since direct impacts from the project could affect the local populations of this species, including reduced reproductive potential, these impacts are considered **potentially significant**. With implementation of the measures below, the impacts on tricolored blackbird would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-10: Restore Temporarily Disturbed Ruderal Habitat

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Impact BIO-7 (All Build Alternatives): Direct impacts on song sparrow (Modesto population) nesting habitat (less than significant with mitigation incorporated)

Construction of any of the project build alternatives would result in direct permanent and temporary impacts on suitable nesting habitat (valley foothill riparian woodland and emergent wetland) for song sparrow (*Melospiza melodia*) (Table 3.15-7; Figures 2.19-3 and 2.19-4). Additionally, construction disturbance (noise and/or activity) during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. No indirect effects are anticipated to occur.

Table 3.15-7. Impacts on Song Sparrow Habitat by Alternative

Habitat Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Valley foothill riparian woodland	0.03	0.03	0.03	0.03	0.03	0.03
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06
Total	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**

Because direct impacts from the project could affect the local populations of this species, including reduced reproductive potential, these impacts are considered **potentially significant**. With implementation of the measures below, the impacts on the Modesto population of song sparrow would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The full text of this measure is included above.

Mitigation Measure BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Impact BIO-8 (All Build Alternatives): Removal or disturbance of special-status and non-special-status bat roosting habitat or colonies (less than significant with mitigation incorporated)

Construction of any of the project build alternatives during the bat maternity season would result in the removal or disturbance of trees that may provide suitable roosting habitat (cavities, crevices, furrowed bark, and foliage) for special-status bats. Implementation of Alternative 2 would result in the removal (permanent impact) of more trees that provide suitable roosting habitat for bats (Figure 2.19-4) than Alternatives 1 and 1a (Figures 2.19-3). Disturbance (temporary impact) of trees that provide suitable roosting habitat would be the same for all alternatives. Removal or disturbance of trees providing suitable roosting habitat could result in the injury or mortality of roosting bats, if present during removal or disturbance of the trees. Removal of occupied roost habitat would also displace bats, causing them to relocate to another roost site and potentially compete with other bats for the roost site. The Hazel Avenue bridge structure would be disturbed (i.e., vibrations, noise) during widening under Alternatives 1 and 1A but would not be removed. As such, the structure would continue to provide suitable roosting habitat for bats. Under Alternative 2, the Hazel Avenue bridge structure would not be widened and therefore the bats potentially in the bridge would not be disturbed. No indirect effects on special-status or non-special-status bats are anticipated as a result of the proposed project.

Because direct impacts from the project could affect the local populations of special-status and non-special-status bats, including reduced reproductive potential, these impacts are considered

potentially significant. With implementation of the measures below, the impacts on special-status bats and roosting colonies of non-special-status bats would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-15: Identify Suitable Roosting Habitat for Bats and Implement Avoidance and Protective Measures

To minimize potential impacts on tree-roosting bats, tree trimming and removal should be conducted between September 1 and October 15, which corresponds to a time period when bats have not yet entered torpor or be caring for nonvolant (non-flying) young. Trimming or removing trees during this timeframe would also avoid impacts on nesting birds.

If tree removal or trimming cannot be conducted between September 1 and October 15, qualified biologists will examine trees for suitable bat roosting habitat before tree removal or trimming. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch) will be identified and the area around these features searched for bats and bat signs (e.g., guano, culled insect parts, staining). Riparian woodland and stands of mature broadleaf trees are considered potential habitat for solitary foliage-roosting bat species. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, the

protective measures listed below will be implemented for trees containing high-quality habitat features.

- Removal or disturbance of trees providing bat roosting habitat will be avoided between April 1 and August 31 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary).
- If a maternity roost is found, whether solitary or colonial, that roost will remain undisturbed until September 1 or until a qualified biologist has determined the roost is no longer active.
- Qualified biologists will monitor tree trimming/removal of the habitat. Trees should be trimmed or removed over two consecutive days. The first day (in the afternoon), limbs and branches should be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices or deep bark fissures should be avoided, and only branches or limbs without those features should be removed. On the second day, the entire tree should be removed. Biologists should search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided to the County and CDFW.

Impact BIO-9 (All Build Alternatives): Disturbance of nesting migratory birds (less than significant with mitigation incorporated)

Tree removal and trimming, clearing of ruderal and other ground vegetation, and disturbance or removal of the Alder Creek box culvert or other structures that would occur with construction of any of the build alternatives could result in disturbance of nesting birds. Construction activities that occur during the nesting season of migratory birds (generally February 1 through September 15) could result in the injury or mortality of nesting birds. Removal or destruction of nests or construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment.

Because direct impacts from the project could affect the local populations of migratory birds, including reduced reproductive potential, these impacts are considered **potentially significant**. Activities that result in removal or destruction of occupied nests or eggs would also violate the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC) Sections 3503 and 3503.5. With implementation of the measures below, the impacts on migratory birds would be reduced to a less-than-significant level and violations of the MBTA and CFGC Sections 3503 and 3503.5 would be avoided. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The full text of this measure is included under Impact BIO-3.

Mitigation Measure BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-12: Conduct Vegetation Removal during the Non-Breeding Season of Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

Mitigation Measure BIO-14: Conduct Preconstruction Surveys for Nesting Migratory Birds

The full text of this measure is included under Impact BIO-4.

No Build Alternative

Under the No Build Alternative, no construction would occur at the interchange so this alternative would not result in any adverse effects on special-status species, or their habitat.

Would the project have a substantial adverse effect on riparian habitat or other sensitive natural communities?

Impact BIO-10 (All Build Alternatives): Permanent loss of Fremont cottonwood-oak woodland (less than significant with mitigation incorporated)

All project build alternatives would result in 2.97 acres of permanent impacts and 0.19 acre of temporary impacts on Fremont cottonwood-oak woodland (Table 3.15-8; Figures 2.16-2 and 2.16-3), but all tree removal in Fremont cottonwood-oak woodland would be considered a long-term impact because of the time required for habitat regeneration. The loss of most of the Fremont cottonwood-oak woodland habitat in the project area has been previously mitigated as part of Phase 2 of the Easton Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the area that has been previously mitigated for Phase 2 of the Easton Project. For the proposed project, compensation would only be required for 0.90 acre of the direct impacts (see Section 2.16, *Natural Communities*, for further details). No indirect impacts on this woodland are anticipated.

Table 3.15-8. Impacts on Fremont Cottonwood-Oak Woodland by Alternative

Alternative 1		Alternative 1A		Alternative 2	
Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
2.97	0.19	2.97	0.19	2.97	0.19

Because cottonwood-oak woodlands are important wildlife habitat for special-status wildlife species and Sacramento County General Plan policies protect oak woodlands, the impact of loss of Fremont cottonwood-oak woodland would be **potentially significant**. With implementation of the measures below, the temporary and permanent impacts on Fremont cottonwood-oak woodland would eventually be reduced to a less-than-significant level when the compensatory planted woodland reaches maturity. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-11: Compensate for the Permanent and Temporary Loss of Fremont Cottonwood-Oak Woodland

The full text of this measure is included under Impact BIO-4.

Impact BIO-11 (All Build Alternatives): Temporary and permanent loss of valley foothill riparian woodland (less than significant with mitigation incorporated)

All project build alternatives would result in 0.03 acre of permanent impacts and 0.03 acre of temporary impacts on valley foothill riparian woodland (Table 3.15-9; EIR/EA Figures 2.16-2 and 2.16-3). However, all tree removal in valley foothill riparian woodland would be considered a long-term impact because of the time required for habitat regeneration, even if the project construction component requiring the removal is considered a temporary impact. No indirect impacts on this woodland are anticipated.

Table 3.15-9. Impacts on Valley Foothill Riparian Woodland by Alternative

Alternative 1		Alternative 1A		Alternative 2	
Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
0.03	0.03	0.03	0.03	0.03	0.03

Because riparian woodlands are important wildlife habitat for special-status wildlife species and are protected under CFGC Section 1602 and Sacramento County General Plan policies, loss of valley foothill riparian woodland is considered **potentially significant**. With implementation of the measures below, the temporary and permanent impacts on valley foothill riparian woodland would eventually be reduced to a less-than-significant level when the compensatory planted woodland reaches maturity. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-7: Compensate for the Permanent and Temporary Loss of Valley Foothill Riparian Woodland

The full text of this measure is included under Impact BIO-3.

No Build Alternative

Under the No Build Alternative, no construction would occur at the interchange so this alternative would not result in changes in or loss of riparian or other natural communities.

Would the project have a substantial adverse effect on streams, wetlands, or other surface waters that are protected by Federal, State, or local regulations and policies?

Impact BIO-12 (All Build Alternatives): Permanent loss of and temporary impacts on emergent wetland, seasonal wetland, perennial drainage, and ephemeral drainage (less than significant with mitigation incorporated)

Permanent impacts under all of the proposed project build alternatives would include 0.06 acre of emergent wetland, 0.02 acre of seasonal wetland, 0.10 acre of perennial drainage in Alder Creek, and 0.001 acre of ephemeral drainage (Table 3.15-10; Figure 2.16-2 and 2.16-3). Temporary impacts under all of the alternatives would include 0.06 acre of emergent wetland, 0.18 acre of perennial drainage, and 0.0003 acre of ephemeral drainage (Table 3.15-10; Figure 2.16-2 and 2.16-3). The specific locations of these impacts are described in Section 2.17, *Wetlands and Other Waters*. All build alternatives could also result in potential indirect impacts on wetlands and drainages that lie outside of the project footprint.

Table 3.15-10. Impacts on Wetlands and Non-Wetland Waters by Alternative

Feature Type	Alternative 1		Alternative 1A		Alternative 2	
	Permanent Impact Area (acres)	Temporary Impact Area (acres)	Permanent Impact Area (acres)	Temporary Impact Area (acres)	Permanent Impact Area (acres)	Temporary Impact Area (acres)
Wetlands						
Emergent wetland	0.06	0.06	0.06	0.06	0.06	0.06
Seasonal wetland	0.02	0	0.02	0	0.02	0
Subtotal Wetlands	***0.08***	***0.06***	***0.08***	***0.06***	***0.08***	***0.06***
Non-Wetland Waters						
Perennial drainage	0.10	0.18	0.10	0.18	0.10	0.18
Ephemeral drainage	0.001	0.0003	0.001	0.0003	0.001	0.0003
Subtotal Non-Wetland Waters	***0.10***	***0.18***	***0.10***	***0.18***	***0.10***	***0.18***
Total All Natural Communities	**0.18**	**0.24**	**0.18**	**0.24**	**0.18**	**0.24**

Because emergent wetlands, seasonal wetlands, perennial drainage, and ephemeral drainage are waters of the United States and waters of the State and are regulated by USACE, the loss of these wetlands and drainages is considered **potentially significant**. With implementation of the measures below, the impacts on wetlands and drainages would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-3: Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-8: Compensate for Loss of Wetlands and Non-Wetland Waters of the United States/Waters of the State

The full text of this measure is included under Impact BIO-3.

Impact BIO-13 (All Build Alternatives): Permanent impacts on roadside ditch (less than significant with mitigation incorporated)

All of the proposed project build alternatives would result in permanent impacts on 0.14 acre of constructed roadside ditch and temporary impacts on 0.03 acre of ditch (Table 3.15-11; Figures 2.16-2 and 2.16-3. Impacts were considered to be permanent if they would result in the placement of permanent fill in the ditch to accommodate an auxiliary lane on US 50. Impacts were considered to be temporary if fill would be removed following completion of construction and temporarily disturbed portions of the ditch would be restored. Temporary impacts may include modification of the ditch bank or channel, increased turbidity, and runoff of chemical substances. All build alternatives could also result in potential indirect impacts on drainages that lie outside of the project footprint.

Table 3.15-11. Impacts on Ditch by Alternative

Alternative 1		Alternative 1A		Alternative 2	
Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
0.14	0.03	0.14	0.03	0.14	0.03

Because the ditch is verified and regulated by USACE as a non-wetland water of the United States and it is a water of the State the impact of the loss of the ditch is considered **potentially significant**. Construction of the new road would replace the ditch to maintain the drainage function, and the constructed roadside ditch provides minimal habitat for wildlife species; therefore, no additional compensatory mitigation would be necessary. With implementation of the measure below, the impacts on the ditch would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

No Build Alternative

Under the No Build Alternative, no construction would occur at the interchange so this alternative would not result in adverse effect on streams, wetlands, or other surface waters.

Would the project have a substantial adverse effect on the movement of any native resident or migratory fish or wildlife species?

All Alternatives

Because of the existing amount of development in the surrounding area and the presence of U.S. 50, the BSA provides limited opportunities for animal movement or migration. Animals moving along Alder Creek or through the Aerojet property to the jughandle area of the proposed project are blocked by the presence of the freeway and/or development. Construction activities and presence of construction equipment and personnel are not expected to limit animal movement or migration any greater more than it is already limited by existing development.

The project, once constructed, would not affect wildlife dispersal and migration corridors because of the existing development and barriers in the area surrounding the proposed project and the limited opportunities for animal movement and migration in the project area. The constructed project is not expected to limit animal movement or migration any more than the constraints from existing development.

This project would not affect any migratory wildlife corridors or the movement of any native resident or migratory fish or wildlife species. This project would not impede the use of native wildlife nursery sites. There would be **no impact**.

Would the project adversely affect or result in the removal of native or landmark trees?

Impact BIO-14 (All Build Alternatives): The removal of native and/or landmark trees (less than significant with mitigation incorporated)

The trees within the project limits were identified in an arborist report prepared by ICF (see Appendix 14 in EIR/EA *Volume 3: Technical Studies*). A few of the trees within the project limits were considered by the arborist to be inaccessible and are not included in the report. Some of these inaccessible trees are on the Aerojet property in the area of the project "jug handle". The loss of most of the Fremont cottonwood-oak woodland habitat in the "jug handle" area has been previously mitigated as part of Phase 2 of the Easton Project (County of Sacramento 2008). Figures 2.16-2 and 2.16-3 show the area that has been previously mitigated for Phase 2 of the

Easton Project. The remaining .90 acres that were not mitigated by Easton will be mitigated per Mitigation Measure Bio-11 for the loss of oak woodland habitat.

There are three large oaks between the eastbound Hazel Avenue off-ramp and the Quality Inn that are not included in the arborist report or tree exhibit because the arborist felt the trees were inaccessible due to safety. The trees are expected to be removed. The hotel will experience a loss of shade in the parking lot and visual screening.

The number of trees proposed for removal, including native, native non-drought tolerant, and non-native trees, under each of project alternatives is shown below in Tables 3.15-12 and 3.15-13. The approximate total number of trees proposed for removal under Alternatives 1 and 1A is included in Table 3.15-12, and the total number of trees proposed for removal under Alternative 2 is included in Table 3.15-13. Trees likely to be removed or preserved under all three alternatives are shown in Appendix H, Trees Proposed for Removal. The proposed project is expected to remove approximately 80 to 100 native trees not compensated under the woodland or riparian mitigation measures; these trees grow in landscaped areas or as individual trees in ruderal habitat (see Trees Proposed for Removal under Alternatives 1, 1A, and 2 in Appendix H EIR/EA Volume 2).

Table 3.15-12. Trees Proposed for Removal under Alternative 1 and Alternative 1A

Tree Type	Number of Trees Proposed for Removal	To Be Determined[b, c]
Native	80	16
Native (not drought tolerant)	34	4
Non-Native	72	2
Total[a]	**186**	**22**

[a] The above totals do not include non-native trees noted on Sheet 2 and native/non-native trees on Sheet 3 of the Arborist Report that will be removed due to the project. Native trees in Sheets 4 and 5 of the Arborist Report are not included in the above calculations due to completion of prior tree mitigation for the Easton project.

[b] The "To be determined" column indicates trees who's impacts could not be determined at the time of this draft EIR, and whether or not the tree would be preserved or removed as a result of project construction. The impact of the project on these trees will be determined at the time of project construction.

[c] There are trees that have the potential to be preserved under Alternatives 1 and 1A. However, no trees are proposed to be preserved or saved under Alternatives 1 and 1A.

Table 3.15-13. Trees Proposed for Removal under Alternative 2

Tree Type	Number of Trees Proposed for Removal	To Be Determined[b]	Preserved
Native	86	19	14
Native (not drought tolerant)	26	12	5
Non-Native	111	2	1
Total[a]	**223**	**33**	**20**

[a] The above calculations do not include non-native trees noted on Sheet 2 and native/non-native trees on Sheet 3 of the Arborist Report that will be removed due to the project. Native trees in Sheets 4 and 5 of the Arborist Report are not included in the above calculations due to completion of prior tree mitigation for the Easton project.

[b] The "To be determined means" column indicates trees who's impacts could not be determined at the time of this draft EIR, and whether or not the tree would be preserved or removed as a result of project construction. The impact of the project on these trees will be determined at the time of project construction.

Changes in drainage and improper irrigation could result in indirect effects on protected trees as a result of the proposed project. Implementation of Mitigation Measure BIO-16 will reduce potential indirect impacts to less than significant for all alternatives.

The loss of native trees including oaks, walnuts and sycamores is considered **potentially significant**. Compensatory mitigation would be required for approximately 1,441 inches DBH of native trees (including oaks, sycamore and walnut) for Alternative 1 or approximately 1,846 inches DBH of native trees for Alternative 2.

The project is expected to remove several large native cottonwood and willows that are not currently part of a wetland or riparian area. These large trees may have become established when the area was still prone to flooding and now have extensive and deep root systems that have allowed them to survive. Newly planted cottonwood trees and willows are water intensive. Considering historic drought patterns and water shortages, planting cottonwoods or willows outside of riparian or wetland areas is not recommended; therefore, compensatory mitigation for the non-riparian cottonwood and willows is included in the mitigation for the loss of tree canopy rather than mitigating on a per inch basis.

The project will remove native western red buds. Unlike the eastern red-bud, the western red-bud is a multi-stemmed shrub; therefore, the western redbuds will be mitigated by replacement planting one individual for each individual removed. The California buckeye is also a shrub that will be mitigated by planting one individual for each individual removed.

With implementation of the measures below, direct and indirect impacts on native trees and shrubs would be reduced to a less-than-significant level.

Mitigation Measure BIO-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included under Impact BIO-1.

Mitigation Measure BIO-16: Protect Native Trees during Construction

This measure applies to all native oaks that have a DBH of at least 6 inches, or if it has multiple trunks of less than 6 inches each, a combined DBH of at least 10 inches.

With the exception of the trees slated for removal that will be mitigated for through compensatory measures, all native oak trees in the project area, all portions of adjacent off-site native oak trees that have driplines that extend onto the project area, and all off-site native oak trees that may be affected by utility installation and/or improvements associated with this project, will be preserved and protected as follows:

1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb will constitute the dripline protection area of the tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of the tree. Removing limbs that make up the dripline does not change the protected area.
2. Chain link fencing or a similar protective barrier will be installed 1 foot outside the driplines of the native trees prior to initiating project construction, in order to avoid damage to the trees and their root system.

3. No signs, ropes, cables (except cables that may be installed by a certified arborist to provide limb support) or any other items will be attached to the native trees.
4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities will be driven, parked, stockpiled or located within the driplines of the native trees.
5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an International Society of Arboriculture (ISA) Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines.
6. All underground utilities and drain or irrigation lines will be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist.
7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of 6 inches of mulch or gravel will be created to protect the root zone. The roadbed will be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material will be replenished as necessary to maintain a 6-inch depth.
8. Drainage patterns on the site will not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees.
9. No sprinkler or irrigation system will be installed in such a manner that it sprays water within the driplines of the oak trees.
10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute A300 pruning standards and the ISA “Tree Pruning Guidelines”.
11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, non-compacted decomposed granite, etc. Landscape materials will be kept 2 feet away from the base of the trunk. The only plant species that will be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.
12. Any fence/wall that will encroach into the dripline protection area of any protected tree will be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers will be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts on the trees.
13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least 1 foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at

least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk. Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1 inch or more.

Mitigation Measure BIO-17: Compensate for the Loss of Protected Trees

Native trees that would be removed in the project area include valley oak, interior live oak, California black walnut, California sycamore, buckeye, and western redbud. Based on preliminary arborist survey data, the removal of approximately 1,846 inches DBH of native trees (including oaks, sycamore and walnut) will be compensated for by planting in-kind native trees equivalent to the DBH inches lost, based on the ratios listed below. Buckeye and western redbud will be compensated by planting one individual for each individual removed. Willows and cottonwoods will be replaced based on the loss of canopy and are include in Mitigation Measure BIO-18 along with the non-native trees. Final compensation amounts will be determined based on final design, and mitigation requirements will be adjusted to compensate the actual amount removed or encroached upon by over 50 percent of the dripline radius.

Equivalent compensation based on the following ratio is required:

- one 15-gallon tree = 1 inch DBH
- one 24-inch box tree = 2 inches DBH
- one 36-inch box tree = 3 inches DBH

A Replacement Tree Planting Plan will be prepared by a certified arborist or licensed landscape architect and will be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) will include the following minimum elements:

- Species, size and locations of all replacement plantings and < 6-inch DBH trees to be preserved
- Method of irrigation
- If planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot-deep boring hole to provide for adequate drainage
- Planting, irrigation, and maintenance schedules;
- Identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees that do not survive during that period.

No replacement tree will be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation or swimming pool excavation. The minimum spacing for replacement native trees will be 15 feet on-center.

If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation will be through payment into the County Tree Preservation Fund. Payment will be made at a rate of $325.00 per DBH inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made.

Impact BIO-15 (All Build Alternatives): The removal of non-drought tolerant native trees and non-native trees that provide shade and/or are considered landmark trees (less than significant with mitigation incorporated)

The project is expected to result in the removal of approximately 74 trees for Alternative 1 and approximately 113 trees for Alternative 2, which would not be mitigated per biological measures 7, 11, or 16. These are primarily non-native landscape trees and some non-riparian/ non wetland cottonwoods and willows. The loss of tree canopy is expected to be approximately 72,310 square feet for Alternative 1 and approximately 86,827 square feet for Alternative 2. Mitigation is recommended to replace the loss of tree canopy within a 15-year growth period. Compliance with Biological Mitigation Measure 18 will reduce impacts. With mitigation impacts to landmark and/or shade trees are considered to be less than significant.

Mitigation Measure BIO-18: Replace Loss of Tree Canopy

Removal of non-native tree canopy for the selected alternative shall be mitigated by creation of new tree canopy equivalent to the acreage of non-native tree canopy removed. New tree canopy acreage shall be calculated using the Sacramento County Department of Transportation 15-year shade cover values for tree species. Preference is given to on-site mitigation, but if this is infeasible, then funding shall be contributed to the Sacramento Tree Foundation's Greenprint program in an amount proportional to the tree canopy lost (as determined by the 15-year shade cover calculations for the tree species to be planted through the funding, with the cost to be determined by the Sacramento County Tree Foundation).

No Build Alternative

The No Build Alternative would not remove any native or landmark trees.

Would the project conflict with any local policies or ordinances protecting biological resources?

All Alternatives

All alternatives for the proposed project are consistent with local policies and ordinances protecting biological resources. While the build alternatives would result in the removal of trees protected per General Plan policies. The build alternatives are consistent with Sacramento County General Plan policies that protect native trees, riparian, and woodland communities (see Impact BIO-10 and Impact BIO-11). The No Build Alternative is also consistent with local

policies and ordinances protecting biological resources since no construction would occur at the interchange and no biological resources would be affected. There would be **no impact.**

Would the project conflict with the provisions of an adopted habitat conservation plan or other approved local, regional, State or Federal plan for the conservation of habitat?

All Alternatives

There are no adopted habitat conservation plans, natural community conservation plans or other approved local, regional, State or Federal habitat conservation plans that apply to the project area. There would be **no impact**.

3.15.3 References Cited

County of Sacramento. 2008. *Easton Project: Easton Place and Glenborough at Easton Final Environmental Impact Report*. November 2008. State Clearinghouse Number: SCH2005062128. Plate PD-6.

U.S. Fish and Wildlife Service. 2017. *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (Desmocerus californicus dimorphus). May. Prepared by the Sacramento Fish and Wildlife Office. Sacramento, CA.

3.16 Cultural Resources

3.16.1 Criteria for Determining Significant Impacts

An impact related to cultural resources would be considered significant if the project would result in the following.

- A substantial adverse change in the significance of a historical resource.
- A substantial adverse effect on an archaeological resource.
- Disturbance of any human remains, including those interred outside of formal cemeteries.
- A substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code (PRC) Section 21074.

3.16.2 CEQA Significance Determinations for Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource?

All Build Alternatives

The built environment surveys conducted on June 8, 2016, found no newly recorded archaeological resources or built environment resources within the project's Area of Potential Effects (APE) for cultural resources. Four previously recorded built environment resources identified from the record search and additional background research on the project area were determined to still be present within the APE: a segment of the SVRR alignment (CA-SAC-428H), one Aerojet industrial building (P-34-2183), the Nimbus Winery (P-34-1667) and the Sacramento County Fire Station #63.

As part of previous recordation of the four resources identified within the APE the Aerojet industrial building (P-34-2183) was evaluated and determined ineligible for listing in the NRHP and CRHR under the Memorandum of Agreement for the Easton Project. The Nimbus Winery (P-34-1667) was evaluated and determined ineligible for listing in the NRHP and CRHR. And, though it is of local interest, the Nimbus Winery is not registered as a local historical property. The Sacramento County Fire Station #63 was initially determined to be a landmark or point of interest, but was later found ineligible for that designation by the State Historic Resources Commission (California Department of Transportation 2018). Additional detail regarding eligibility determinations are discussed in Section 2.7, *Cultural Resources*.

One historic-era built environment resource within the project area is considered a historical resource for the purposes of CEQA: the Sacramento Valley Railroad (SVRR) (P-34-455; CA-SAC-428-H). Although the SVRR crosses the project area, the project would not cause a substantial adverse change in the significance of the resource. The SVRR passes through the project area specifically at the jughandle near the intersection of Hazel and Folsom Blvd. The SVRR is well documented and was previously determined eligible for listing in the NRHP in 1993 under Criteria A, as the State's first passenger railroad west of the Mississippi River and for its role in the growth of the cities of Sacramento and Folsom, and under Criteria B, for its association with Theodore Judah. The character-defining features of the SVRR are the rail alignment, its historic setting, and location. Although the resource is located in the APE, no proposed project construction would compromise the character-defining features that help define why the rail line is significant under NRHP Criteria A and B. Consequently, as currently designed, the proposed project does not have the potential to affect, either directly or indirectly, the SVRR alignment. There would be **no impact**.

No Build Alternative

The No Build Alternative would not modify the Hazel Avenue/US 50 interchange. The existing interchange, ramp, and lane configuration would remain. Therefore, this alternative would not affect the SVRR alignment, its historic setting, or its location.

Would the project have a substantial adverse effect on an archaeological resource?

Impact CUL-1 (All Build Alternatives): Adverse effect on an archaeological resource (less than significant with mitigation incorporated)

The record search indicated one previously recorded archaeological site, CA-SAC-1013H (Natomas-Aerojet Dredge Fields), and one archaeological district, CA-SAC-308H (Folsom Mining District), within the APE. The Natomas-Aerojet Dredge Fields are evaluated as not eligible for listing in the NRHP or CRHR with State Historic Preservation Officer concurrence. As a result of the archaeological pedestrian survey, no associated features or elements of the Natomas-Aerojet Dredge Fields, or the Folsom Mining District were observed within the APE; therefore, the project will not cause a substantial adverse change in the significance of a known archaeological resource.

During consultation with UAIC, one prehistoric site in the vicinity of the APE was of concern. This site is listed on the California Office of Historic Preservation's Archaeological Determinations of Eligibility as an individual property determined eligible for the NRHP by consensus through the Section 106 process; the site is also listed in the CRHR. As a result of the archaeological pedestrian survey, no evidence of the site was observed within the APE. The UAIC considers the area culturally sensitive. Portions of the APE nearest to the site have been completely paved over and the project would not cause any ground disturbance near the site. To ensure complete avoidance, mitigation is proposed to delineate the limits of the APE and instruct crews to keep construction-related staging, equipment, and worker parking within the approved APE boundary.

It is possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives. This impact could be considered a significant impact on those previously unknown cultural resources.

This impact is considered **potentially significant**. With implementation of the measures below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel**
>
> Before any ground-disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel, including contractors and subcontractors, to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas, their responsibility to report potential resources if observed, and the penalties for not complying with applicable State and Federal laws and permit requirements.

Mitigation Measure CUL-2: Monitor for Archaeological Resources during Initial Ground Disturbance

A Native American monitor will be retained to monitor all initial ground disturbing activities (e.g., grading, excavation, tree removal). The purpose of the monitoring is to ensure that no unrecorded archaeological resources are affected by the project and to ensure that the project complies with all applicable permit requirements and agency conditions of approval.

Mitigation Measure CUL-3: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

It is Caltrans' policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County coroner will be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendent (MLD). The County will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

Mitigation Measure CUL-4: Install Orange Construction Fencing to Avoid Culturally Sensitive Areas

Construction-related staging, equipment, and worker parking will be kept within the approved APE boundary. The APE boundaries in the vicinity of areas identified as culturally sensitive by the UAIC as a result of consultation with the lead agencies will be delineated with orange construction fencing or other visible means to ensure complete avoidance.

No Build Alternative

The No Build Alternative would not modify the Hazel Avenue/US 50 interchange. Therefore, this alternative would not affect a known or a previously unknown archaeological resource.

Would the project disturb any human remains, including those interred outside of formal cemeteries?

Impact CUL-2 (All Build Alternatives): Disturb any human remains (less than significant with mitigation incorporated)

The APE is generally sensitive for archaeological deposits, including human remains. Earth-disturbing excavation and grading construction activities could damage human remains if present in the project area. If human remains are inadvertently discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County coroner will be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the MLD. The project proponent will work with the MLD to avoid the remains and, if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

This impact is considered **potentially significant**. With implementation of the measures below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Refer to the full text of this measure under Impact CUL-1.

Mitigation Measure CUL-2: Monitor for Archaeological Resources during Initial Ground Disturbance

Refer to the full text of this measure under Impact CUL-1.

Mitigation Measure CUL-3: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

Refer to the full text of this measure under Impact CUL-1.

Mitigation Measure CUL-4: Install Orange Construction Fencing to Avoid Culturally Sensitive Areas

Refer to the full text of this measure under Impact CUL-1.

No Build Alternative

The No Build Alternative would not modify the Hazel Avenue/US 50 interchange. Therefore, this alternative would not disturb any human remains if present in the project area.

Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074?

All Alternatives

The County emailed AB 52 consultation letters to three tribes who had requested formal notification of projects requiring AB 52 consultation. On January 28, 2016, a letter was emailed to Steven Hutchason, Executive Director Environmental for the Wilton Rancheria. On January 29, 2016, a letter was emailed to Gene Whitehouse, Chairperson of the United Auburn Indian Community of the Auburn Rancheria (UAIC). On June 1, 2016, a letter was emailed to Randy Yonemura, Cultural Committee Chair of the Ione Band of Miwok Indians (IBMI). The letter to IBMI was sent later in the AB 52 process, as the County had not received a formal request for AB 52 notification from this tribe prior to the project being deemed complete.

The only response to the initial AB 52 notification letters was from Antonio Ruiz, Cultural Resources Officer from the Wilton Rancheria, who responded to the letter by e-mail on February 4, 2016, stating that the Wilton Rancheria would like to further consult. The Wilton Rancheria also requested cultural reports and geotechnical reports for the project. Although only the Wilton Rancheria responded to the initial notification letters, the County invited all three tribes to AB 52 consultation again later in 2016 concurrent with initiation of National Historic Preservation Act Section 106 consultation. On November 2, 2016, the County sent a Section 106 notification letter to the UAIC. On December 15, 2016, the County received a response letter from Gene Whitehouse with the UAIC, stating that UAIC would like to initiate consultation under AB 52, and the point of contact would be Marcos Guerrero. Consultation with the tribes did not result in the identification of any tribal cultural resources located within the project APE. During consultation with UAIC, a prehistoric site was identified within the vicinity of the APE as noted above. Mitigation measure CUL-4 addresses complete avoidance of the prehistoric site.

Based on the consultation completed for AB 52, the County determined that the project would not cause a substantial adverse change in the significance of a tribal cultural resource either listed in the CRHR, local listing, or one determined by the lead agency, at its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. There would be **no impact**.

3.16.3 References Cited

California Department of Transportation. 2018. Historic Property Survey Report. Hazel Avenue/U.S. 50 Interchange Project. City of Rancho Cordova, Sacramento County. 03-SAC-50/PM 15.1-17.5. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. September. Sacramento, CA. Prepared by ICF.

3.17 Hazards and Hazardous Materials

3.17.1 Criteria for Determining Significant Impacts

An impact related to hazards and hazardous materials would be considered significant if the project would result in the following.

- Creation of a substantial hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Exposure of the public or the environment to a substantial hazard through reasonably foreseeable upset conditions involving the release of hazardous materials.
- Emission of hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, resulting in a substantial hazard to the public or the environment.
- An impairment of implementation of or physical interference with an adopted emergency response or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to or intermixed with urbanized areas.

3.17.2 CEQA Significance Determinations

Would the project create a substantial hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact HZ-1 (All Build Alternatives): Potential exposure risk during transport, use, or disposal of hazardous commonly used construction materials (less than significant)

Construction of all build alternatives for the proposed project would involve the transportation, storage, and use of small quantities of common materials, such as fuels and oils to operate construction equipment. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, consistent with applicable laws and regulations, the transportation, handling, and disposal of these materials would be compliant with regulations enforced by CUPA and Cal-OSHA. In addition, the implementation of standard BMPs under the SWPPP would further reduce the potential of accidental release or exposure. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed, and no new transport, use, or disposal of hazardous materials would take place.

Would the project expose the public or the environment to a substantial hazard through reasonably foreseeable upset conditions involving the release of hazardous materials?

Impact HZ-2 (All Build Alternatives): Release of, or exposure to hazardous materials during construction (less than significant with mitigation)

The project area generally has the potential for hazardous materials in the form of aerially deposited lead (ADL) along US 50 within the project area; lead or chromium in yellow pavement striping; asbestos-containing material (ACM) in various bridge components; PCBs in pole-mounted transformers; LBP in utility openings or on steel structures; and gasoline-contaminated soil that could be encountered or released during construction of any of the build alternatives unless measures are taken to avoid that release. Cattlemen's Restaurant (Assessor's Parcel Number [APN]: 069-0060-085) and Nimbus Winery (APN: 069-0050-013) buildings may contain ACM and LBP in their construction materials. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances. See Figure 2.12-1 for the locations of known and potential hazardous sites.

Soil testing for ADL indicate that higher concentrations of ADL were associated with the samples obtained from the shoulders of US 50, while lower concentrations and/or non-detect results were associated with Hazel Avenue, Folsom Boulevard, and the on- and off-ramp connections to US 50. Construction workers' health could be adversely affected if exposed to ADL during ground-disturbing activities such as grading along US 50.

These impacts are considered **potentially significant**. With implementation of the measures below, the impacts on human health would be reduced to a less-than-significant level. The impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure HZ-1: Develop and Implement Plans to Address Worker Health and Safety**
>
> As required by Caltrans, Federal, State, and local regulations, prior to construction, the County will employ a Certified Industrial Hygienist who will prepare a Health and Safety Plan, Lead Compliance Plan, BMP and/or injury and illness prevention plan to address worker safety when working with potentially hazardous materials (e.g., levels of protective personal equipment, emergency action plan, procedures for encountering hazardous materials) including potential ACMs, LBPs, lead or chromium in traffic stripes, ADL, and other construction-related materials within the ROW during any soil-disturbing activity.

Mitigation Measure HZ-2: Conduct Site-specific Assessments and Prepare and Implement a Work Plan

Prior to construction, the County will conduct additional assessments of soil, groundwater, and building materials within the proposed acquisition area of the parcels described below. In addition, prior to soil and groundwater testing, the County will prepare a work plan that detail testing locations and analytical methods. Testing locations will be similar to proposed excavation locations in order to characterize potentially excavated soils. The plan will incorporate the soil and groundwater data to ensure that soil and groundwater are stored, managed, and disposed of appropriately and in accordance with applicable laws and regulations.

Soil and Groundwater

Assess the Chevron Service Station (APN: 069-0160-012), Nimbus Winery (APN: 069-0050-013), Aerojet Facility (APN: 072-0231-125), and UPRR ROW for possible soil and groundwater contamination. The sampling and testing of surface soils and groundwater at these sites will be analyzed for total petroleum hydrocarbons such as diesel, heavy metals, petroleum hydrocarbons, PAHs, and chlorinated solvents. Drilling for soil and groundwater will be performed by OSHA-trained personnel with appropriate licenses (CFR 1910.120).

If soil and/or groundwater contamination is identified, the County will comply with Federal and State regulations and the Sacramento County CUPA regulatory requirements regarding the handling and disposal of hazardous wastes. These requirements include consultation with the Department of Toxic Substances Control (DTSC) and State Water Resources Control Board and adherence to the SWPPP. The SWPPP requirement of BMPs designed to minimize the release of hazardous materials would help reduce potential impacts. Contaminated soils not reused on-site will be disposed of at a Class I landfill facility.

If groundwater is extracted as part of dewatering, the extracted groundwater will be stored in tanks, and tested for chlorinated solvents, and either sent off-site for recycling or directed to the existing groundwater treatment system at the Aerojet facilities for disposal and treatment. This will be in addition to the pre-characterization of groundwater quality during preconstruction testing.

Asbestos-Containing Materials and Lead-Based Paint

The Cattlemen's Restaurant (APN: 069-0060-085) and Nimbus Winery (APN: 069-0050-013) buildings are likely to contain ACM and LBP in their construction materials. Various bridge components, such as the overpass, could also contain ACM. The County will conduct a hazardous materials survey prior to demolition or significant renovation of Cattlemen's Restaurant, Nimbus Winery, and bridge structures.

If lead or asbestos is found in these buildings or structures, prior to removal or renovation the County will prepare an abatement plan as part of the Task-Specific Safety Plan

required under Section 12-1.01.C of the County Standard Construction Specifications. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare hazardous materials specifications for abatement of the ACM and LBP. This specification will be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. The County will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and LBP deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

Mitigation Measure HZ-3: Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Traffic Striping along Existing Roadways

The County will sample and test yellow traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be conducted in strict accordance with appropriate regulations of the California Health and Safety Code Section 1532.1, and Section 13-2.09, *Removal of Traffic Stripes and Pavement Markings* of the County's Standard Construction Specifications (2017). Section 13-2.09 includes safety requirements such as shielding sandblasting equipment and using a vacuum to ensure grindings are contained. Traffic striping will be disposed of at a Class I disposal facility. The responsibility of implementing this measure will be outlined in the contract between the County and the construction contractor.

Mitigation Measure HZ-4: Appropriately Dispose of Soils Contaminated with Aerially Deposited Lead

Soils in the project limits along the US 50 corridor identified as having hazardous levels of ADL will be handled and disposed of in accordance with applicable Cal-OSHA requirements including a project-specific worker Health and Safety Plan and Lead Compliance Plan. Cal-OSHA standards regarding lead apply to all construction work where an employee may be exposed to lead and include notification of lead testing results; providing protective clothing and equipment; hazardous materials training; and control measures to contain lead.

Impact HZ-3 (Alternative 1A): Exposure to potentially contaminated groundwater (less than significant with mitigation)

Under Alternative 1A, a direct tunnel ramp would be constructed below existing ground level and groundwater could be encountered during construction. Measured groundwater was found approximately 17.7 to 25.3 feet below existing ground (Parikh 2013). Contamination of groundwater is known to occur from the Aerojet facility. Key contaminates that could be encountered by construction workers are TCE, percholate, and N-Nitrosodimethylamine.

To prevent the possibility of groundwater from reaching the ground surface at the direct tunnel ramp after it is constructed, the ramp would be designed to include waterproofing within the proposed soldier pile wall and a thicker concrete roadway section. The waterproofing would

prevent the possibility of groundwater, including potentially contaminated groundwater from the Aerojet facility, reaching the surface.

Construction workers could be exposed to hazardous materials in the groundwater encountered during construction of Alternative 1A. This impact is considered **potentially significant**. With implementation of the measure below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

> **Mitigation Measure HZ-2: Conduct Additional Site Assessments and Prepare a Work Plan**
>
> The full text of this measure is included under Impact HZ-2.

No Build Alternative

Under the No Build Alternative, interchange improvements, including the tunnel ramp under Alternative 1A, would not be constructed, and the release of or exposure to hazardous materials during construction, including potentially contaminated groundwater, would not occur.

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?

All Build Alternatives

There are no public or private K–12 schools within 0.25 mile of the project area. The nearest school is approximately 1.16 miles west of the project area. Hazardous materials would not be emitted or released within 0.25 mile of any schools. There would be **no impact**.

Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, resulting in a substantial hazard to the public or the environment?

Impact HZ-4 (All Build Alternatives): Exposure to contaminated soil and groundwater during ground-disturbing activities at the Aerojet site (less than significant with mitigation)

The Aerojet facility is an 8,500-acre superfund site undergoing cleanup located on the south side of Folsom Boulevard that has been identified in several hazardous materials databases. Soil and groundwater have been contaminated by past operating and disposal practices from industrial chemical manufacturing, pesticide manufacturing, and testing. The substrate of the site has also been affected by TCE and perchlorate from historical mining and dredging activities. Groundwater treatment for a variety of chlorinated solvents is ongoing. Exposure to contaminated soil and/or groundwater as a result of construction activities could occur. Viaduct construction may require drilled piles from 50–80 feet in depth and construction of a tunnel ramp

under Alternative 1A would likely encounter groundwater. If contaminated soils and/or groundwater within the ROW is encountered, construction workers' health could be adversely affected. This impact is considered **potentially significant**. With implementation of the measures below, the impact would be reduced to a less-than-significant level. This impact would be **less than significant with mitigation incorporated**.

Mitigation Measure HZ-1: Develop and Implement Plans to Address Worker Health and Safety

The full text of this measure is included under Impact HZ-2.

Mitigation Measure HZ-2: Conduct Additional Site Assessments and Prepare a Work Plan

The full text of this measure is included under Impact HZ-2.

No Build Alternative

Under the No Build Alternative, interchange improvements would not be constructed, and exposure to contaminated soil and groundwater from the Aerojet site would not occur.

Would the project impair implementation of or physically interfere with an adopted emergency response or emergency evacuation plan?

Impact HZ-5 (All Build Alternatives): Temporary and permanent changes in routing of emergency services (less than significant)

Access would change for emergency service providers in the project area as a result of all build alternatives, including access and routes to specific properties that could be implemented as part of an emergency response or evacuation plan.

Construction

Construction of the build alternatives would temporarily affect accessibility and routes for emergency service providers. Travel lane and sidewalk closures may occur during various phases of construction, resulting in detours and temporary traffic delays associated with the construction period. Local streets would be temporarily affected during construction to allow contractor access and construction tasks. Access to SacRT light rail and UPRR tracks would be maintained during construction. A project-specific TMP, described in Chapter 1, would be developed before and implemented during construction. The TMP would direct the process and procedures for dissemination of information to the public and motorists, provide guidance for implementation of incident management, describe construction strategies for traffic handling and guiding traffic through work zones, address traffic demand management during construction, and describe and direct the implementation of alternate routes or detours. This impact is considered **less than significant**. No mitigation is required.

Operation

Permanent changes in some traffic routes would result from construction of the build alternatives. The changes could necessitate updates to emergency response plans. While some circulation routes would change, intersection and freeway operation would not worsen as a result of the build alternatives. The primary changes in circulation that would result from all build alternatives are listed below.

- As a result of ramp changes and elimination of the Aerojet Road off-ramp, traffic on eastbound US 50 headed for Aerojet Road would use the eastbound Hazel Avenue off-ramp and then diverge on a separate ramp to reach Aerojet Road.
- As a result of the extension of Hazel Avenue over Folsom Boulevard and the Sacramento Placerville Transportation Corridor Joint Powers Authority rail corridor, and the elimination of the Hazel Avenue/Folsom Boulevard intersection, traffic on Hazel Avenue south of US 50 traveling to or from Folsom Boulevard (and traffic on Folsom Boulevard to or from Hazel Avenue) would use the proposed new jughandle roadway and new intersections at Folsom Boulevard and the extension of Hazel Avenue to travel between the two roadways.

Alternative 2 would also change access from eastbound US 50 to northbound Hazel Avenue. Eastbound US 50 to northbound Hazel Avenue traffic would diverge from US 50, travel under Hazel Avenue, cross over US 50 and merge with the westbound US 50 off-ramp to Hazel Avenue.

The permanent changes in circulation under all build alternatives would maintain or improve LOS and traffic delays at local roadway intersections and freeway ramps. Emergency service providers would utilize the new circulation routes. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

The No Build Alternative would not change the routing of emergency services.

Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to or intermixed with urbanized areas?

Impact HZ-6 (All Build Alternatives): Create risk of loss, injury or death involving wildland fires (less than significant)

The project site is primarily located adjacent to urbanized areas at low risk for wildland fires. Planned development south of the project would further reduce wildland fire risk by creating a greater separation between the project site and undeveloped areas. Construction and operation of the proposed project would not create a greater wildland fire risk. In addition, the primary construction materials, concrete and asphalt, would not introduce more potential fire fuel to the project area. During construction, the use and staging of equipment would follow standard

construction safety protocols to prevent fire or sparks that could cause fire. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

The No Build Alternative would not change or create a risk of loss, injury or death involving wildland fires.

3.17.3 References Cited

Parikh Consultants, Inc. 2013. Preliminary Geotechnical Report-Hazel Avenue/ US-50 Interchange, Sacramento County, California. Job No. 2011-135-PGR. January.

3.18 Greenhouse Gas Emissions

3.18.1 Criteria for Determining Significant Impacts

An impact related to GHG emissions would be considered significant if the project would result in the following.

- The generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

3.18.2 CEQA Significance Determinations

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact GHG-1 (All Build Alternatives): Generate greenhouse gas emissions, directly and indirectly, or conflict with applicable plans (less than significant)

Climate change is a complex phenomenon with the potential to alter local climatic patterns and meteorology. Increases in anthropogenic GHG emissions have been unequivocally linked to recent warming and climate shifts (Intergovernmental Panel on Climate Change 2007). Although modeling indicates that climate change will result globally and regionally, uncertainty remains with regard to characterizing the precise *local* climate characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that some degree of climate change is expected as a result of past and future GHG emissions.

The most common GHGs resulting from transportation projects are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Although there is currently no Federal law specifically related to climate change or the reduction of GHGs, the EPA is developing proposed regulations under the Clean Air Act. California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the State's long-term GHG reduction and climate change adaptation program. Of particular importance is AB 32, which establishes a statewide goal to reduce GHG emissions back to 1990 levels by 2020, and Senate Bill (SB) 375 supports AB 32 through coordinated transportation and land use planning with the goal of more sustainable communities. SB 32 extends the State's GHG policies and establishes a near-term GHG reduction goal of 40% below 1990 emissions levels by 2030. Executive Order (EO) S-03-05 identifies a longer-term goal for 2050.[1]

Construction activities would generate short-term emissions of CO_2, CH_4, and N_2O from the use of equipment (e.g., graders) and on-road vehicles (e.g., employee commuter cars). GHG emissions generated by construction activities were estimated using SMAQMD's RCEM (Version 8.1.0). Table 3.18-1 summarizes estimated GHG emissions from construction.

Table 3.18-1. Greenhouse Gas Emissions from Project Construction (metric tons per year)

Alternative and Year	CO_2	CH_4	N_2O	CO_2e
Alternative 1 and 1A				
2020	1,244	<1	<1	1,254
2021	715	<1	<1	720
Total	**1,959**	**<1**	**<1**	**1,975**
Alternative 2				
2020	1,026	<1	<1	1,035
2021	934	<1	<1	941
2022	38	<1	<1	38
Total	**1,998**	**<1**	**<1**	**2,014**

CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = carbon dioxide equivalent

As shown in Table 3.18-1, construction of Alternatives 1 and 2 would generate approximately 1,975 and 2,014 metric tons carbon dioxide equivalent (CO_2e), respectively, which is equivalent to the annual GHG emissions generated by approximately 400 to 425 passenger vehicles (U.S. Environmental Protection Agency 2015). This impact would be **less than significant**. No mitigation is required.

Operational emissions for existing (2015), opening (2022), and design (2042) year conditions were modeled using Caltrans' CT-EMFAC model and traffic data provided by DKS (California Department of Transportation 2017; provided in Volume 3, or from the project website at http://www.sacdot.com/Pages/Project-Hazel-StateRoute50.aspx). As shown in Table 3.18-2, project implementation would increase GHG emissions compared to the existing conditions. Compared to the No Build Alternative, the build alternatives would slightly decrease GHG

[1] EO S-03-05 has set forth a reduction target to reduce GHG emissions by 80 percent below 1990 levels by 2050. This target has not been legislatively adopted.

emissions under opening (2022) year conditions and slightly increase GHG emissions under design (2042) year conditions. This increase would not exceed SMAQMD's operational threshold of 1,100 metric tons CO_2e, as discussed further below. The emissions results mirror the change in VMT; as shown in Table 3.18-2, the build alternatives result in a slight (0.01%) reduction in VMT under opening (2022) year conditions and a slight (0.02%) increase in VMT under design (2042) year conditions.

Table 3.18-2. Estimated Greenhouse Gas Emissions from Project Operation (metric tons per year)

Condition	Annual VMT	CO_2	CH_4	N_2O	CO_2e
2015 Existing	21,509,079,172	9,050,387	418	396	9,178,982
2015 Build	21,512,785,222	9,050,429	418	397	9,179,036
2022 No Build	23,543,591,726	8,309,893	248	222	8,382,284
2022 Build	23,540,673,310	8,308,671	248	222	8,381,050
2042 No Build	28,526,289,032	7,260,113	149	133	7,303,391
2042 Build	28,533,358,126	7,260,815	149	133	7,304,087
Comparison to Existing					
2015 Build	3,706,050	42	<0	<0	53
% change between 2015 Build and Existing	<1%	<0%	<0%	<0%	<0%
2022 Build	2,031,594,138	-741,716	-169	-174	-797,933
% change between 2022 Build and Existing	9%	-8%	-40%	-44%	-9%
2042 Build	7,024,278,954	-1,789,573	-268	-264	-1,874,895
% change between 2024 Build and Existing	33%	-20%	-64%	-67%	-20%
Comparison to No Build					
2015 Build	3,706,050	42	<0	<0	53
2022 Build	-2,918,416	-1,222	<0	<0	-1,234
2042 Build	7,069,094	702	<1	<1	697
SMAQMD GHG Threshold					1,100

CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = carbon dioxide equivalent

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data. The numbers are estimates of CO_2 emissions and not necessarily the actual CO_2 emissions. The model does not account for factors such as the rate of acceleration and the vehicles' aerodynamics, which would influence CO_2 emissions. To account for CO_2 emissions, CARB's GHG Inventory follows the Intergovernmental Panel on Climate Change (IPCC) guideline by assuming complete fuel combustion, while still using EMFAC data to calculate CH_4 and N_2O emissions. Though EMFAC is currently the best available tool for use in calculating GHG emissions, it is important to note that the CO_2 numbers provided are only useful for a comparison of alternatives.

The State CEQA Guidelines do not indicate what amount of GHG emissions would constitute a significant impact on the environment. Instead, they authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (State CEQA Guidelines 15064.4(a) and 15064.7(c)). The California

Supreme Court decision[2] in the *Centers for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) confirmed that there are multiple potential pathways for evaluating project-level GHG emissions consistent with CEQA, depending on the circumstances of a given project. These potential pathways include reliance on business-as-usual (BAU) model[3], numeric thresholds, and compliance with regulatory programs.

Use of a BAU threshold is most applicable to land use development projects with emission sources covered by the AB 32 scoping plan. There are currently no drafted, adopted, or recommended numeric thresholds relevant to the analysis of GHG emissions from transportation projects. The County has adopted thresholds for residential energy use, commercial/industrial energy use, and land use development mobile source emissions. SMAQMD has also adopted a threshold of 1,100 metric tons CO_2e for operation of land use development projects, such as new residential and commercial projects. While not explicitly applicable to transportation projects, this analysis considers the 1,100-metric-ton threshold as a GHG benchmark. The impact determination also considers compliance with regulatory programs, as referenced in the Newhall Ranch decision. The GHG regulation most applicable to transportation projects is SB 375. SB 375 was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under this law, SACOG is tasked with developing an SCS that provides a plan for meeting per capita CO_2 emissions levels allocated to SACOG by CARB. These levels are 7% below 2005 emissions levels by 2020 and 19% below 2005 levels by 2035. Accordingly, the targets established by SB 375 not only address near-term (2020) emissions, but also long-term (2035) emissions consistent with statewide EOs[4], judicial attention[5], and recommendations made by the Association of Environmental Professionals Climate Change Committee.[6]

As shown in Table 3.18-2, operational emissions would decrease relative to the No Build Alternative under opening year (2022) conditions. This is a GHG benefit. While emissions are projected to slightly increase under horizon year (2042) conditions, emissions would not exceed SMAQMD's land use threshold of 1,100 metric tons CO_2e. The project would also be consistent with the following strategies indicated in the 2016 MTP/SCS.

[2] It should be noted that the defendants in the Newhall Ranch case have requested a rehearing from the California Supreme Court on a number of grounds. If the Supreme Court decides to rehear the case, it is possible that the ruling may change.

[3] Only if "an examination of the data behind the Scoping Plan's business-as-usual model allowed the lead agency to determine what level of reduction from business as usual a new land use development at the proposed location must contribute in order to comply with statewide goals."

[4] EO B-30-15 has set forth an interim reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 and EO S-03-05 has set forth an interim reduction target to reduce GHG emissions by 80 percent below 1990 levels by 2050.

[5] See the California Appellate Court, 4th District 2014 rulings in the *Cleveland National Forest Foundation et al. v. SANDAG* and *Sierra Club vs. County of San Diego* cases.

[6] The Association of Environmental Professional's *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments in California* white paper states that long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target."

Strategy 13.4: Encourage local agencies to fund local arterial access and traffic capacity projects with local development-based fees supplemented with other local funds as appropriate.

Strategy 26.3: Open up interregional highway capacity only when goods movement and non-commute traffic warrants it. Evidence of this need can also occur when local roadways bear the burden of goods movement activity diverted from congested highways.

Strategy 27.2: Support corridor mobility investments along major arterials that serve multiple modes of travel through combining road capacity improvements with operational improvements to support smart growth. Supportive investments include enhancements for high-quality transit, technology deployment, bicycle and pedestrian improvements, and safer intersections.

Strategy 30.1: Pursue strategic road expansion that reduces congestion and supports effective transit services, walking and bicycling.

Strategy 30.3: Pursue strategic road expansion that reduces congestion on access routes to areas with significant infill development.

Strategy 30.4: Give priority for roadway and intersection expansion to routes where midday demand approaches existing capacity or excessive peak period demand threatens to spill over into midday, so no part of the system fails to function continuously for much of the day.

The proposed project is listed in the 2016 MTP/SCS and its design concept and scope is consistent with the project description in the MTP/SCS (Sacramento Area Council of Governments 2016a). The Final EIR for the 2016 MTP/SCS demonstrates that projects identified in the MTP/SCS meet CARB's issued SB 375 GHG targets for the SACOG region in 2020 and 2035 (Sacramento Area Council of Governments 2016b). GHG emissions associated with the MTP/SCS, including those projects identified in the MTP/SCS, would therefore be less than significant. Accordingly, the proposed project's project-level GHG emissions would be consistent with SB 375. This impact is considered **less than significant**. No mitigation is required.

No Build Alternative

Under the No Build Alternative, the interchange improvements would not be constructed, and no associated emissions would result. Long-term GHG emissions would result in a negligible difference compared to the build alternatives as detailed in Table 3.18-2.

3.18.3 References Cited

California Department of Transportation. 2017. *Air Quality Study Report. U.S. 50 / Hazel Avenue Interchange Project. Sacramento County*. 03-SAC-50/PM 15.1-17.4. Federal Project No.: EA 03-3E380/E-FIS 0300020439. County Control Number: 2011-70062. July. Sacramento, CA. Prepared by ICF.

Intergovernmental Panel on Climate Change. 2007. Historical Overview of Climate Change Science. In: Climate Change 2007: Working Group I: The Physical Science Basis: Fourth Assessment Report. Available: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter1.pdf. Accessed: September 21, 2015.

Sacramento Area Council of Governments. 2016a. Metropolitan Transportation Plan/Sustainable Communities Strategy.

Sacramento Area Council of Governments. 2016b. Environmental Impact Report for the 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy, State Clearinghouse # 2014062060. February.

U.S. Environmental Protection Agency. 2015. Greenhouse Gas Equivalences Calculator. Last Revised: October 23, 2015. Available: http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator. Accessed: July 13, 2016.

3.19 Alternatives Analysis

CEQA requires that an EIR evaluate a "reasonable range" of alternatives to a proposed project. An EIR is not required to consider every conceivable alternative to a project; rather, consideration should focus on alternatives that appear to be feasible, would meet the project objectives, and would avoid or substantially lessen at least one of the proposed project's significant environmental effects. In addition, although a No Project Alternative (or No Build Alternative) is not the baseline for determining whether impacts related to the proposed activities would be significant under CEQA, an EIR must evaluate the impacts of the No Project Alternative to allow decision makers to compare the impacts of approving the project to the impacts of not approving it.

EIRs are required to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison to the proposed project or program (State CEQA Guidelines Section 15126.6(a), (d), (f)). This requirement enables the lead agency to identify the *environmentally superior alternative*—that is, the alternative that would least affect the environment while still accomplishing project objectives. If the environmentally superior alternative is the No Project Alternative, the lead agency must also identify an environmentally superior alternative from among the other project alternatives (State CEQA Guidelines Section 15126.6(e)).

Typically, an EIR alternatives analysis would include a discussion of the alternatives screening process, identification of those alternatives that were eliminated from detailed consideration, and

a detailed analysis of the impacts of the alternatives identified as feasible as compared to the proposed project. In this document, feasible alternatives to the proposed project are described in Chapter 1, *Proposed Project*, and analyzed at an equal level of detail to the project within Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*. Impact conclusions for each CEQA topic and for each Alternative are also summarized above in this chapter.

3.19.1 Selection and Analysis of Alternatives

3.19.1.1 Project Objectives

The County has identified the following objectives:

- Improve operations by removing the close intersection spacing between the eastbound ramps and Folsom Boulevard, and minimizing conflict with heavy and light rail.
  - Proposed alternatives accomplish this by grade-separating Hazel Avenue over Folsom Boulevard.
- Provide sufficient capacity in the ramps and roadways for future traffic volumes.
  - Proposed alternatives accomplish this by widening and/or lengthening the on- and off-ramps and Hazel Avenue as required by their respective traffic analyses.
- Maintain the Aerojet Road off-ramp connection to the approved development while improving the mainline operations.
  - Proposed alternatives accomplish this by removing the Aerojet Road exit from US 50 but still providing direct access to Aerojet Road through the eastbound Hazel Avenue off-ramp.

3.19.1.2 Alternatives Development and Screening Process

In March 2011, agencies and firms with strong interchange and geometric knowledge collaborated to identify a range of alternatives to be considered for improvements to Hazel Avenue near the US 50 interchange. Six alternatives were identified and analyzed through a Preliminary Traffic Operations Analysis to determine which alternatives were feasible. Based on the traffic analysis, three of the six alternatives provided acceptable traffic operations through the interchange and met the project objectives. However, these alternatives each had a high number of non-standard design features and were subsequently rejected by Caltrans.

The project development team then created two alternatives and one subalternative that both provide acceptable traffic operations through the interchange and meet the project objectives. These alternatives were carried forward for analysis in this EIR/EA.

3.19.1.3 Alternatives Carried Forward for Analysis in this EIR/EA

This EIR/EA assesses two build alternatives and one sub alternative: Alternative 1, Alternative 1A, and Alternative 2, as well as a No Build Alternative. These alternatives are summarized below and are described in detail in Chapter 1.

Alternative 1: L-9 Interchange with Viaduct Connector

Alternative 1 consists of a modified type L-9 interchange configuration. A Caltrans Type L-9 interchange involves a ramp configuration that includes a diagonal off-ramp, a diagonal on-ramp, and a loop on-ramp. This alternative would provide a viaduct connection to Aerojet Road.

Alternative 1A: L-9 Interchange with Undercrossing Connector

Alternative 1A is a sub-alternative to Alternative 1. It is the same as Alternative 1 except that the eastbound off-ramp would split and introduce a direct tunnel ramp under Hazel Avenue to carry eastbound off-ramp traffic to Aerojet Road and Folsom Boulevard.

Alternative 2: Direct Flyover to Hazel Avenue with Connector

Alternative 2 consists of a modified type L-9 interchange configuration, with a flyover ramp carrying vehicles travelling from eastbound US 50 to northbound Hazel Avenue over the freeway to join with the westbound off-ramp.

A comparison of impacts that could occur and necessary avoidance, minimization, and/or mitigation measures for each alternative is provided in Table S-3, Summary of CEQA Impacts, in the Summary chapter of this EIR/EA.

3.19.1.4 Additional Alternatives Considered but Eliminated

A standard type L-9 interchange was evaluated as a baseline concept with which to compare the proposed alternatives. However, it was determined through assessment of traffic operations, cost, and access/mobility needs that the standard type L-9 interchange does not satisfy the project's need and purpose and therefore was not proposed as a viable alternative.

As part of the Peer Review process, this project complied with Caltrans Policy Directive 13-02, "Intersection Control Evaluation." A variety of intersection control types were considered for all of the viable interchange types. A diverging diamond configuration was evaluated, but the traffic patterns for this interchange suited to this configuration. Roundabouts were not considered feasible due to traffic volumes, ROW constraints, and proximity to rail locations.

3.20 Environmentally Superior Alternative

The impacts associated with each of the build alternatives are qualitatively similar, as described in Chapter 2 and Table S-3. The No Build Alternative would not incur impacts related to constructing operating the project. However, without the proposed project improvements five intersections in the project study area would operate at an unacceptable Level of Service (LOS) during AM and PM peak hours in the future year 2022, and two freeway segments would operate at LOS F. In the horizon year 2042, four intersections would operate at an unacceptable LOS during AM and PM peak hours and ten freeway segments would operate at an unacceptable LOS during AM or PM peak hours. Worsened air quality conditions would also likely occur in opening year and horizon year scenarios due to roadway congestion. The No Build Alternative

would not meet the project objectives of improving operations, providing sufficient ramp and roadway capacity, and maintaining the Aerojet Road off-ramp connection to the approved development while improving the mainline operations.

Each of the build alternatives would require land acquisition and would result in the relocation of the Chevron Station and Cattlemens restaurant. Alternatives 1 and 1A would avoid the acquisition and relocation of the Nimbus Winery, whereas Alternative 2 would require the relocation of this property.

Each of the build alternatives would have less-than-significant impacts on population and housing and greenhouse gas emissions. Each of the build alternatives would have less-than-significant impacts after mitigation on the following resources: recreational facilities; air quality; construction noise; flood risk; stormwater runoff; paleontological resources; biological resources; cultural resources; and hazardous materials (except for impacts related to groundwater exposure). All build alternatives would result in significant and unavoidable impacts related to the creation of nighttime light. The total number of trees proposed to be removed would be somewhat greater under Alternative 2 (223 trees) versus under Alternatives 1 and 3 (186 trees), impacts to native and/or landmark trees and impacts to non-drought tolerate native and non-native trees would be less than significant with mitigation incorporated under all Alternatives.

While Alternative 2 would meet most of the project objectives, it would result in a significant and unavoidable aesthetics impact due to the introduction of a new transportation infrastructure and change in visual character (Impact AE-3). Alternative 2 would also result in higher permanent increases in noise levels than the proposed project (Impact NO-2), although mitigation would reduce this impact to a less-than-significant level. Under the design year, traffic noise levels would approach or exceed the noise abatement criteria for 41 dwelling units under Alternative 1; whereas, traffic noise levels would approach or exceed noise abatement criteria for 47 and 49 units under Alternative 1A and Alternative 2, respectively.

Alternative 1A, which entails a direct tunnel ramp, also would meet most of the project objectives, but would result in a potential impact regarding exposure to contaminated groundwater (Impact HZ-3). Mitigation is available to reduce this impact to less-than-significant levels; however, this impact would not occur under the other build alternatives. Alternative 1A also has the greatest potential disturbance to paleontological and cultural resources due to the excavation required for the tunnel ramp.

As analyzed in Chapter 2 and summarized in Table S-3, Alternative 1 would result in fewer environmental impacts, while still meeting the objectives of the proposed project, compared to Alternative 1A and Alternative 2. Based on the analysis presented in Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, and the impact conclusions summarized above, the environmentally superior alternative is Alternative 1.

121°13'40"W

121°13'30"W

121°13'20"W

38°37'40"N

38°37'30"N

50

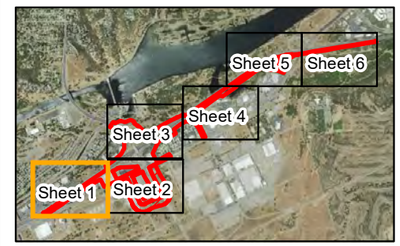
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 1 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200

Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

Path: \\PDOCIT\RDSGIS1\Projects_1\County_of_Sacramento\100529_15_Hazel/AveIC\mapdoc\BioFig_3_1_Preliminary_Orange_Fencing_Locations.mxd; Author: ; Date: 7/15/2019

Figure 3-1
Preliminary Orange Fencing Locations

121°13'10"W

121°13'0"W

121°12'50"W

38°37'40"N

38°37'30"N

50

Folsom Blvd

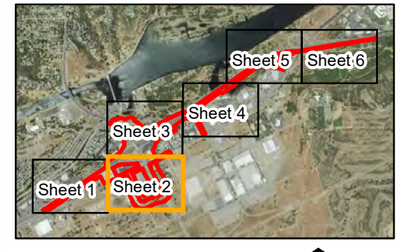
Nimbus Rd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 2 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200

Feet

1 inch = 200 feet

Notes:

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Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

Path: \\PDC01\RDSGIS1\Projects_1\County_of_Sacramento\000529_15_HazelAve\Cmapdoc\BioFig_3-1_Preliminary_Orange_Fencing_Locations.mxd; Author: ; Date: 7/15/2019

Figure 3-1
Preliminary Orange Fencing Locations

121°13'10"W

121°13'0"W

121°12'50"W

38°38'0"N

38°37'50"N

Hazel Ave

50

Folsom Blvd

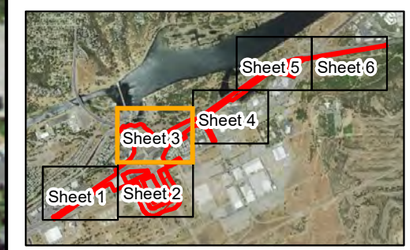
Fences or flagging to be installed for individual trees with active birds nests or suitable bat roosting habitat that are identified during preconstruction surveys.

Hazel Avenue / U.S. 50 Interchange Project

Sheet 3 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200

Feet

1 inch = 200 feet

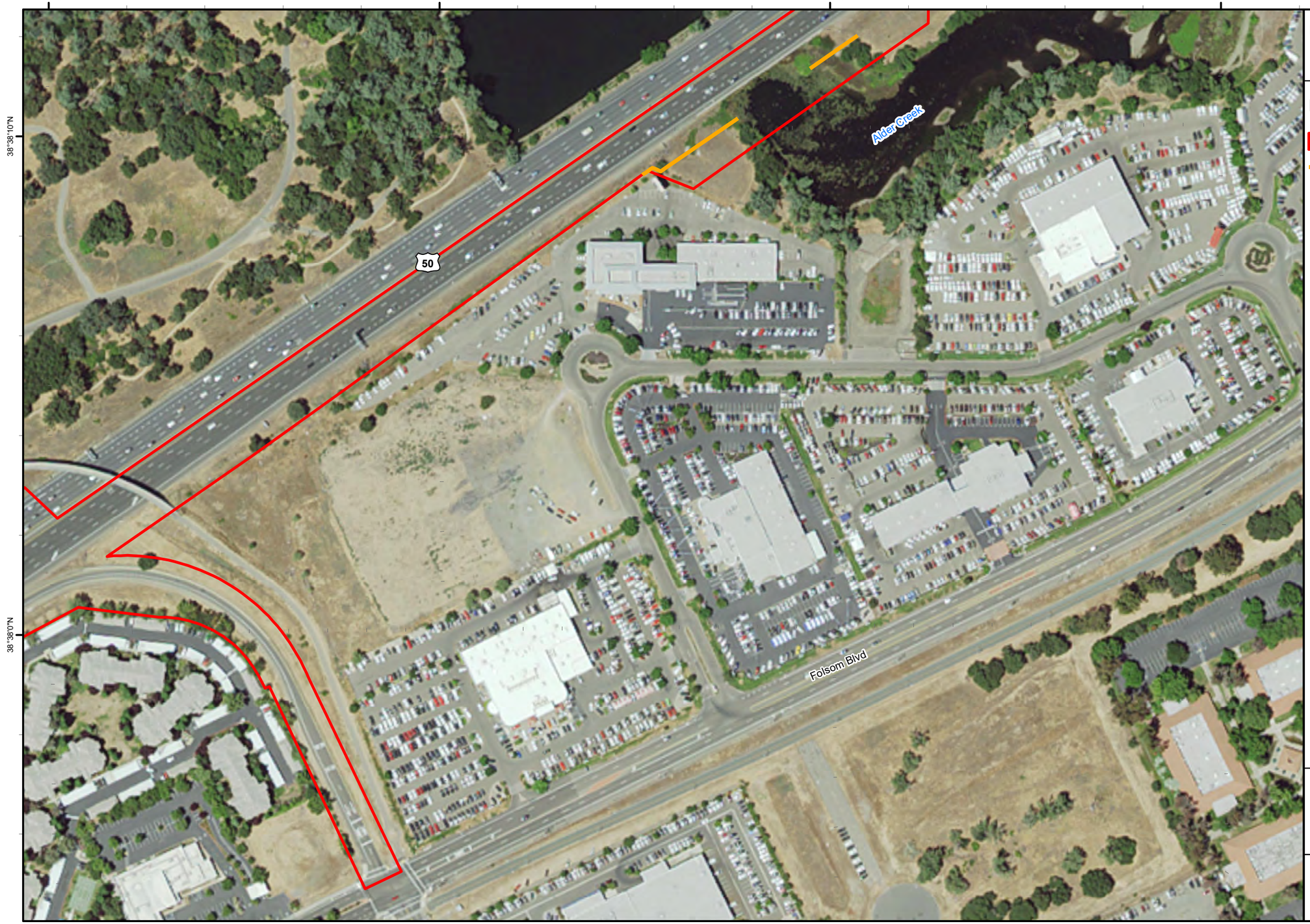
Notes:

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USGS Topo Quad: Folsom and Buffalo Creek
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Figure 3-1
Preliminary Orange Fencing Locations

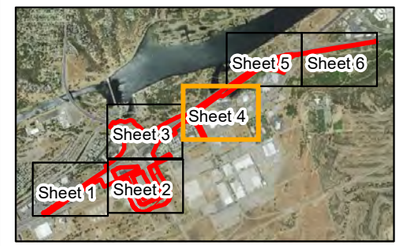


Hazel Avenue / U.S. 50 Interchange Project

Sheet 4 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200
Feet

1 inch = 200 feet

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

Prepared By: ICF International
Delineated By: L. Webber
Delineation Date: May 31. 2016
Drawn By: A. Angier

Path: \\PDCCITRDSGIS1\Projects_1\County_of_Sacramento\000529_15_HazelAve\Cmapdoc\BioFig_3_1_Preliminary_Orange_Fencing_Locations.mxd; Author: ; Date: 7/15/2019

Figure 3-1
Preliminary Orange Fencing Locations

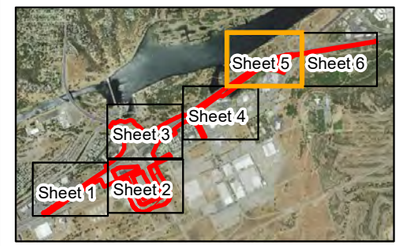
121°12'20"W
121°12'10"W
121°12'0"W
121°11'50"W
38°38'30"N
38°38'20"N
50
Folsom Blvd

Hazel Avenue / U.S. 50 Interchange Project

Sheet 5 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200
Feet
1 inch = 200 feet

Notes:
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Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
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Path: \\PDC01\RDSGIS1\Projects_1\County_of_Sacramento\00529_15_HazelAve\Cmaps\docs\BioFig_3_1_Preliminary_Orange_Fencing_Locations.mxd; Author: ; Date: 7/15/2019

Figure 3-1
Preliminary Orange Fencing Locations

121°11'40"W

121°11'30"W

121°11'20"W

38°38'30"N

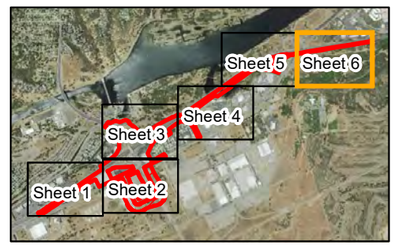
38°38'20"N

Hazel Avenue / U.S. 50 Interchange Project

Sheet 6 of 6

Legend

- Biological Study Area
- Preliminary Orange Environmentally Sensitive Area Fencing Locations



0 50 100 200

Feet

1 inch = 200 feet

N

Notes:

Base Map Source: ICF and ECORP
Imagery Source: NAIP 2014
USGS Topo Quad: Folsom and Buffalo Creek
PLSS: Rio De Los Americanos Land Grant

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Delineated By: L. Webber
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Figure 3-1
Preliminary Orange Fencing Locations

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 meetings, outreach, and a public scoping meeting. This chapter summarizes the results of these efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Scoping Process for the EIR/EA

4.1.1 Notice of Preparation and Public Scoping Meetings

Sacramento County, as the CEQA Lead Agency, distributed a NOP of a Draft EIR for the proposed project on January 29, 2016 to the following agencies and entities. A copy of the NOP is included in Appendix G, *Agency Letters*.

- City of Rancho Cordova
- City of Folsom
- USFWS
- USACE
- Central Valley RWQCB
- SMAQMD
- SacRT
- California Department of Parks and Recreation
- Aerojet
- Regional Parks
- Sacramento Regional County Sanitation District
- SMUD
- PG&E
- California Transportation Commission
- Sacramento Area Bicycle Advocates
- Public Utilities Commission
- John C. Segerdell, Chief Executive Officer, Sacramento Placerville Transportation Corridor – Joint Powers Authority
- Easton Development
- CSUS Aquatic Center
- Sacramento County Department of Water Resources
- Sacramento County Sewer District
- Sacramento Regional Sanitation District
- SARA
- San Juan Unified School District
- Easton/Aerojet Rocketdyne
- Ethan Conrad
- Twilight LLC
- Folsom Twin Invs LLC
- USFWS—Sacramento

- Environmental Council of Sacramento
- Governor's Office of Planning and Research
- Caltrans
- FHWA
- Bureau of Reclamation
- NMFS
- Robert J/Sarah D Forest
- Heritage Preservation League of Folsom

The NOP requested comments from the responsible and trustee agencies regarding environmental issues, reasonable alternatives, and reasonable mitigation measures that should be discussed in the Draft EIR to address each agency's specific concerns in their areas of responsibility. The 30-day comment period closed on March 4, 2016. The NOP also invited the representatives to attend a public meeting that was held on March 3, 2016 at the Governor's Office of Planning and Research from 2:00 p.m. to 4:00 p.m. in the Large Conference Room 202. The meeting was attended by twenty-six people, including members of the project development team, local agencies, and other interested parties.

Comments from this scoping meeting, with information on how they were addressed, are summarized below.

- Mr. Chris Porter of Ethan Conrad Properties expressed concern regarding the visibility and—depending on the build alternative—the potential removal of the Nimbus Winery building. Mr. Porter discussed that the property has undergone renovations and removal of the building would result in 200 jobs lost. Extensive plumbing improvements were done to the Cattlemen's Restaurant as well.

  Visual renderings to be included in the Visual Impact Assessment were discussed. An elevation towards the freeway and from the freeway (to demonstrate if signage would be visible to travelers) was suggested. Mr. Porter suggested installation of a monument sign might be appropriate as well.

  Project Development Team response: The project development team prepared a visual rendering from the Nimbus Winery looking towards the interchange to represent views of Nimbus Winery visitors and a visual rendering from US 50 looking towards the Nimbus Winery to represent views of motorists. These renderings were evaluated in the Visual Impact Assessment.

- Mr. Brian Dulgar of the CSU Sacramento Aquatic Center stated that the current westbound off-ramp at Hazel Avenue is dangerous due to drivers making a right turn and not seeing or looking for pedestrians crossing the street.

  Project Development Team response: The design team explored this issue and modified the design to include a separated multi-use Class I bicycle path that may be used by pedestrians.

- Mr. Brandon Rose of ECOS commented that the environmental document should include information on the options or alternatives looked at prior to narrowing down to the build alternatives discussed during the scoping meeting (1, 1A, and 2). Mr. Rose also wanted to note that he believes Nimbus Winery is (or should be considered) a local landmark.

Project Development Team response: Chapter 1, *Proposed Project*, of the EIR/EA includes information on the criteria and process used to narrow down to the build alternatives. Section 2.7, *Cultural Resources*, discusses the results of consultation with local historical societies and evaluation of the Nimbus Winery.

4.2 Consultation and Coordination with Public Agencies

During preparation of the technical studies for the proposed project, formal and informal coordination was conducted with the Federal, State, and local agencies and entities listed below.

4.2.1 U.S. Fish and Wildlife Service

On April 4, 2016 Jennifer Haire received a list of threatened and endangered species for the proposed project from the USFWS Sacramento Field Office for the development of the Natural Environmental Study (NES). Since 2016, updates to the list were also obtained and reviewed. The most recent version of the species list obtained is included in Appendix G. On April 28, 2016 Debra Sykes, of ECORP Consulting, provided a map of biological resources identified during surveys for the Glenborough at Easton and Easton Place Project, which has overlap with the proposed project. On June 14, 2016 Ms. Sykes also provided the USACE 404 Permit, USFWS Biological Opinion, and a map showing portions of the project where required mitigation had been completed from the Glenborough at Easton and Easton Place Project. A biological assessment was sent to the USFWS on March 13, 2019 with a request to initiate FESA consultation and a request for a determination on the project's potential effects on valley elderberry longhorn beetle.

4.2.2 U.S. Army Corps of Engineers, Sacramento District

A delineation of the potential wetlands and non-wetland waters of the United States (ICF 2018) was submitted to the USACE in October 2018 with a request for a preliminary jurisdictional determination. The USACE responded on December 12, 2018, concurring with the results and providing the preliminary jurisdictional determination (USACE file number SPK-2018-00952). The response from the USACE is included in Appendix G.

4.2.3 Native American Heritage Commission and Coordination with Local Native American Tribes

On December 7, 2015 and May 31, 2016, letters were sent to the NAHC requesting a SLF search on behalf of the County of Sacramento. The NAHC provided a response letter on June 15, 2016, stating that no Sacred Lands were identified as part of their search. The NAHC also provided a list of 17 Native American contacts. On June 15, 2016, the NAHC replied that the SLF contains no record of any Native American cultural resources in or within the immediate vicinity of the APE, and provided a list of 17 Native American contacts who may be interested in the project. A

copy of the NAHC letter and list of Native American contacts was provided to the County Department of Community Development, Planning and Environmental Review (PER) Division.

The County sent letters on October 31, 2016, and follow-up emails on November 1 and 2, 2016, to all Native American contacts provided by the NAHC as part of their Native American consultation obligations under the NHPA. The correspondence is included in Appendix G. Through their consultation efforts, the County received responses from the Native Americans and other tribal representatives. Below are the summarized responses from the outreach efforts.

- Robert Columbo representing the Buena Vista Rancheria stated in a phone conversation (March 6, 2017) that he was aware of the project and that the tribe did not have any issues or concerns.
- Judith Marks from the Colfax-Todd's Valley Consolidated Tribe sent an email dated March 8, 2017 requesting a site visit and that tribal monitors be present when the project is constructed. On May 5, 2017, Ms. Marks met with Stephen Pappas (ICF) and Carol Gregory (Sacramento County) for a field visit. Ms. Marks was provided detailed project maps and was briefed on the project plans. Ms. Marks asked to be updated on any project developments. In lieu of construction monitors, Ms. Marks asked that she be contacted if anything is found during construction.
- Randy Yonemura then of the IBMI Cultural Committee, stated in a phone call (December 8, 2016) that he had concerns with the project and requested consultation. A meeting between Mr. Yonemura, ICF, and the County was conducted on January 27, 2017 to discuss the project and to receive comments and questions from the consulting parties. Technical reports were requested by Mr. Yonemura. Additional meetings occurred in May and December 2017, and February, March, and May 2018. During these meetings, Mr. Yonemura described the Native American usage of the areas surrounding the APE and indicated that the entire region was used by Native Americans. Although the area surrounding the APE was heavily used by Native Americans, Mr. Yonemura did not identify or provide any specific documentation of cultural resources within the APE. In July 2018 ICF drafted a summary of the information gathered during the meetings and provided the documentation to the County for their records.
- Grayson Coney and a tribal representative on behalf of Jason Ryberg of the Tsi Akim Maidu indicated in phone conversations (both on December 8, 2016) that the Tsi Akim Maidu did not have any concerns regarding the project.
- Marcos Guerrero of the UAIC stated in an email (November 2, 2016) that the UAIC had concerns regarding the project and requested a site visit. On November 17, 2016, representatives from the UAIC met with ICF and County representatives to discuss the project and receive comments and questions from the UAIC. Mr. Guerrero suggested that a search of the UAIC's files be completed for the project and that the UAIC would be able to conduct their own survey of the project in addition to possible Native American monitors during ground-disturbing activities. The County requested a record search with the UAIC; however, no results from the record search have been provided. The UAIC mentioned that one prehistoric site in the vicinity of the APE was of concern. The site is outside of the APE and listed on the California Office of Historic Preservation's Archaeological Determinations of Eligibility as an individual property determined eligible for the NRHP by consensus

through the Section 106 process; the site is also listed in the CRHR. As a result of the archaeological pedestrian survey, no evidence of the site was observed within the APE. On January 18, 2018 representatives from the UAIC, Sacramento County, and ICF conducted a field visit of the portion of the APE within the Aerojet property as requested by UAIC. Following the Aerojet visit, UAIC staff did not present any additional concerns or information regarding the project. On September 20, 2018, per UAIC's request, the County provided the geographic information system shapefile of the approved APE boundary to UAIC for their records. In response, on September 26, 2018, the UAIC requested a tribal monitor for the project per previous consultation discussions.

- Ed Silva, Tribal Resources Coordinator with the Wilton Rancheria coordinated a meeting with County representatives to discuss the project as well as other County projects. The project was briefly discussed, but no formal comments, site visits, or additional follow-up was requested by tribal representatives present at the meeting.

Additionally, the County of Sacramento, Department of Community Development, PER Division conducted consultation with California Native American Tribes for California AB 52 (PRC 21080.3) purposes. The County emailed AB 52 consultation letters to three tribes that requested formal notification for projects requiring AB 52 consultation. On January 28, 2016, a letter was emailed to Steven Hutchason, Executive Director Environmental for the Wilton Rancheria, on January 29, 2016 a letter was emailed to Gene Whitehouse, Chairperson of the UAIC of the Auburn Rancheria, and a letter was emailed to Randy Yonemura, then the Cultural Committee Chair, of the IBMI on June 1, 2016. This letter to Mr. Yonemura was sent later as the County of Sacramento did not receive a formal request for AB 52 notification from this tribe prior to the project being deemed complete.

The only response from the initial AB 52 notification letters was from Antonio Ruiz, Cultural Resources Officer from the Wilton Rancheria, who responded to the letter by email on February 4, 2016 notifying that the Wilton Rancheria would like to further consult. The Wilton Rancheria also requested cultural reports and geotechnical reports for the project. Geotechnical reports were emailed to Mr. Ruiz on November 9, 2016. Although only the Wilton Rancheria responded to the initial notification letters, the County invited all three tribes to AB 52 consultation later in 2016. On November 2, 2016, the County sent an updated AB 52 notification letter to the UAIC. On December 15, 2016 the County received a response letter from Gene Whitehouse with the UAIC, stating that UAIC would like to initiate consultation under AB 52, and the point of contact would be Marcos Guerrero. AB 52 consultation documentation is included in Appendix G.

4.2.4 North Central Information Center

A records search was conducted in December 2015 at the NCIC at California State University, Sacramento. The results of the search are described in the Cultural Resources section of this document under Section 2.7.2.2, *Research Methodology*.

4.2.5 Historical Societies

On March 25, 2016, contact letters were sent to the Sacramento County Historical Society, Rancho Cordova Historical Society, Folsom Historical Society, Heritage Preservation League, and the California Historical Society. On August 30, 2016, an additional contact letter was sent to the Heritage Preservation League of Folsom.

On November 16, 2016, Beth Kelly of the Heritage Preservation League of Folsom sent an email regarding an interest in preserving the Nimbus Winery. The same day, a reply was sent via email thanking them for their response. As of the date of this report, no further responses from any of the other historical societies/groups have been received. The correspondence is included in Appendix G.

4.3 Public Participation and Outreach

4.3.1 Public Meetings

On March 7, 2013 a public meeting was held at the Sacramento State Aquatic Center on Hazel Avenue in Gold River regarding the Project Study Report. The meeting was held as an open house, in which one station was set up to provide background on the purpose of the project, and three separate stations were set up with large exhibits showing each alternative. Postcard mailers were sent to 4,300 residential and business addresses from Sunset Avenue (north) to Albany Avenue (south). Nearby homeowners associations were also contacted. Fifty-eight participants signed in and 11 comment cards were received.

Of the 11 comments received, five stated preference for Alternative 2 and two stated dislike of all the alternatives. One comment requested that bicycle traffic is protected with the project. Two commenters noted the impact on businesses through loss of land. One comment stated the project would result in a storage facility losing units. The commenter noted that the project would require driving an extra mile to get to Folsom Boulevard from the storage facility location. The other comment stated that the Comfort Inn & Suites parking lot size would be reduced, leading to the hotel removing rooms to continue meeting code standards for the number of parking spaces required per room. The commenter also noted that the project would block all left turns out of the hotel's driveway. Two commenters made notes about the flyovers. One stated preference for an alternative that keeps the off-ramps on the ground and the other prefers the relocation of Folsom Boulevard rather than building flyovers.

Chapter 5 List of Preparers

The following agency staff and consultants contributed to the preparation of this EIR/EA.

5.1 County of Sacramento

- Timothy Stevens, P.E., T.E., Civil Engineer
- Marianne Biner, Senior Planner
- Carol Gregory, Associate Planner
- Tim Hawkins, Environmental Coordinator

5.2 City of Rancho Cordova

- Rupa Somavarapu, Senior Civil Engineer

5.3 Caltrans

- John Holder, Project Manager
- Julia Green, Environmental Senior
- Masum Patwary, Environmental Coordinator
- Christine Zdunkiewicz, Traffic oversight
- Ken Lastufka, Community Impacts oversight
- Jeff Pietrzak, Visual/Aesthetics oversight
- Lisa Machado, Archaeology oversight
- Joan Fine, Architectural History oversight
- Gurdeep Bhattal, Hydrology/Floodplain oversight
- Richard Stewart, Geology/Soils; Paleontology oversight
- Jason Lee, Air Quality/Climate Change oversight
- Ryan Pommerenck, Noise oversight
- Mark Melani, Hazardous Waste oversight
- Laura Loeffler, Section 4(f) oversight
- James Robertson, Biology oversight

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- Claire Bromund, Project Manager
- Jody Job, Publications Specialist
- Christine McCrory, Editor
- Barbara Wolf, Editor
- Lindsay Christensen, Community Impact Assessment
- Jennifer Ban, Visual/Aesthetics
- Stephen Pappas, Archaeology
- Katie Haley, Architectural History
- Katrina Sukola, Hydrology Floodplain, Water Quality, Stormwater
- Ellen Unsworth, Geology/Soils; Paleontology
- Sandy Lin, Air Quality, Energy
- Jason Volk, Noise, Vibration
- Elizabeth Scott, Noise, Vibration
- Jennifer Haire, Wildlife Biology
- Lisa Webber, Botany, Wetland Ecology
- Teresa Giffen, Graphics
- Alex Angier, Geographic Information Systems

5.5 Mark Thomas & Company

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- Jake Weir, P.E., Civil Engineer

5.6 Blackburn

- Laura Long, Environmental Engineer
- Nicole Hart, P.E., Senior Project Manager

5.7 DKS Associates

- John Long, P.E., Traffic Engineer

5.8 Parikh Consultants, Inc.

- Gary Parikh, P.E.; G.E. #666, Project Manager

5.9 WRECO

- Han Bin Liang, P.E., Project Manager

Chapter 6 Distribution List

The following agencies, organizations, and individuals will be sent a copy of this Draft EIR/EA.

Federal Agencies and Tribal Representatives

Federal Emergency Management Agency

Federal Highway Administration

Bureau of Reclamation

Native American Heritage Commission

U.S. Army Corps of Engineers, Sacramento District

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service, Sacramento Office

U.S. Department of the Interior, Bureau of Reclamation

Buena Vista Rancheria

Colfax-Todds Valley Consolidated Tribe

Ione Band of Miwok Indians

Nashville-El Dorado Miwok

Shingle Springs Band of Miwok Indians

Tsi Akim Maidu

United Auburn Indian Community of the Auburn Rancheria

Wilton Rancheria

State Agencies

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 Wildlife, North Central Region

California Department of Parks and Recreation

California Energy Commission

California Highway Patrol

California Integrated Waste Management

California Office of Historic Preservation

California Office of Planning and Research

California Public Utilities Commission

California Resources Agency

California Reclamation Board

California State Clearinghouse

California State Lands Commission

California State University Sacramento, Aquatic Center

California State Water Resources Control

California Regional Water Quality Control Board, Central Valley Region

Central Valley Flood Protection Board

California Department of Education, School Facilities Planning Division

California Transportation Commission

Caltrans, Division of Environmental Analysis

The following agencies, organizations, and individuals will be sent notification of availability of this Draft EIR/EA including an internet link to the documents and/or a DVD/CD/thumb drive.

Local Agencies

Aerojet General Corporation

City of Rancho Cordova

Cordova Community Planning Advisory Council

Fair Oaks Community Planning Advisory Council

City of Folsom

Pacific Gas & Electric Company

Rancho Cordova Fire Department

Rancho Cordova Police Department

Sacramento Area Bicycle Advocates

Sacramento Area Sewer District

Sacramento County Department of Water Resources

Sacramento County Department of Transportation – Transportation Planning & Development Services

Sacramento County Regional Parks

Sacramento County Regional Sanitation District

Sacramento County Sheriff Department

Sacramento Metropolitan Air Pollution Control District

Sacramento Metropolitan Fire District

Sacramento Municipal Utility District

Sacramento Area Flood Control District

Sacramento Regional Transit

Sacramento-Placer Transportation Corridor—Joint Powers Authority

San Juan Unified School District

Save the American River Association

Union Pacific Railroad

School Districts

Folsom Cordova Unified School District

Federal Elected Officials

United States Senate, Kamala Harris

United States Senate, Diane Feinstein

United States Congress, Doris Matsui, 6th District

State Elected Officials

California State Senator Ted Gaines, District 1

California State Assembly, Ken Cooley, District 8

Local Elected Officials

All members of the Sacramento County Board of Supervisors

All members of the Rancho Cordova City Council

Other Individuals and Organizations

Sacramento Metropolitan Chamber of Commerce

Heritage Preservation League of Folsom

Janet Laurain, Adams Broadwell Joseph & Cardozo

Brian Dulgar, California State University Aquatic Center

Chris Porter, Ethan Conrad Properties

Brandon Rose, Environmental Council of Sacramento

Molly Wright, Sacramento Metropolitan Air Quality Management District

Keaton Browder, Federal Highway Administration

Mark Thomas, City of Rancho Cordova

Victor Takahashi, California State University Sacramento

Michael Pavik, Easton Development Company

Owners and occupants of property contiguous to the parcels on which the property is located