Interstate 80/Interstate 680/State Route 12 Interchange Project

SOLANO COUNTY, CALIFORNIA
DISTRICT 4-SOL-80 (PM 10.8/17.0); SOL-680 (PM 10.0/13.1);
SOL-SR 12 (PM 1.7/L2.8); and SOL-SR 12 (PM L1.8/4.8)
EA # 0A5300, Project # 04-0000-0150

Final Environmental Impact Report/
Environmental Impact Statement
Volume 1

Prepared by the State of California Department of Transportation

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

October 2012
General Information about This Document

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disc. To obtain a copy in one of these alternate formats, please write to California Department of Transportation, Attn: Howell Chan, Environmental Analysis Branch Chief, California Department of Transportation, District 04, 111 Grand Avenue, P. O. Box 23660, Oakland, CA 94623-0660; call (510) 286-5623 (voice); or use the California Relay Service at (800) 735-2929 (TTY), (800) 735-2929 (voice), or 711.
Construct roadway widening and interchange improvements along Interstate 80/Interstate 680/State Route 12, near the cities of Fairfield and Suisun City.

FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

Volume 1

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

THE STATE OF CALIFORNIA
Department of Transportation
and the Cooperating Agency
U. S. Army Corps of Engineers, San Francisco District

Date of Approval

The following person may be contacted for additional information concerning this document:

California Department of Transportation, District 4 Office of Environmental Analysis
Howell Chan, District Branch Chief
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Oakland CA 94623-0660

Abstract: The project consists primarily of improvements to the I-80/I-680/SR 12 Interchange to ease traffic congestions, accommodate projected growth, and improve safety. The project includes expansion and relocation of the westbound truck scales. Project impacts would occur in the following resource areas: Land Use, Growth, Farmlands, Community Impacts, Utilities, Traffic and Transportation, Visual Resources, Cultural Resources, Hydrology, Water Quality, Geology/Soils/Seismic, Paleontology, Hazardous Waste, Air Quality, Noise, Energy, and Biology. The draft environmental document was circulated for public review and comment from August 10 to October 18, 2010.
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Summary

This final environmental impact report/environmental impact statement (EIR/EIS) has been prepared in compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines and with the National Environmental Policy Act (NEPA) and the Council for Environmental Quality Regulations for implementing NEPA. The purpose of this Final EIR/EIS is to identify environmental effects associated with the proposed project, identify measures to avoid, minimize or mitigate those effects and disclose all substantive comments and responses on the Draft EIR/EIS.

The Draft EIR/EIS was available for public review from August 10, 2010 to October 18, 2010, during which time public comments were accepted. Written and oral comments were also accepted at a public hearing that was held on September 23, 2010 at the Solano County Administration Building. The comments received and responses to them are provided in Appendix L of this document.

This Final EIR/EIS will be available for review for 30 days (from October 19, 2012 to November 18, 2012), prior to taking action regarding the project.

Overview of Project Area
The project to improve the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) interchange and relocate the westbound truck scales facility is located in the vicinity of the city of Fairfield, Solano County, California. The project area covers some 13 miles encompassing all three highways. The project involves improvements on an approximate 6.2-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximate 3.1-mile-long segment of I-680 between Gold Hill Road and I-80, 1.1-mile-long segment of SR 12 West (SR 12W) between 0.5 mile west of Red Top Road and I-80, and an approximate 3.0-mile-long segment of SR 12 East (SR 12E) between I-80 and Main Street in Suisun City. The alternatives analyzed in this document consist of two full build alternatives (Alternative B and Alternative C), each with a corresponding fundable the first phase (Alternative B, Phase 1 and Alternative C, Phase 1).

Related Projects
Several related transportation projects are being planned or recently were completed in the general project area. These transportation projects and a number of non-transportation projects are discussed in the cumulative impacts section (Chapter 3.6) of this document and include:

- North Connector Project.
- Interstate 80 High-Occupancy Vehicle Lanes Project.
- I-80 Eastbound Cordelia Truck Scales Relocation Project.
- Jameson Canyon (SR 12) Widening from I-80 to SR 29.
- I-80 Express Lanes Project.
- I-80 Improvements through Fairfield.
- 2010 State Highway Operations and Protection Program (SHOPP) Projects.
Purpose and Need

Purpose
The purposes of the project are listed below. The alternatives presented in this document meet all of the purposes listed below. Neither of the fundable first phases include the relocation of the truck scales and therefore, they would not address the purposes specified under numbers 5 and 6 below. However, they would meet the remaining purposes and would partially meet number 5 by providing congestion relief.

2. Reduce the amount of cut-through traffic on local roads.
3. Encourage the use of high-occupancy vehicle lanes and ridesharing.
4. Improve safety conditions.
5. Accommodate current and future truck volumes on highways.
6. Facilitate adequate inspection and enforcement at truck scales.

Need
The current I-80/I-680/SR 12 interchange complex was constructed approximately 40 years ago. Since the 1960s, the San Francisco Bay Area (Bay Area) and Northern California region have experienced rapid population growth, resulting in substantial increases in regional traffic and truck traffic passing through which results in congestion, delays, and unacceptable levels of service (LOS). The project will address these related deficiencies.

- Traffic Congestion: Current traffic volumes along segments of I-80 and I-680 in the project area create heavy traffic congestion with an average travel speed of 46 mph during the morning peak period and 33 mph during the afternoon peak period. These average speeds are well below the threshold of 59.7 miles per hour identified by the Highway Capacity Manual as the minimum operating speed associated with acceptable mainline freeway operations. There are several bottlenecks and LOS F (as defined in vehicles per hour per lane) locations within the freeway system as a result of this congestion. Chapter 3.1.6 discusses this in detail, and Tables 3.1.6-1 and 3.1.6-2 illustrate the correlations between congestion and LOS.

- Traffic Diverting to Local Roads: It is estimated that up to 1,450 vehicles (PM peak hour) currently divert from the northbound I-680 to eastbound I-80 connector to alternate routes to bypass the congestion and re-enter eastbound I-80 or eastbound SR12 at locations east of a bottleneck location. This cut-through traffic creates a series of problems along the local street system such as increase of congestion and delay on local roads; reduction of accessibility for local properties and increase of delay for transit and emergency service vehicles.

- Truck-Related Congestion: The westbound truck scales are located on the most congested freeway segment in Solano County. Trucks slowing to enter the short (approximately 500 feet) off-ramp to the scales, and accelerating to enter I-80 on the short on-ramp from the
scales, exacerbate the congestion problem, as do trucks queuing onto the mainline from the short off-ramp to the facility.

- **Unreliable Freight Transport:** Travel times for truck trips are unpredictable due to queues and congestion.

- **Traffic Safety:** High vehicle volumes, short merge and diverge maneuvers, and short distances between interchanges, all contribute to safety issues in the area. Within the project limits most freeway segments of I-80 (from interchange to interchange) experience a higher total accident rate and a higher fatal and injury rate compared to the statewide averages for similar facilities. Over 60% of the accidents on I-80 were rear-end type collisions. Within the project limits of SR 12 East half of the sections experience higher total accident rates and fatal accident rates than the statewide average for similar facilities. 48% of the accidents on SR 12 East were rear-end type collisions. The majority of accidents on I-80, SR12 West and SR-12 East occurred during commute periods. The combination of high percentages of accidents during commute periods and high percentages of the rear-end type collisions are related to the congestion observed in these sections.

**Proposed Project**

The proposed project involves improvements on an approximately 4.5-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximately 3.5-mile-long segment of I-680 between Gold Hill Road and I-80, a 2.0-mile-long segment of SR 12 West (SR 12W) between 0.5 mile west of Red Top Road and I-80, and an approximately 2.5-mile-long segment of SR 12 East (SR 12E) between I-80 and Main Street in Suisun City. Within the limits of the project area, I-80 is a six to ten lane freeway. SR 12E is a divided four-lane highway, I-680 is a four-lane freeway, and SR 12W is an undivided two-lane highway.

**Scope of Alternatives in this Document**

The proposed project is a project by the California Department of Transportation (the Department) and is subject to state and federal environmental review requirements including the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In order to meet the requirements of both CEQA and NEPA, two alternatives were developed to meet the future traffic demand with the 20-year planning horizon, taking into consideration environmental and engineering constraints, but not near-term financial constraints (available funding in the short term). These alternatives each represent a comprehensive project on which a Notice of Determination (NOD) could be issued for the purposes of CEQA. In addition, a subset of each full-build alternative was developed that takes into account near-term financial constraints and therefore represents the fundable first phase of the project on which a Record of Decision (ROD) and Notice of Determination (NOD) could be issued for the purposes of NEPA and CEQA. This approach is more fully explained in Chapter 2, Section 2.2.1 of the EIR/EIS.

**Alternatives Considered in this Document**

Two alternatives (Alternatives B and C) and the associated fundable first phases (Alternative B, Phase 1 and Alternative C, Phase 1) are currently being analyzed in this document. Alternatives B and C are full build alternatives addressing comprehensive improvements to the I-80/I-680/SR 12W interchange; the widening of I-680 and I-80; and the relocation, upgrade, and expansion of the westbound truck scales on I-80.
Alternatives B and C differ primarily in the location of the I-80/I-680/SR 12W interchange improvements and the improvements on SR 12E. Under Alternative B, the I-80/I-680 and I-80/SR 12W interchanges would be improved in place and a single interchange would be constructed on SR 12E to serve Beck Avenue and Pennsylvania Avenue. Under Alternative C, I-680 would be realigned to the west to connect with the I-80/SR 12W interchange, and two interchanges would be constructed on SR 12E to serve Beck Avenue and Pennsylvania Avenue.

The fundable first phases of the full-build alternatives are Alternative B, Phase 1 and Alternative C, Phase 1. Alternative B, Phase 1 would improve the I-80/Green Valley Road, I-80/I-680, I-80/Suisun Valley Road and the SR 12E/Beck Avenue interchanges. Alternative C, Phase 1 would realign I-680 to the west to connect with the I-80/SR 12W interchange and provide direct connections between all highways except eastbound SR 12W and southbound I-680. Red Top Road would be extended to meet Business Center Drive and interchanges at SR 12W/Red Top Road, I-80/Red Top Road, I-80/Green Valley Road, and I-680/Red Top Road would be constructed or improved. A third lane would be added to SR 12 East from west of Chadbourne Road Undercrossing to the Webster Street exit.

While the fundable first phases of the alternatives would not address all project needs, they would reduce congestion and cut-through traffic on local roads, and improve safety conditions.

Alternative C was identified by the project development team (PDT) as their preferred alternative based upon the following reasons:

- Traffic operations of Alternative C would be superior to Alternative B. Alternative C would include all freeway to freeway movements between I-80 and I-680 via direct connectors, whereas Alternative B would not have a direct connector between I-680 North and I-80 West.

- Alternative C would encourage regional traffic to stay off local roads by providing a high-capacity connection from I-680 to SR 12 West/I-80 West that would carry an acceptable level of traffic during peak hours (500 vehicles per hour in 2035). Without this connection, traffic making the same movement using Alternative B would need to use local roads, either Red Top Road (which would pass by Rodriguez High School) or Lopes Road to the Green Valley Interchange.

- Alternative C would provide drivers on I-680 with standard, outside-lane entrances/exits to I-80. Alternative B would provide these entrances/exits in the median, potentially increasing driver confusion.

- Alternative C would create relatively less traffic friction (less merging on and off the freeway) in the area between Green Valley and Suisun Valley Roads. Alternative B would leave two partial interchanges (I-80/SR 12 West and I-80/I-680) that, together with the median-lane I-680 to I-80 merge and the outer lane braided traffic, could lead to greater traffic friction and driver confusion.

- Alternative C would move I-680 away from the residential areas in Cordelia, reducing noise impacts on an existing community and potential impacts to the Village of Cordelia Historic District.
The environmental impacts of Alternatives B and C would be similar, including impacts to biology, farmland and other areas of environmental concern.

Alternative C offers more favorable construction phasing and staging opportunities, as it will be constructed on a new alignment. Staging and construction for Alternative B would be more complicated because the improvements would be constructed essentially in the same alignment and existing traffic would need to be accommodated.

The Alternative C alignment would affect light industrial areas that are relatively less difficult to relocate, whereas the Alternative B alignment would impact freeway commercial areas that are relatively more difficult to relocate.

The PDT’s decision to identify Alternative C as the preferred alternative was made with the following intended results:

- To establish the ultimate Alternative C as a vision and goal to meet identified transportation needs.
- To acknowledge that Alternative C must be implemented in phases due to funding limitations and constraints, and may not be completed until beyond the twenty-year planning horizon.
- To recognize that each phase of Alternative C will have independent utility.
- To work towards the ultimate Alternative C one phase at a time.
- To extend identification of the preferred alternative to Alternative C, Phase 1, upon which additional decisions – Least Environmentally Damaging Practicable Alternative (LEDPA), a Record of Decision under NEPA, the Project Report, permits, final design, and right-of-way work – may be taken.
- To plan for future phases through updating, amending, or adopting new general plans, zoning, transportation plans, and transportation improvement programs.
- To perform additional or supplemental planning, environmental, and engineering work and reach decisions for each future phase as funding becomes possible and as long as there are identified transportation needs that remain.

**No-Build Alternative**

Under the No-Build Alternative, the facilities associated with the interchange project (freeway lanes, interchanges, ramps, westbound truck scales, and HOV lane direct connectors from I-80 to I-680) would not be constructed. Traffic congestion in the project vicinity would worsen substantially, causing delays of up to six hours and gridlock conditions on the freeway would force traffic onto local roads. Worsened congestion will further exacerbate congestion from truck weaving and backup to the mainline freeways from the truck scale facilities in the westbound direction and truck inspection and enforcement would be impaired due to substantially worsened conditions on the mainline in both directions. Fatal/injury accidents within the project limits, which already exceed statewide the average, will worsen substantially from the increased congestion.
Joint California Environmental Quality Act/National Environmental Policy Act Documentation

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Department is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 USC 327.

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, it is quite often the case that a “lower level” document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

Following receipt of public comments on the Draft EIR/EIS and circulation of the Final EIR/EIS, the Department will be required to take actions regarding the environmental document. The Department will determine whether to certify the EIR and issue Findings and a Statement of Overriding Considerations under CEQA and to issue a Record of Decision under NEPA.

Project Impacts

Project impacts would occur in the following resource areas: Land Use, Growth, Farmlands, Community Impacts, Utilities, Traffic and Transportation, Visual Resources, Cultural Resources, Hydrology, Water Quality, Geology/Soils/Seismic, Paleontology, Hazardous Waste, Air Quality, Noise, Energy, and Biology. Potentially significant impacts under CEQA may occur in agricultural resources. Project effects under NEPA are discussed fully in Chapter 3. Chapter 4 addresses impacts under CEQA. Table S-1, located at the end of this summary, summarizes the impacts of the project.

Coordination with Public and Other Agencies

Notice of Preparation and Scoping

A notice of preparation of (NOP) for the proposed project was published on April 28, 2003. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties.

A scoping meeting for the NOP was held on May 12, 2003 from 6 p.m. to 8:30 p.m. at Rodriguez High School, located at 5000 Red Top Road in Fairfield. An open house was held on March 17, 2009, from 6:30 p.m. to 8:30 p.m. at Nelda Mundy Elementary School, at 580 Vintage Valley Drive in Fairfield.

A number of means were utilized to inform the public of the scoping process and the public open house meeting. A public notice was distributed to the project mailing list, which included property owners, elected officials, city staff, special interest organizations, and neighborhood groups. The Department mailed a letter to agency representatives and elected officials.
Information pertaining to the scoping process and the public open house scoping meeting also appeared on the Solano Transportation Authority website at http://www.solanolinks.com.

**Coordination with Agencies**
The Department and STA have coordinated with the following federal, state, and local agencies.

- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Department of Agriculture, National Resources Conservation Service
- NOAA’s National Marine Fisheries Service
- U.S. Army Corps of Engineers
- Yocha Dehe Wintun Nation
- California Department of Fish and Game
- California Department of Conservation
- Regional Water Quality Control Board
- Office of Historic Preservation
- Bay Conservation Development Commission
- Metropolitan Transportation Commission
- Solano County
- City of Fairfield
- Suisun City
- California Highway Patrol
- Bay Area Air Quality Management District

**Public Review and Comment**
The Draft EIR/EIS was available for public review from August 10, 2010 to October 18, 2010, during which time comments were accepted. A total of 21 written comments were received from agencies and citizens. Comment letters and responses to comments are provided in Appendix L of this document. Comment letters included comments regarding the following resource areas: Land Use, Farmlands, Utilities, Traffic and Transportation, Hydrology and Floodplain, Air Quality, Noise, and Biological Environment.

A public meeting was held on Thursday, September 23, 2010 at the Solano County Administration Building from 6:00 to 8:00 pm. The purpose of the meeting was to present the Draft EIR/EIS including both build alternatives and their associated fundable first phases and to solicit comments from the public. Twenty-six attendees signed in at the open house. The format of the meeting was an informational open house. Exhibit boards showing the project and addressing all issue areas were available for viewing and Department and STA staff were available to answer questions. Comment forms were available at the public meeting to facilitate
the submission of written comments by attendees. A court reporter was provided at the open house to accept verbal comments. A total of seven comments (four written and three verbal) were submitted at the public meeting.

Comments letters and written and verbal comments from the public meeting and responses to them are provided in Appendix L.

**Necessary Permits and Approvals**
The table below shows the permits and approvals that would be required.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit, Approval, or Consultation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Fish and Wildlife Service</td>
<td>Consultation under Section 7 of the federal Endangered Species Act</td>
<td>A Biological Opinion for Alternative C, Phase 1 has been issued by the USFWS and included in Appendix H</td>
</tr>
<tr>
<td>NOAA’s National Marine Fisheries Service</td>
<td>Consultation under Section 7 of the federal Endangered Species Act and for Essential Fish Habitat under Magnuson-Stevens Fishery Conservation and Management Act</td>
<td>A concurrence letter has been issued by NOAA’s NMFS and is included in Appendix H.</td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Clean Water Act Section 404 individual permit for placement of fill</td>
<td>Application to be submitted after NEPA completed</td>
</tr>
<tr>
<td>California Department of Fish and Game</td>
<td>California Fish and Game Code Section 1602 streambed alteration agreement for waters of the state; potential consultation under Section 2081 of the California Endangered Species Act (CFG Code, Sections 2050 et seq.); CEQA trustee agency</td>
<td>To be completed after CEQA completed</td>
</tr>
<tr>
<td>San Francisco Bay Regional Water Quality Control Board</td>
<td>Non-point Clean Water Act Section 402 National Pollutant Discharge Elimination System permit (General Construction Permit), Clean Water Act Section 401 water quality certification</td>
<td>Application to be submitted after CEQA completed</td>
</tr>
<tr>
<td>Bay Area Air Quality Management District</td>
<td>Permit for air pollutant emission–generating equipment</td>
<td>Application to be submitted if portable engines and certain other equipment have not previously been registered with the California Air Resources Board after CEQA completed</td>
</tr>
<tr>
<td>California Public Utilities Commission</td>
<td>General Order 131-D filing requirements for high-voltage electrical lines</td>
<td>Application to be submitted after CEQA completed</td>
</tr>
<tr>
<td>San Francisco Bay Conservation and Development Commission</td>
<td>Marsh Development Permit</td>
<td>Application to be submitted after CEQA completed</td>
</tr>
<tr>
<td>Federal Highway Administration</td>
<td>Air Quality Conformity Concurrence</td>
<td>FHWA concurrence letter signed on April 13, 2011</td>
</tr>
<tr>
<td>State Historic Preservation Office</td>
<td>Section 106 Compliance and Programmatic Agreement</td>
<td>Programmatic Agreement approved November 8, 2011.</td>
</tr>
</tbody>
</table>

**Unresolved Issues**
Section 15123(b) of the State CEQA Guidelines requires an EIR to identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During preparation of the environmental document, no known issues of controversy were raised, and no issues remain unresolved.
## Table S-1. Comparison of Alternatives

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phase 1</td>
</tr>
<tr>
<td>HUMAN ENVIRONMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.1—Land Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on Fairfield Linear Park</td>
<td>No effect</td>
<td>Minimal impact</td>
<td>No effect</td>
<td>Minimal impact</td>
</tr>
<tr>
<td>3.1.2—Growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential to Induce Growth</td>
<td>No effect</td>
<td>Any new or intensified development would occur in accordance with county and local plans</td>
<td>Same as Full Build</td>
<td>Same as B</td>
</tr>
<tr>
<td>3.1.3—Farmlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Conversion of Farmland</td>
<td>No effect</td>
<td>18 parcels, ~140 acres affected</td>
<td>None</td>
<td>19 parcels, ~122 acres affected</td>
</tr>
<tr>
<td>Conversion of Agricultural Lands under Williamson Act Contracts</td>
<td>No effect</td>
<td>48.76 acres would be converted</td>
<td>None</td>
<td>40 acres would be converted</td>
</tr>
<tr>
<td>Conversion of Agricultural Lands under Conservation Easements</td>
<td>No effect</td>
<td>22.5 acres of Valine easement converted</td>
<td>None</td>
<td>22.5 acres of Valine easement converted</td>
</tr>
<tr>
<td>3.1.4—Community Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Character and Cohesion</td>
<td>No effect</td>
<td>No separation or division of an existing neighborhood</td>
<td>Effects would be similar to full build</td>
<td>Same as B; Possible beneficial effect on Cordelia area by moving highway further from residential areas</td>
</tr>
<tr>
<td>Displacement of Residences and Businesses</td>
<td>No effect</td>
<td>1 residential displacement, 201 partial and 27 full acquisitions of businesses; relocation parcels available</td>
<td>67 partial and 5 full acquisition of businesses; relocation parcels available</td>
<td>1 residential displacement; 144 partial and 32 full acquisitions of businesses; relocation parcels available</td>
</tr>
</tbody>
</table>
### Summary

#### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Environmental Justice</td>
<td>No effect</td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phase 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fewer than under full build; Same as B</td>
<td>10 displacements in Environmental Justice Block Groups; Same as B</td>
<td>Fewer than under full build; Same as B</td>
</tr>
</tbody>
</table>

| 3.1.5—Utilities and Emergency Services           |                           |               |               |                                                     |
| Potential Effect to Utilities                    | No effect                 | Possible impacts on utilities or interruption of service during construction and operation | Same as B | Same as B | Minimize Disruption of Utilities Services |
| Potential Effects on Police, Fire, and Emergency Service Providers during Construction | No effect                 | Possible short-term effects due to lane closures during construction | Same as B | Same as B | Same as B |

| 3.1.6—Traffic and Transportation/Pedestrian and Bicycle Facilities | 2015: in a.m. peak hour condition would not worsen significantly, but in p.m. peak hour VHD would increase more than 100%, duration of congestion would nearly double, queues on SR 12E would back traffic up on I-80 | 2015: Beneficial impact in a.m. peak hour (VMT up 7%, VHD down nearly 70%, network travel speed up 25%) and p.m. peak hour (VMT up 60%, VHD down 70%, network travel speed up 140%) | 2015: Beneficial impact in p.m. peak hour (VMT up 11%, VHD down 58%, network travel speed up 32%) and very little effect in a.m. peak hour (VMT up less than 0.5%, VHD down 22%, network travel speed up 3%) | 2015: Beneficial impact in p.m. peak hour (VMT up 7%, VHD down 39%, network travel speed up 20%) and minimal effect in a.m. peak hour (VMT down less than 0.5%, VHD up 3%, no change in network travel speed) | 2035: Beneficial impact in a.m. peak hour (VMT up 5%, VHD down 50%, | None required |
| Effects on System-Wide MOEs                       | 2035: Significant congestion and delays in a.m. peak | 2035: Beneficial impact in a.m. peak hour (VMT up 5%, VHD down 50% | Same as B | 2035: Beneficial impact in a.m. peak hour (VMT up 1%, VHD down 18% | None required | 2035: Beneficial impact in a.m. peak hour (VMT up 5%, VHD down 50% | None required |
**Table S-1. Continued**

<table>
<thead>
<tr>
<th>Impact</th>
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<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td>hour; severe congestion on SR 12E in p.m. peak hour</td>
<td>network speed up 17% and in the p.m. peak hour (VMT up 39%, VHD down 47%, network speed up 82%)</td>
<td>network speed up 6% and in the p.m. peak hour (VMT up 16%, VHD down 16%, network speed up 25%)</td>
<td>None required</td>
<td></td>
</tr>
</tbody>
</table>

**Effects on Travel Times**

- **2015**: Peak direction travel times would increase to 8 to 15 minutes in the a.m. peak hour, and 12 to 34 minutes in the p.m. peak hour.
- **2035**: Peak direction travel times would increase to 10 to 20 minutes in the a.m. peak hour and 28 to 99 minutes in the p.m. peak hour.

<table>
<thead>
<tr>
<th>2015:</th>
<th>Beneficial impact, peak direction reduction in travel time of 17%–70% in a.m. peak hour and 35%–80% in the p.m. peak hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015: Beneficial impact, peak direction reduction in travel time of 1%–38% in the a.m. peak hour and 46%–85% in the p.m. peak hour</td>
</tr>
<tr>
<td></td>
<td>2035: Beneficial impact, peak direction reduction in travel time of 10%–50% in the a.m. peak hour and 19%–73% in the p.m. peak hour</td>
</tr>
</tbody>
</table>

- **2015**: Beneficial impact, peak direction reduction in travel time of 17%–70% in the a.m. peak hour and 40%–80% in the p.m. peak hour.
- **2035**: Beneficial impact, peak direction reduction in travel time of 10%–50% in the a.m. peak hour and 19%–73% in the p.m. peak hour.

**Effects on Freeway Operations**

- **2015**: In a.m. peak hour, bottleneck on WB SR 12E; congestion remains at near existing levels, with congested period lasting about 1.5 hours.
- **2035**: In a.m. peak hour, bottlenecks on SR 12W WB and SR; congestion remains near existing levels.

<table>
<thead>
<tr>
<th>2015:</th>
<th>In a.m. peak hour, no bottlenecks within project limits; congestion decreases to existing levels (relative to 3 hours under 2035 No Build).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In p.m. peak hour, bottleneck on EB I-80 at Air Base Parkway (east of project limits), congested period decreases to 3 hours (relative to 6 hours under No Build).</td>
</tr>
<tr>
<td>2035:</td>
<td>In a.m. peak hour, bottlenecks on SR 12W WB and SR; congestion decreases to existing levels (relative to 3 hours under 2035 No Build).</td>
</tr>
<tr>
<td></td>
<td>In p.m. peak hour, bottleneck on EB I-80 at Air Base Parkway (east of project limits), congested period decreases to 3 hours (relative to 6 hours under No Build).</td>
</tr>
</tbody>
</table>

- **2015**: In a.m. peak hour, bottleneck on WB SR 12E; congestion remains near existing levels.
- **2035**: In a.m. peak hour, bottlenecks on EB and WB SR 12E; congested period decreases to about 2 hours (relative to 3 hours under 2015 No Build).

<table>
<thead>
<tr>
<th>2015:</th>
<th>In a.m. peak hour, bottleneck on WB SR 12E; congestion remains near existing levels.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In p.m. peak hour, bottleneck on EB and WB SR 12E; congested period decreases to about 2 hours (relative to 3 hours under 2015 No Build).</td>
</tr>
</tbody>
</table>

None required
<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td></td>
</tr>
<tr>
<td><strong>2035:</strong> In a.m. peak hour, bottlenecks on WB 12W, I-80, and 12E in a.m. peak hour, congested period increases to 3 hours. In p.m. peak hour, bottlenecks in both directions on SR 12E and I-80, on SR 12W EB, and I-80 NB; congested period increases to 6+ hours.</td>
<td>12E WB, congestion decreases to near existing levels (relative to No Build). In p.m. peak hour, bottlenecks on I-80 WB, I-80 EB, SR 12W EB, and SR 12E EB; congested period would decrease to 4.5 hours (relative to 6 hours under 2035 No Build)</td>
<td>EB and WB SR 12E; congested period decreases to 2.5 hours, relative to 3 hours under 2035 No Build. In p.m. peak hour, I-80 WB, I-80 EB, SR 12W EB, and SR 12E EB and WB; congested period would decrease to 5 hours, relative to 6 hours under 2035 No Build</td>
<td>Design and construct intersection improvements (including signalization, land configuration changes, approach widening, and operational improvements) at project on-ramp terminal and non-ramp terminal intersections to maintain intersection at acceptable levels of service.</td>
<td></td>
</tr>
<tr>
<td><strong>Effects on Intersection Operations</strong></td>
<td>All intersections except Lopes Road/Gold Hill Road would operate unacceptably (one ramp terminal intersection and two non-ramp terminal intersections); in the p.m. peak hour, 9 intersections would operate unacceptably (5 ramp terminal intersections and 4 non-ramp terminal intersections). 2035: in the a.m. peak hour 8 intersections would operate unacceptably (4 ramp terminal intersections and 4 non-ramp terminal intersections); in the p.m. peak hour, 22 intersections would operate unacceptably</td>
<td>2015: two non-ramp terminal intersections would operate acceptably in the a.m. peak hour; in p.m. peak hour, 1 ramp terminal intersection and 3 non-ramp terminal interfaces would operate unacceptably 2035: one ramp terminal intersection and 3 non-ramp terminal intersections would operate unacceptably in the a.m. peak hour; 8 ramp terminal intersections and 7 non-ramp terminal intersections would operate unacceptably in the p.m. peak hour</td>
<td>All intersections would operate acceptably in the a.m. peak hour; 3 non-terminal ramp intersections would operate unacceptably in the p.m. peak hour</td>
<td>2015: one ramp terminal intersection would operate unacceptably in the a.m. peak hour; in the p.m. peak hour, 3 ramp terminal intersections and 2 non-ramp terminal intersections would operate unacceptably 2035: one ramp terminal intersection would operate unacceptably in the a.m. peak hour; in the p.m. peak hour, 3 ramp terminal intersections and 5 non-ramp terminal intersections would operate unacceptably</td>
</tr>
</tbody>
</table>
### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
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</tr>
</thead>
<tbody>
<tr>
<td><em>(14 ramp terminal intersections and 8 non-ramp terminal intersections)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Effects on Pedestrian and Bicycle Facilities</strong></td>
<td>No effect</td>
<td>May require special design or construction measures to ensure that existing facilities can be maintained</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td><strong>Effects on Transit Routes and Service</strong></td>
<td>Worsened traffic conditions in p.m. peak hour in 2015 and 2035 will result in delays for buses and paratransit vehicles</td>
<td>Improved traffic operations would reduce delays for buses and paratransit vehicles</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td><strong>Construction Period Disruption of Vehicle, Pedestrian, and Bicycle Circulation</strong></td>
<td>No effect</td>
<td>Construction would result in temporary additional traffic from construction vehicles and workers and possible temporary lane closures and detours</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
</tbody>
</table>

#### 3.1.7—Visual and Aesthetic Resources

<table>
<thead>
<tr>
<th>Temporary Visual Impacts Caused by Construction Activities</th>
<th>No effect</th>
<th>Temporary impacts that would not contrast with existing visual character</th>
<th>Same as B, but to a lesser extent</th>
<th>Same as B</th>
<th>Same as B, but to a lesser extent</th>
<th>None required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Term Changes in Visual Quality and Character</td>
<td>No effect</td>
<td>Result in adverse and beneficial changes to visual quality and character. Adverse visual impacts would occur at Viewpoint 8 in Landscape Unit 1 and</td>
<td>Same as B, but to a lesser extent</td>
<td>Result in adverse and beneficial changes to visual quality and character. Adverse visual impacts would occur at viewpoints 6 and 8 in Landscape</td>
<td>Same as C, but to a lesser extent</td>
<td>Design westbound truck scales to be visually compatible with local architectural features of the surrounding community</td>
</tr>
</tbody>
</table>
## Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td>Viewpoint 2 in Landscape Unit 3.</td>
<td></td>
<td></td>
<td></td>
<td>Unit 1 and Viewpoint 2 in Landscape Unit 3.</td>
</tr>
<tr>
<td>Light and Glare</td>
<td>No effect</td>
<td>Increased lighting and glare during construction and, to some extent, during operations, but consistent with existing conditions</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>3.1.8—Cultural Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on Unknown or Known Resources from Construction</td>
<td>No effect</td>
<td>Potential to disturb buried cultural resources during construction</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Discovery of Human Remains during Construction</td>
<td>No effect</td>
<td>Potential to disturb buried human remains during construction</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential to Affect Historic Properties at 177 Main</td>
<td>No effect</td>
<td>Construction on the parcel would create</td>
<td>No effect; no project improvements in the</td>
<td>Same as B</td>
</tr>
</tbody>
</table>
### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td>Street, the Suisun City Train Depot (APN 0032-020-240)</td>
<td>visual impact, but would not substantially alter the existing setting, so no adverse effect would result</td>
<td>area</td>
<td>area</td>
<td></td>
</tr>
<tr>
<td>Potential to Affect Village of Cordelia Historic District</td>
<td>No effect</td>
<td>Construction on empty parcel within the district boundaries will not affect integrity of district</td>
<td>Same as B</td>
<td>Removal of elevated ramps may result in beneficial visual impact</td>
</tr>
<tr>
<td>Potential to Affect Suisun City Historic District</td>
<td>No effect</td>
<td>Construction at the edge of the district would result in minor visual impact but would not substantially alter the existing setting, so no adverse effect would result</td>
<td>No effect; no project improvements in the area</td>
<td>Same as B</td>
</tr>
<tr>
<td>Effects to Historic Resource Protected under Section 4(f)</td>
<td>No effect</td>
<td>Minor or negligible impact on the Suisun City Train Depot (APN 0032-020-240), and the Village of Cordelia and Suisun City Historic Districts</td>
<td>Minor or negligible impact on the Village of Cordelia Historic District</td>
<td>Minor or negligible impact on Suisun City Train Depot (APN 0032-020-240) and Suisun City Historic District</td>
</tr>
</tbody>
</table>

### PHYSICAL ENVIRONMENT

#### 3.2.1—Hydrology and Floodplain

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Green Valley Creek</td>
<td>No effect</td>
<td>Flow characteristics would be improved; existing structures would be replaced with freespans; existing piers would be removed</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Dan Wilson</td>
<td>No effect</td>
<td>Flow characteristics would be improved; existing structures</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
</tbody>
</table>
### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
<th>No Build</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build Phase 1</td>
</tr>
<tr>
<td>Creek</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would be replaced with freespan structures; existing piers would be removed</td>
<td>No effect</td>
<td>No effect; no project improvements in the area</td>
<td>Same as B</td>
<td>No effect; no project improvements in the area</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Suisun Creek</td>
<td>No effect</td>
<td>Flow characteristics would be improved; existing structures would be replaced with freespan structures; existing piers would be removed</td>
<td>No effect; no project improvements in the area</td>
<td>Same as B</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Raines Drain</td>
<td>No effect</td>
<td>Increased mainline elevation (up to 3' higher) and relocation of westbound truck scales (reduction of floodplain storage) will result in impacts on the existing floodplain</td>
<td>No effect; no project improvements in the area</td>
<td>Same as B</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Alonzo Drain and Ledgewood Creek</td>
<td>No effect</td>
<td>New bridges over Ledgewood Creek would be freespan; bridge/culvert widening would not alter existing conditions</td>
<td>Bridge/culvert widening would not alter existing conditions</td>
<td>Same as B, Phase 1</td>
</tr>
<tr>
<td>Hydraulic Capacity and Floodplain of Pennsylvania Avenue Creek</td>
<td>No effect</td>
<td>Culvert widening and new culverts would not alter existing conditions</td>
<td>No effect; no project improvements in the area</td>
<td>Same as B</td>
</tr>
</tbody>
</table>
### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>3.2.2—Water Quality and Stormwater Runoff</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased Runoff and Associated Operational Water Quality Issues</td>
<td>No effect</td>
<td>Increase in impervious surfaces would result in increase in runoff</td>
<td>Same as B, but to a lesser extent</td>
<td>Same as B, but to a lesser extent</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Potential Water Quality, Erosion and Sediment Control Issues during Construction</td>
<td>No effect</td>
<td>Potential for sediment or pollutants associated with construction to enter waterways</td>
<td>Same as B, but to a lesser extent</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Potential to Require Dewatering during Construction</td>
<td>No effect</td>
<td>Anticipated due to water level</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3.2.3—Geology/Soils/Seismic/Topography</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of Fault Rupture during Operations</td>
<td>No effect</td>
<td>Potential impact due to faults in the vicinity</td>
<td>Same as B</td>
<td>Same as C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>No Build</td>
<td>Alternative B</td>
<td>Alternative C</td>
<td>Avoidance, Minimization, and/or Mitigation Measures</td>
</tr>
<tr>
<td>--------------------------------------------</td>
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<td>---------------</td>
<td>---------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Risk from Ground Shaking during Operation</td>
<td>No effect</td>
<td>Potential impact due to active faults in the vicinity</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Structures will be designed to meet the regulations and standards associated with UBC Seismic Hazard Zone 4/CBSC standards, Department standards, and (if applicable) County General Plan standards to minimize potential ground shaking risks on associated project features Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities</td>
</tr>
<tr>
<td>Risks from Development on Unstable Materials</td>
<td>No effect</td>
<td>Potential impact at bridge and overcrossing locations</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Design structures and facilities to account for unstable materials Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction</td>
</tr>
<tr>
<td>Risk from Landslides or Other Slope Failure during Operation</td>
<td>No effect</td>
<td>Potential effects from landslides and debris flows in hilly areas of the project area</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Incorporate specific recommendations pertaining to cut slopes and fill slopes/embankments into the project design. For cut slopes, implement slope gradients, rock bedding and joint evaluation, drilling and geophysical testing, and</td>
</tr>
<tr>
<td>Impact</td>
<td>No Build</td>
<td>Alternative B</td>
<td>Alternative C</td>
<td>Avoidance, Minimization, and/or Mitigation Measures</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>----------</td>
<td>---------------</td>
<td>---------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>No effect</td>
<td></td>
<td>Full Build</td>
<td>Full Build</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase 1</td>
<td>Phase 1</td>
<td></td>
</tr>
<tr>
<td>Risk during Operation as a Result of Development on Expansive Soils</td>
<td>No effect</td>
<td>Soils in the project area have moderate to high shrink-swell potential</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>slopes stabilization measures. For fill slopes/embankments, implement slope gradients and slope stabilization measures. Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk during Operation as a Result of Weak Foundation Materials and Postconstruction Settlement</td>
<td>No effect</td>
<td>Potential consolidation settlement hazard in the vicinity of Suisun Valley Road and Dan Wilson Creek</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Structures will be designed to meet the regulations and standards associated with UBC Seismic Hazard Zone 4/CBSC standards, Department standards, and (if applicable) County General Plan standards to minimize potential shrink-swell hazards on associated project features</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project
October 2012 xix
## Table S-1. Continued

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runoff, Erosion, and Sedimentation from Grading Activities Associated with Construction</td>
<td>No effect</td>
<td>Potential impact during construction activities</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.4—Paleontology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Destruction of Vertebrate or Otherwise Scientifically Significant Paleontological Resources as a Result of Construction Activities | No effect | Excavation for foundations in sensitive units could result in the inadvertent destruction of fossil resources | Same as B, but to a lesser extent as less excavation occurs in high-sensitivity areas | Same as B, but to a greater extent as there would be more excavation in sensitive units | Same as B, but to a lesser extent as less excavation occurs in high-sensitivity areas | Conduct preconstruction studies to ensure that paleontological materials exposed at the surface are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means, and to further assess potential impacts. Train Construction Personnel in Recognizing Fossil Material. A qualified professional paleontologist as defined by the Department’s Standard Environmental Reference will monitor activities during key portions of the project (typically, those involving substantial disturbance in previously undisturbed materials with paleontological sensitivity). Stop Work and consult with a qualified professional paleontologist if fossil remains are encountered during construction.
### Table S-1. Continued

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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full Build</td>
<td>Phase 1</td>
<td></td>
</tr>
<tr>
<td>Exposures of Humans and the Environment to Groundwater Contamination as a Result of Construction Activities</td>
<td>No effect</td>
<td>Same as B</td>
<td>Same as B</td>
<td>Test groundwater for contaminants identified in the ISA report</td>
</tr>
<tr>
<td>Potential for Exposure of Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials as a Result of Construction Activities</td>
<td>No effect</td>
<td>Same as B</td>
<td>Same as B</td>
<td>Implement a Health and Safety Plan</td>
</tr>
<tr>
<td>Potential for Exposure of Known Hazardous Materials to Humans or the Environment as a Result of Construction Activities</td>
<td>No effect</td>
<td>Same as B</td>
<td>Same as B</td>
<td>Handle, remove, store, and dispose Yellow Striping according to Health and Safety Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dispose of Soils Contaminated with ADL, Arsenic, Herbicides in Accordance with Appropriate Regulations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contractors will coordinate the timing of construction activities with individual growers on parcels within or adjacent to the project area to avoid any aerially applied chemical impacts on workers during construction</td>
</tr>
<tr>
<td>Potential for Exposure of Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials as a Result of Construction Activities</td>
<td>No effect</td>
<td>Same as B</td>
<td>Same as B</td>
<td>Implement a Health and Safety Plan</td>
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</table>
## Summary

### Table S-1. Continued

<table>
<thead>
<tr>
<th>Impact</th>
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<th>Avoidance, Minimization, and/or Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conformity with the Regional Transportation Plan</td>
<td>No effect</td>
<td>N/A</td>
<td>Not in RTP</td>
<td>This alternative is included in 2035 RTP and 2011 TIP</td>
</tr>
<tr>
<td>Potential Violations of Carbon Monoxide NAAQS or CAAQS</td>
<td>Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS</td>
<td>Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS</td>
<td>Same as B</td>
<td>Same as B</td>
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<tr>
<td>Potential Violations of PM2.5 NAAQS or CAAQS</td>
<td>No effect</td>
<td>Project determined to be a Project of Air Quality Concern, but no new violations.</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential for Generation of MSAT Emissions</td>
<td>Lower MSAT emissions than all build alternatives except Alternative C, Phase 1 for 2035</td>
<td>Minor increase in all MSAT emissions compared to No Project conditions</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Generation of Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter</td>
<td>Lower emissions of ozone precursors than all build alternatives except Alternative C, Phase 1 for 2035</td>
<td>Minor increase in emissions of all ozone precursors compared to No Project conditions</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Temporary Increase in Ozone Precursors (ROG and NOx), CO, and PM10 Emissions during Grading and Construction Activities</td>
<td>No effect</td>
<td>Temporary increase in all ozone precursors due to construction</td>
<td>Same as B</td>
<td>Same as B</td>
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### Table S-1. Continued

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<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
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<td>3.2.7—Noise</td>
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<tr>
<td>Exposure of Noise Sensitive Land Uses to Increased Traffic Noise</td>
<td>Noise levels would increase as traffic congestion increases</td>
<td>No effect under NEPA, however, increased noise in areas D, E, and R affecting 49 units</td>
<td>No effect under NEPA, however, increased noise in areas D, E, and R affecting 21 units</td>
<td>No effect under NEPA, however, increased noise in areas E, H, and R affecting 37 units</td>
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<tr>
<td>Exposure of Noise-Sensitive Land Uses to Construction Noise</td>
<td>No effect</td>
<td>Construction equipment would generate noise</td>
<td>Same as B</td>
<td>Same as B</td>
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<td>BIOLOGICAL ENVIRONMENT</td>
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<tr>
<td>3.3.1—Natural Communities</td>
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<tr>
<td>Loss or Disturbance of Riparian Woodland Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 1.31 acres; temporary disturbance of 0.41 acre</td>
<td>Permanent loss of 0.10 acre; temporary disturbance of 0.06 acre</td>
<td>Permanent loss of 2.24 acres; temporary disturbance of 0.25 acre</td>
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<tr>
<td>Permanent Loss and Temporary Disturbance of Oak Woodlands</td>
<td>No effect</td>
<td>Blue Oak: Temporary disturbance of 0.52 acre</td>
<td>Blue Oak: Temporary disturbance of 0.50 acre</td>
<td>Blue Oak: Temporary disturbance of 0.52 acre</td>
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<td><strong>Full Build</strong></td>
<td><strong>Phase 1</strong></td>
<td><strong>Full Build</strong></td>
</tr>
<tr>
<td>Loss or Disturbance of Perennial Drainage Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 0.67 acre; temporary disturbance of 1.0 acre</td>
<td>Permanent loss of 0.08 acre; temporary disturbance of 0.88 acre</td>
<td>Permanent loss of 0.66 acre; temporary disturbance of 0.92 acre</td>
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<tr>
<td>Loss of Nonjurisdictional Constructed Seasonal Drainages</td>
<td>No effect</td>
<td>Permanent loss of 0.11 acre; temporary disturbance of 0.17 acre</td>
<td>No effect</td>
<td>Permanent loss of 0.11 acre; temporary disturbance of 0.17 acre</td>
</tr>
<tr>
<td>Loss or Disturbance of Jurisdictional Seasonal Drainages Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 2.22 acres; temporary disturbance of 0.78 acre</td>
<td>Permanent loss of 1.25 acres; temporary disturbance of 0.23 acre</td>
<td>Permanent loss of 2.28 acres; temporary disturbance of 0.52 acre</td>
</tr>
<tr>
<td>Loss or Disturbance of Nonjurisdictional Perennial Marsh</td>
<td>Permanent loss of 0.03 acre; temporary disturbance of 0.01 acre</td>
<td>Permanent loss of 0.04 acre</td>
<td>No effect</td>
<td>No effect</td>
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</table>
### Table S-1. Continued

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</thead>
<tbody>
<tr>
<td>Loss or Disturbance of Jurisdictional Perennial Marsh Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 5.15 acres; temporary disturbance of 4.68 acres</td>
<td>Permanent loss of 0.34 acre; temporary disturbance of 1.26 acres</td>
<td>Permanent loss of 5.03 acres; temporary disturbance of 3.68 acres</td>
<td>Permanent loss of 0.44 acre – 0.07 acre with fill reduction of 0.37 acre achieved through design refinements; temporary disturbance of 1.66 acre</td>
<td>Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat Restore Temporarily Disturbed Perennial Marsh Compensate for Permanent Loss of Wetlands</td>
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<tr>
<td>Loss or Disturbance of Alkali Seasonal Marsh Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 1.75 acres; temporary disturbance of 0.28 acre</td>
<td>No effect</td>
<td>Permanent loss of 1.03 acre; temporary disturbance of 0.13 acre</td>
<td>No effect</td>
<td>Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Compensate for Permanent Loss of Wetlands</td>
</tr>
<tr>
<td>Loss or Disturbance of Nonjurisdictional Seasonal Wetland</td>
<td>No effect</td>
<td>Permanent loss of 0.03 acre</td>
<td>Permanent loss of 0.02 acre</td>
<td>Permanent loss of 0.36 acre; temporary disturbance of up to 0.19 acre</td>
<td>Permanent loss of 0.34 acre; temporary disturbance of up to 0.01 acre</td>
<td>Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands</td>
</tr>
<tr>
<td>Loss or Disturbance of Jurisdictional Seasonal Wetland Resulting from Construction</td>
<td>No effect</td>
<td>Permanent loss of 7.84 acres; temporary disturbance of 1.85 acres</td>
<td>Permanent loss of 1.82 acres</td>
<td>Permanent loss of 8.62 acres; temporary disturbance of 0.70 acre</td>
<td>Permanent loss of 3.88 acres – 2.88 acres with fill reduction achieved through design refinements</td>
<td>Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Construct a Retaining Wall on the South Side of SR 12E Compensate for Permanent Loss of Wetlands</td>
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<td>Full Build</td>
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<td>3.3.3—Plant Species</td>
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<tr>
<td>Potential direct and indirect effects on Alkali Milk-Vetch</td>
<td>No effect</td>
<td>Potential to remove or disturb plants if present in the future</td>
<td>No effect</td>
<td>Potential to remove or disturb plants if present in the future</td>
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<tr>
<td>Loss or Disturbance of Pappose Tarplant</td>
<td>No effect</td>
<td>Loss of 185 plants</td>
<td>No effect</td>
<td>Loss of 200 plants</td>
</tr>
<tr>
<td>Potential direct and indirect effects on Streamside Daisy</td>
<td>No effect</td>
<td>Potential to remove or disturb plants if present in the future</td>
<td>No effect</td>
<td>Potential to remove or disturb plants if present in the future</td>
</tr>
<tr>
<td>Direct and Indirect Effects to Saline Clover</td>
<td>No effect</td>
<td>Loss of 35 plants</td>
<td>No effect</td>
<td>Loss of 65 plants</td>
</tr>
</tbody>
</table>

**Notes:**

- No effect
- Potential to remove or disturb plants if present in the future
- Conduct preconstruction surveys for special-status plants
- Compensate for loss of special-status plants
- Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands
### Table S-1. Continued

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<tr>
<td><strong>3.3.4—Animal Species</strong></td>
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<tr>
<td>Potential Loss or Disturbance of Western Pond Turtles Resulting from Construction</td>
<td>No effect</td>
<td>Construction in and near ponds and streams could result in loss or disturbance of habitat</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance of Nesting White-tailed Kites Resulting from Construction</td>
<td>No effect</td>
<td>Tree removal and construction noise could result in disturbance to nesting birds</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance of Burrowing Owls and Permanent Loss of Habitat Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities could disturb nesting owls and implementation of the project would result in loss of nesting and foraging habitat</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance of Nesting Northern Harriers Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities could disturb nesting birds and implementation of the project would result in loss of nesting and foraging habitat</td>
<td>No effect</td>
<td>Same as B</td>
</tr>
<tr>
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</tr>
<tr>
<td>Potential Disturbance of Nesting Loggerhead Shrikes Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities could disturb nesting birds</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance of Nesting Tricolored Blackbirds Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities could disturb nesting birds</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance of Nesting Migratory Birds and Raptors Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities could remove or disturb occupied nests</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance to Nesting Swallows Resulting from Construction</td>
<td>No effect</td>
<td>Construction activities associated with bridge construction could result in loss of active nests</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Disturbance to Roosting Bats Resulting from Construction</td>
<td>No effect</td>
<td>Construction could result in removal of bat roosting habitat and disturb roosting bats</td>
<td>Same as B</td>
<td>Same as B</td>
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<tr>
<td><strong>River Lamprey</strong></td>
<td></td>
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</tr>
<tr>
<td>Potential Effects on River Lamprey Resulting from Construction</td>
<td>No effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality Effects</td>
<td>No effect</td>
<td>Construction activities could result in sediments or contaminants entering streams</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Impact</td>
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<td>--------------------------------------------</td>
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<td>-----------------------------------------------------</td>
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<tr>
<td>Habitat and Channel Morphology Effects</td>
<td>No effect</td>
<td>Construction in and adjacent to streams could affect channel morphology and streamside vegetation</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Minimize Impacts on Creek Channels</td>
</tr>
<tr>
<td>Water Temperature Effects</td>
<td>No effect</td>
<td>Minimal impact to water temperature from removal/addition of shading</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Minimize Impacts on Creek Channels</td>
</tr>
<tr>
<td>Interference with Movement</td>
<td>No effect</td>
<td>Dewatering activities associated with construction could interfere with fish movement</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels</td>
</tr>
<tr>
<td>Disturbance and Direct Injury</td>
<td>No effect</td>
<td>Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels Minimize Noise Impacts on Special-Status Fish Species</td>
</tr>
<tr>
<td>Potential Water Quality Effects on River Lamprey Associated with Operations</td>
<td>No effect</td>
<td>Increase in impervious surfaces could result in increase in pollutants entering streams</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel</td>
</tr>
</tbody>
</table>
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<td>Full Build</td>
<td>Phase 1</td>
<td>Full Build</td>
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<tr>
<td><strong>Central Valley Fall-Run/Late-Fall-Run Chinook Salmon</strong></td>
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<tr>
<td>Potential Effects on Chinook Salmon Resulting from Construction</td>
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</tr>
<tr>
<td>Water Quality Effects</td>
<td>No effect</td>
<td>Construction activities could result in sediments or contaminants entering streams</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B, but no effects at Suisun Creek</td>
</tr>
<tr>
<td>Habitat and Channel Morphology Effects</td>
<td>No effect</td>
<td>Construction in and adjacent to streams could affect channel morphology and streamside vegetation</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Water Temperature Effects</td>
<td>No effect</td>
<td>Minimal impact to water temperature from removal/addition of shading</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Interference with Movement</td>
<td>No effect</td>
<td>Dewatering activities associated with construction could interfere with fish movement</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
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</table>
| Disturbance to Potential Spawning Habitat                             | No effect | Construction associated with the bridge over Suisun Creek could result in disturbance to spawning habitat located 20 feet downstream of bridge | No effect | Same a B | No effect | Minimize Impacts on Creek Channels
Avoid Disturbance to Potential Fish Spawning Habitat or remove and replace gravels |
| Disturbance and Direct Injury                                           | No effect | Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work | Same as B, but no effects at Suisun Creek | Same as B, but to a lesser extent due to less construction in the vicinity of Ledgewood Creek | Same as B, but no effects at Suisun Creek | Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons
Provide Alternate Migration Corridor through Creek Channels
Minimize Noise Impacts on Special-Status Fish Species |
| Potential Water Quality Effects on Chinook Salmon Resulting from Operations | No effect | Increase in impervious surfaces could result in increase in pollutants entering streams | Same as B, but no effects at Suisun Creek | Same as B | Same as B, but no effects at Suisun Creek | Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices
Prevent Contaminants and Hazardous Materials from Entering the Stream Channel |
| Potential Interference with Fish Movement Resulting from Operations     | No effect | Culvert extension in Ledgewood Creek under SR 12E would worsen fish passage conditions | Same as B | Same as B | Same as B | Implement Culvert Retrofit at the SR 12E Crossing on Ledgewood Creek |
| Sacramento Splittail                                                    | No effect | Construction associated with bridges over Ledgewood Creek could result in sediments or contaminants entering the creek | Same as B, but to a lesser extent | Same as B, but to a lesser extent | Same as B, but to a lesser extent | Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices
Prevent Contaminants and Hazardous Materials from Entering the Stream Channel |
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<td>Full Build</td>
</tr>
<tr>
<td><strong>Potential Water Quality Effects on Sacramento Splittail Associated</strong></td>
<td><strong>No effect</strong></td>
<td>Increase in impervious surfaces could result in increase in pollutants entering Ledgewood Creek</td>
<td>Same as B, but to a lesser extent</td>
<td>Same as B</td>
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<td>with Operations</td>
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<tr>
<td><strong>3.3.5—Threatened and Endangered Species</strong></td>
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<tr>
<td><strong>Loss or Disturbance of Contra Costa Goldfields Resulting from</strong></td>
<td><strong>No effect</strong></td>
<td>Construction would result in the loss of 30 plants (this number may vary from year to year), and permanent loss of 55.95 acres and temporary disturbance of 14.02 acres of critical habitat</td>
<td>Construction would result in the permanent loss of 7.27 acres and temporary disturbance of 1.17 acres of critical habitat</td>
<td>Construction would result in the permanent loss of 39.59 acres and temporary disturbance of 8.55 acres of critical habitat</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Loss or Disturbance of Showy Indian Clover from Construction</strong></td>
<td><strong>No effect</strong></td>
<td>Construction could affect potential habitat</td>
<td>No effect</td>
<td>Same as B</td>
</tr>
<tr>
<td><strong>Potential Loss or Disturbance of Callippe Silverspot Butterfly</strong></td>
<td><strong>No effect</strong></td>
<td>Construction would result in the permanent loss of 38.82 acres and temporary disturbance of 19.32 acres of habitat and could result in the loss of individuals</td>
<td>No effect</td>
<td>Same as B</td>
</tr>
<tr>
<td>Resulting from Construction</td>
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Final Environmental Impact Report/Environmental Impact Statement  
Interstate 80/Interstate 680/State Route 12 Interchange Project  
October 2012  
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<td>Potential Loss or Disturbance of Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp Resulting from Construction</td>
<td>No effect</td>
<td>Construction would result in direct affect to 1.36 acres and indirect affect to 1.24 acres of potential habitat</td>
<td>Construction would result in direct affect to 1.33 acres and indirect affect to 0.04 acre of potential habitat</td>
<td>Construction would result in direct affect to 1.45 acres and indirect affect to 0.26 acre of potential habitat</td>
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<td>Potential Loss of Valley Elderberry Longhorn Beetle Habitat Resulting from Construction</td>
<td>No effect</td>
<td>Construction would result in direct affects to 11 shrubs and indirect affects to 1 shrub</td>
<td>Construction would result in direct affects to 10 shrubs and indirect affects to 1 shrub</td>
<td>Construction would result in direct affects to 10 shrubs and indirect affect 2 shrubs</td>
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<tr>
<td>Potential Loss of California Red-legged Frog and its Habitat Resulting from Construction</td>
<td>No effect</td>
<td>Construction would result in permanent loss of 2.11 acres of aquatic habitat, 109.23 acres of upland habitat, and 18.24 acres of critical habitat and temporary disturbance of 2.16 acres of aquatic habitat, 37.58 acres of upland habitat and 1.98 acres of critical habitat</td>
<td>Construction would result in permanent loss of 0.58 of aquatic habitat, and 21.09 acres of upland habitat, and temporary disturbance of 0.96 acre of aquatic habitat, and 0.74 acre of upland habitat. No critical habitat would be affected</td>
<td>Construction would result in permanent loss of 1.68 acres of aquatic habitat, 142.63 acres of upland habitat, and 22.89 acres of critical habitat and temporary disturbance of 1.25 acres of aquatic habitat, 12.99 acres of upland habitat and 0.13 acre of critical habitat</td>
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The table details the impacts of various alternatives on different species and habitats, along with mitigation measures proposed to address these impacts.
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<td>Full Build</td>
<td>Phase 1</td>
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<td>Indirect Effects from Habitat Fragmentation and Vehicle-Related Mortality</td>
<td>No effect</td>
<td>Potential indirect effects of construction of road extension related to reduced migration opportunities and increased vehicle related mortality, but would be offset by design features of road extension.</td>
<td>No effect</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Loss of CTS and its Habitat Resulting from Construction</td>
<td>No effect</td>
<td>Construction would result in the permanent loss of 23.06 acres of upland habitat and 6.21 acres of aquatic habitat and the temporary disturbance of 6.96 acres of upland habitat and 0.95 acre of aquatic habitat</td>
<td>Construction would result in the permanent loss of 0.49 acre of upland habitat and no temporary disturbance; there would be no impact to aquatic habitat</td>
<td>Construction would result in the permanent loss of 12.58 acres of upland habitat and 4.47 acres of aquatic habitat and the temporary disturbance of 3.35 acres of upland habitat and 0.49 acre of aquatic habitat</td>
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<tr>
<td>Potential Loss of Swainson’s Hawk Nesting and Foraging Habitat Resulting from Construction</td>
<td>No effect</td>
<td>Construction would result in the permanent loss of 231.52 acres of foraging habitat and 12.45 acres of potential nesting habitat and the temporary disturbance of 6.83 acres of potential nesting habitat</td>
<td>Construction would result in the permanent loss of 53.94 acres of foraging habitat and 5.40 acres of potential nesting habitat and the temporary disturbance of 0.59 acre of potential nesting habitat</td>
<td>Construction would result in the permanent loss of 224.60 acres of foraging habitat and 21.42 acres of potential nesting habitat and the temporary disturbance of 7.17 acres of potential nesting habitat</td>
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<tr>
<td>Potential Effects on Steelhead Resulting from Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality Effects</td>
<td>No effect</td>
<td>Construction activities could result in sediments or contaminants entering streams</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Steelhead Habitat and Channel Morphology</td>
<td>No effect</td>
<td>Construction in and adjacent to streams could affect channel morphology and streamside vegetation</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Water Temperature Effects</td>
<td>No effect</td>
<td>Minimal impact to water temperature from removal/addition of shading</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Interference with Steelhead Movement</td>
<td>No effect</td>
<td>Dewatering activities associated with construction could interfere with fish movement</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
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<tr>
<td>Disturbance to Potential Spawning Habitat</td>
<td>No effect</td>
<td>Construction associated with the bridge over Suisun Creek could result in disturbance to spawning habitat located 20 feet downstream of bridge</td>
<td>No effect</td>
<td>Same a B</td>
</tr>
<tr>
<td>Disturbance and Direct Injury to Steelhead</td>
<td>No effect</td>
<td>Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B, but to a lesser extent due to less construction in the vicinity of Ledgewood Creek</td>
</tr>
<tr>
<td>Potential Water Quality Effects on Steelhead Resulting from Operations</td>
<td>No effect</td>
<td>Increase in impervious surfaces could result in increase in pollutants entering streams</td>
<td>Same as B, but no effects at Suisun Creek</td>
<td>Same as B</td>
</tr>
<tr>
<td>Potential Interference with Fish Movement Resulting from Operations</td>
<td>No effect</td>
<td>Culvert extension in Ledgewood Creek under SR 12E would worsen fish passage conditions</td>
<td>Same as B</td>
<td>Same as B</td>
</tr>
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### 3.3.6—Invasive Species

| Potential Introduction and Spread of Invasive Plant Species Resulting from Construction | No effect | Construction activities have the potential to spread invasive plant species | Same as B | Same as B | Same as B | Avoid the Introduction and Spread of Invasive Plants—Minimize Soil Disturbance, Restore Disturbed Areas Using Native Species |
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<td>Removal of Native Trees</td>
<td>No effect</td>
<td>Loss of 8 mature native oak trees</td>
<td>Loss of 6 mature native oak trees</td>
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<td>None</td>
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Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project

October 2012
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<td>SR 12W</td>
<td>SR 12 West</td>
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<td>VELB</td>
<td>valley elderberry longhorn beetle</td>
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<td>vehicle hours of travel</td>
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<td>WET</td>
<td>waste extraction test</td>
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<tr>
<td>WPCP</td>
<td>Water Pollution Control Plan</td>
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<tr>
<td>Y</td>
<td>Yolo silty clay loam</td>
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Chapter 1  Proposed Project

1.1  Introduction

The California Department of Transportation (Department), in cooperation with the Solano Transportation Authority (STA), proposes to improve the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) interchange in the vicinity of the city of Fairfield, Solano County, California. The project area, shown in Figure 1-1, is located along 13 miles of the highways. The temporal and geographic scope of the analysis for each resource area is defined within each resource chapter. The existing I-80/I-680/SR 12 interchange complex was constructed approximately 40 years ago, and current traffic demands result in congestion, delays, and unacceptable levels of service (LOS). The proposed improvements are designed to reduce congestion, accommodate anticipated increases in traffic, and address safety concerns.

The fundable first phase of either alternative of the proposed project is fully funded in the financially constrained Regional Transportation Plan (RTP) Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion (Appendix 1, page 126). The Federal Highway Administration (FHWA) and Federal Transportation Administration (FTA) found the 2009 RTP and the 2009 TIP (Revised) to be in conformity with the SIP on May 29, 2009. The proposed project is also included in the MTC financially constrained 2011 TIP as TIP ID SOL070020. The MTC adopted the 2011 TIP on October 27, 2010, and the FHWA and FTA adopted the 2011 TIP on December 14, 2010. The design concept and scope of the proposed project is consistent with the project description in the 2009 RTP and the 2011 TIP, and the assumptions in the Metropolitan Transportation Commission’s regional emissions analysis.

Table 1-1 presents the proposed funding sources for specific portions for the first phase of either alternative.

<table>
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<tr>
<th>RTP Reference Number</th>
<th>Funding Type and Source</th>
<th>Funding Amount</th>
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<td>230326</td>
<td>Improve I-80/I-680/SR12 Interchange, including connecting I-680 northbound to Route 12 westbound (Jamieson Canyon), adding connectors and reconstructing local interchanges (Phase 1)</td>
<td>$487.9</td>
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<tr>
<td>22700</td>
<td>Construct Parallel Corridor north of I-80 from Red Top Road to Business Center Drive (portion of funding shown in RTP)</td>
<td>$35.0</td>
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<td>230687</td>
<td>I-680/I-80 interchange in Solano County — widen to add an express lane direct connector (portion of funding shown in RTP)</td>
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<td><strong>Total Funding</strong></td>
<td></td>
<td><strong>$750.9</strong></td>
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1.2 Purpose and Need

1.2.1 Purpose of the Proposed Project

As described in more detail below, the purpose of the I-80/I-680/SR 12 Interchange Project (proposed project) is to reduce congestion through the interchange, reduce cut-through traffic on local roads, encourage the use of high-occupancy vehicle (HOV) lanes and ridesharing, improve safety conditions, accommodate existing and future traffic volumes on the highways, and facilitate adequate inspection and enforcement at the I-80 truck scale facilities. The alternatives presented in this document meet all of the purposes listed below. The fundable first phases of the alternatives do not include the relocation of the truck scales and therefore, would not address the purposes specified under 5 and 6 below. However, they would meet the remaining purposes and would partially meet number 5 by providing congestion relief.

1. Reduce congestion through the I-80/I-680/SR 12 interchange complex: Highway widening and interchange improvement would accommodate current and future traffic volumes, including trucks, as well as to reduce congestion and improve travel time reliability through the I-80/I-680/SR 12 Interchange complex.

2. Reduce the amount of cut-through traffic on local roads: Improvements to the mainline and highway interchanges would reduce congestion on the highways, thereby making it less attractive for motorists to use local roads instead of the mainline (as discussed below in Section 1.3). The proposed project would also improve access to local community resources and businesses and reduce delays for emergency service vehicles.

3. Encourage the use of HOV lanes and ridesharing: The addition of HOV lane connectors between I-80 and I-680 and HOV lanes on I-680 would encourage the use of HOV lanes and thereby encourage ridesharing. Both I-80 and I-680 are part of the planned High Occupancy Vehicle (HOV) network system (MTC Transportation 2030 Plan for the San Francisco Bay Area and the MTC Transportation 2035 Plan). Extending limits of HOV lanes increases time savings for carpool lane users. Similarly express bus routes use HOV lanes to bypass congestion and provide faster more reliable service.

4. Improve safety conditions: The proposed project would reduce accidents and improve safety in the I-80, I-680, and SR 12 corridors by relieving congestion through highway widening and by reducing lane changes over short distances through off- and on-ramp modifications for interchanges and the relocation of the westbound truck scale.

5. Accommodate current and future truck volumes on highways: The proposed project would improve the westbound truck scales and access to them from I-80 and SR 12 East (SR 12E). These improvements would accommodate current and future truck volumes on the mainlines by reducing the number of trucks queuing to exit at the truck scales and by providing longer on-ramps to allow trucks to gain speed before entering traffic.

6. Facilitate adequate inspection and enforcement at truck scales: The new westbound truck scale facility would be designed to accommodate anticipated truck traffic growth until at least 2035, ensuring that all trucks are weighed and inspected according to California Highway Patrol (CHP) requirements.
1.2.2 Need for the Proposed Project

The I-80/I-680/SR 12 interchange is a point at which two major interstate freeways and one state highway converge. When it was constructed in the 1960s, the interchange was located in a relatively rural setting, surrounded by agricultural lands with mountains to the north and the vast Suisun Marsh to the south.

Since the 1960s, the San Francisco Bay Area and northern California region in general have experienced rapid population growth. The Bay Area’s population has grown by more than 86% during this time; Solano County’s population has more than tripled. This tremendous amount of growth has resulted in substantial increases in regional traffic passing through the interchange complex area, as well as substantial changes in the immediately surrounding land uses. Societal and economic trends toward an increased numbers of cars per household, decreased affordability of housing in the Bay Area, increased distances that people are willing to travel to work, and increased amounts of discretionary time and income for recreation have also contributed to an increase in regional traffic.

Eastbound and westbound regional truck scales and inspection facilities are also located within the I-80/I-680/SR 12 interchange complex. The location of the truck scales within the interchange complex is ideal for monitoring and enforcing truck weight and safety requirements because it provides a single location that can monitor truck traffic in both the eastward and westward directions on I-80, I-680, and SR 12. However, the volume of trucks to be weighed and inspected has increased dramatically since the 1960s. Trucks must exit the freeway mainline, then re-enter it after inspection. The exiting and entering of a large number of trucks creates a severe weaving problem, which is made worse by the size, limited maneuverability, and lower speeds of large trucks. In response to this issue, STA, in cooperation with the Department and the CHP, conducted the Cordelia Truck Scales Relocation Study (Solano Transportation Authority 2005), which was completed in February 2005. The study evaluated alternatives for relocating and expanding the truck scale facilities and determined that the preferred location for the expanded truck scale facilities was within the existing interchange complex. The relocation of the I-80 eastbound Cordelia Truck Scales facility was addressed previously as a separate project with independent utility. Relocation and expansion of the westbound truck scale facility are included as part of the proposed project.

The specific deficiencies to be addressed by the proposed project are described below.

**Capacity, Transportation Demand and Safety**

**Traffic Congestion**

The I-80/I-680/SR 12 interchange is vital to the mobility of both the local area and the entire northern California region because it serves a multitude of destinations. It is a critical corridor for local and regional commute travel. During the past ten years, commute travel through the area has increased substantially in response to the growing Bay Area economy and expansion of employment centers; these changes have increased housing prices in the Bay Area, pushing residents farther east in search of affordable housing. By 2030, commute traffic is projected to constitute between 40% and 75% of the total number of vehicles traveling through the project area.
Chapter 1. Proposed Project

The current traffic volumes along segments of I-80 and I-680 in the project area create heavy traffic congestion. The most congested period occurs during the p.m. peak hour.

During the a.m. peak hour, a queue typically develops on westbound I-80 at the SR 12 West (SR 12W) connector. This occurs primarily because of trucks that are unable to keep up speed on the SR 12W grade toward Napa, resulting in slow traffic in the outside lane on I-80. This queue, combined with trucks entering from the truck scales and weaving vehicles headed to the Suisun Valley Road off-ramp or southbound I-680 connector, in turn results in slow-moving queues in the two outermost lanes. The congestion typically extends from the westbound off-ramp from SR 12W to SR 12E.

During the p.m. peak hour, a bottleneck develops on eastbound I-80 between the Travis Boulevard on-ramp and the Air Base Parkway off-ramp, resulting in queues that extend back to the I-80/West Texas Street interchange. The signalized intersections on SR 12E at Beck and Pennsylvania Avenues also cause some queuing on eastbound SR 12E during the p.m. peak period.

Currently, the following roadway segments within the project area experience traffic operating speeds of less than 35 miles per hour (mph) during the peak.

- Westbound I-80 (outside lane only) between the I-80/I-680 interchange and SR 12W during the a.m. peak period.
- Westbound I-80 (outside two lanes only) between SR 12E and the Suisun Valley Road off-ramp during the a.m. peak period.
- Northbound I-680 between Central Avenue and I-80 during the p.m. peak period.
- Eastbound I-80 between SR 12W and the Cordelia Truck Scales during the p.m. peak period.
- Eastbound I-80 between Beck Avenue and Travis Boulevard during the p.m. peak period.

The current average freeway travel speeds through the project area are 46 mph during the a.m. peak period and 33 mph during the p.m. peak period. These average speeds are well below the 59.7-mph threshold identified in the Highway Capacity Manual as the minimum operating speed associated with acceptable mainline freeway operations as indicated in the 2009 Traffic Operation Report prepared for this project. The 2009 Traffic Operations Report indicates that without the proposed project, travel speeds will drop to 42 mph during the a.m. peak period and 16 mph during the p.m. peak period by 2035. With the freeway system operating at or near capacity, the duration of congestion would increase from 1–2 hours in the a.m. peak period to 3–4 hours. In the p.m. peak period, the duration of congestion would increase from 1.5 to 2.5 hours to 6–7 hours.

Traffic Diverting to Local Roads

The congestion and delays experienced on the freeway system encourage some motorists to exit the freeways at interchanges within the I-80/I-680/SR 12 interchange complex and use local surface streets in the vicinity to bypass the congestion on the freeway mainlines. Most notable is the amount of traffic using surface streets to bypass the congestion experienced at the transition from northbound I-680 to eastbound I-80. This segment operates poorly during the p.m. peak period. 

Traffic Diverting to Local Roads

The congestion and delays experienced on the freeway system encourage some motorists to exit the freeways at interchanges within the I-80/I-680/SR 12 interchange complex and use local surface streets in the vicinity to bypass the congestion on the freeway mainlines. Most notable is the amount of traffic using surface streets to bypass the congestion experienced at the transition from northbound I-680 to eastbound I-80. This segment operates poorly during the p.m. peak period.
period, particularly on Fridays, when long queues develop between the I-80/I-680 interchange and the I-680/Gold Hill Road interchange. This diversion will increase substantially by 2035 without the proposed project because freeway travel times system-wide are projected to increase by up to 300% in the p.m. peak hour.

The three primary diversion routes on surface streets are:

- Central Way to Pittman Road.
- Gold Hill Road to Ramsey Road to Cordelia Road.
- Gold Hill Road to Lopes Road to Cordelia Road.

It is estimated in the Traffic Operations Report that up to 1,450 vehicles in the p.m. peak hour currently divert from the northbound I-680 to eastbound I-80 connector to alternate routes and re-enter eastbound I-80 or eastbound SR 12 at locations east of the bottleneck location (Abernathy Road, Chadbourne Road, or Beck Avenue). This cut-through traffic creates a series of problems along the local street system:

- **Increased congestion and delays on local roads:** Several local street intersections are currently operating at unacceptable levels of service (as defined in the 2009 Traffic Operations Report) because of drivers choosing local roads over the freeway system, including Ramsey Road/Bridgeport Avenue, Lopes Road/I-680 ramp/I-80 ramp, Pittman Road/Central Way, and Rockville Road/Suisun Valley Road. Several other diversion routes are anticipated to be used by 2035 without the proposed project, resulting in unacceptable operations at several locations along local streets such as Business Center Drive and the planned North Connector roadway that will parallel I-80 along its north side.

- **Reduced accessibility for local properties:** The increased volume of traffic and congestion on local roadways results in reduced accessibility for adjacent properties. These properties include important community resources, such as Solano Community College, Rodriguez High School, and Fairfield Fire Department Station 5.

The surface streets in the vicinity of the interchange project area serve as transit and emergency vehicle routes for area neighborhoods. Fairfield and Suisun Transit operate ten routes, including Routes 7 (Cordelia Villages) and 3 (Outer Fairfield Loop), which use surface streets in the project vicinity. Traffic diverted to local roadways from I-680 and I-80 during peak commute times creates more traffic on these local streets which can affect emergency vehicle response times and impedes transit service for area residents and businesses.

Also, within the project area, several interchanges provide access to local businesses and land uses, including I-680/Gold Hill Road; I-80 at Red Top, Green Valley, Suisun Valley, and Abernathy Roads; and SR 12/Chadbourne Road. Currently, congestion on I-80 and I-680 results in queues on several on- and off-ramps that provide local access.

In the a.m. peak period, the following ramps are congested:

- Green Valley Road on-ramp to westbound I-80.
- Suisun Valley Road off-ramp from westbound I-80.
In the evening peak period, the following ramps are congested.

- Green Valley Road off-ramp from eastbound I-80.
- Central Way off-ramp from northbound I-680.
- Suisun Valley Road on- and off-ramps to and from eastbound I-80.
- Travis Boulevard on-ramp to eastbound I-80.
- Air Base Parkway off-ramp from eastbound I-80.

In the future, as congestion worsens on I-80 and I-680, additional on- and off-ramps are projected to have significant queues or delays, including the Red Top Road on- and off-ramps to and from eastbound I-80 and the Gold Hill Road on- and off-ramps to and from northbound I-680.

**Truck-Related Congestion**

The Cordelia Truck Scales (known formally as the Cordelia Commercial Vehicle Enforcement Facility), located on I-80 between Suisun Valley Road and SR 12E, were built in 1958. There are two truck scale facilities located within the I-80/I-680/SR 12 interchange complex: one serving the eastbound direction and one serving the westbound direction. Only the facility serving westbound truck traffic is addressed as part of the proposed project; the relocation and replacement of the eastbound facility was addressed in a previous project.

Although the truck scales are currently in an optimal location to capture virtually all truck traffic traveling on I-80, I-680, and SR 12, they also are located along the most congested freeway segment in Solano County. Trucks slowing to enter the short (approximately 500-foot) off-ramp to the westbound truck scales, trucks queuing onto the mainline from the short off-ramp to the facility, and trucks accelerating to enter I-80 on the short on-ramp from the scales exacerbate the congestion problem. The I-80/I-680/I-780 Major Investment Study/Corridor Study, Segment 1: I-80/I-680/SR 12 Tier 2 Evaluation Report (MIS) (Solano Transportation Authority 2004) states that the truck scales cause substantial congestion within this segment of I-80 because of truck weaving and backup on the mainline facility. The location of the current truck scale facilities also constrains the widening of I-80 in this segment, requiring that the facilities be relocated before additional improvements are pursued along this section of I-80.

Currently, congestion develops on I-80 during the commute peak hours because of trucks weaving with traffic streams to and from the I-680 connector ramps, the Suisun Valley Road/Green Valley Road ramps, and the SR 12E and SR 12W connector ramps. This congestion will continue to compound by 2035. The a.m. peak-hour congestion in the westbound direction extends nearly 4.5 miles, from the I-80/I-680 junction to West Texas Street. Heavy westbound on-ramp volumes from the I-80/SR 12E and Air Base Parkway interchanges also contribute to the congestion during the a.m. peak period.

Although the current combination of general vehicle traffic and truck volumes creates congestion, the I-80 mainline traffic volume is projected to increase by about 2% per year, to 270,000 daily vehicles in 2035. Along with the truck traffic increase described above, the traffic increases will exacerbate current congestion if the westbound truck scales are not expanded to
accommodate higher truck volumes and moved to a location that provides for maximum weaving lengths and for braiding of critical traffic streams.

**Unreliable Freight Transport**
Currently, travel times for truck trips through the corridor are unpredictable because of the queues that develop in the vicinity of the truck scale facility and congestion that is caused partially by trucks maneuvering into and out of the truck scale facility, as described above. This unpredictability will increase as general vehicle and truck volumes grow, as described above.

**Traffic Safety**
The Department maintains statistics for all State highway facilities for three types of accident rates: the total accident rate, accidents involving fatalities and accidents involving fatalities or injuries. Within the project limits most freeway segments of I-80 experience a higher total accident rate and higher fatal or injury accident rate compared to the average statewide rate for similar types of facilities (Table 1-2). Half of the segments experience a higher than average fatal accident rate than the average statewide rate. Within the project limits of SR-12 East half of the sections experience higher than average total and fatal accident rates compared to the average statewide rate for similar types of facilities and most sections experience a higher than average accident rate for fatal plus injury accidents compared to the average statewide rate for similar facilities.

In reviewing the accident summary records 65% of the accidents occurred on I-80 during commute periods, with over 50% of the accidents being rear-end collisions. On SR 12 East over 50% of the accidents occurred during the commute periods, with over 60% of the accidents being rear-end collisions. On SR 12 West 70% of the accidents occurred during the commute periods, with 48% of the accidents being rear-end collisions. This combination of high accident rates during commute periods and a high percentage of rear-end type collisions is likely related to the congestion observed in these sections.

The effect of slow moving trucks decelerating into, or accelerating out of, the westbound truck scales combined with already congested lanes is described in Section 3.1.6-6, and in the 2009 Traffic Operations Report. Increased vehicle traffic, and in particular increased truck volumes, will exacerbate the accident rate based on the general correlation between increased volumes and congestion and increased accident rates.

The proposed improvements will reduce current and projected congestion as well as braid several congested weave movements. Therefore, it is anticipated that construction of the proposed improvements will result in accident rates dropping to, or below, the statewide average for similar facilities.
<table>
<thead>
<tr>
<th>Location</th>
<th>Post Mile</th>
<th>Number of Accidents</th>
<th>Actual Accident Rate (Accidents per Million Vehicle Miles)</th>
<th>Average Accident Rate (Accidents per Million Vehicle Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>Fatal</td>
</tr>
<tr>
<td><strong>Western Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—westerly project limit to Red Top Road undercrossing</td>
<td>10.89 to 11.39</td>
<td>88</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>I-80—Red Top Road undercrossing to SR 12W/I-80 connector structure</td>
<td>11.39 to 11.98</td>
<td>69</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>I-80—SR 12W/I-80 undercrossing to Green Valley Road overcrossing</td>
<td>11.98 to 12.74</td>
<td>155</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>I-80—Green Valley Road overcrossing to I-680/I-80 connector structure</td>
<td>12.74 to 13.09</td>
<td>121</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>I-680—0.5 mile south of Gold Hill Road overcrossing to I-80/I-680 connector</td>
<td>9.5 to 13.1</td>
<td>94</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>SR 12W—0.5 mile west of Red Top Road to SR 12W/I-80 connector</td>
<td>1.75 to 2.76</td>
<td>42</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>I-80—I-680/I-80 connector structure to Suisun Valley Road overcrossing</td>
<td>13.09 to 13.49</td>
<td>141</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td><strong>Central Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—Suisun Valley Road overcrossing to SR 12E/I-80 connector structure</td>
<td>13.49 to 15.81</td>
<td>472</td>
<td>0</td>
<td>137</td>
</tr>
<tr>
<td>I-80—SR 12E/I-80 connector structure to Abernathy Road overcrossing</td>
<td>15.81 to 16.17</td>
<td>62</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td><strong>Eastern Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—Abernathy Road overcrossing to West Texas Street undercrossing</td>
<td>16.17 to 17.20</td>
<td>173</td>
<td>2</td>
<td>39</td>
</tr>
<tr>
<td>SR 12E—SR 12E/I-80 connector to Chadbourne Road undercrossing</td>
<td>1.85 to 2.22</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SR 12E—Chadbourne Road undercrossing to Beck Avenue</td>
<td>2.22 to 3.20</td>
<td>63</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>SR 12E—Beck Avenue to Pennsylvania Avenue</td>
<td>3.20 to 4.07</td>
<td>64</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>SR 12E—Pennsylvania Avenue to Civic Center Boulevard</td>
<td>4.07 to 4.74</td>
<td>70</td>
<td>0</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: California Department of Transportation 2006–2008.

Notes: Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.

Source: California Department of Transportation 2004–2006.

Notes: Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.
Logical Termini and Independent Utility

In its memorandum titled *The Development of Logical Project Termini*, the Federal Highway Administration provides guidance that establishes the logical termini (end points) and independent utility of a particular proposed project (Federal Highway Administration November 5, 1993). The proposed project must satisfy an identified need (e.g., safety, rehabilitation, economic development, or capacity improvements) and should be considered in the context of the local area (e.g., socioeconomics, topography, future travel demand, and other infrastructure improvements in the area). The U.S. Department of Transportation (USDOT)/FHWA regulations identify three general principles used in demonstrating a proposed project’s logical termini and independent utility (23 Code of Federal Regulations [CFR] 771.111[f]). To ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are evaluated fully, the proposed project must meet the following criteria.

- **Connect logical termini and be of sufficient length to address environmental matters on a broad scope:** In *The Development of Logical Project Termini*, logical termini for project development are defined as: 1) rational end points for a transportation improvement, and 2) rational end points for a review of the environmental impacts. The environmental impact review frequently covers a broader geographic area than the strict limits of the transportation improvements. In the past, the most common termini have been points of major traffic generation, especially intersecting roadways. This is because, in most cases, traffic generators determine the size and type of facility being proposed. Choosing a corridor of sufficient length to evaluate all impacts need not preclude staged construction. Construction may be “staged,” or programmed for shorter sections or discrete construction elements as funding permits.

- **Have independent utility or significance:** A project that is independent must be usable and must be a reasonable expenditure, even if no additional transportation improvements in the area are made. A project is considered “independent” when it can function, or operate, on its own, without further construction of an adjoining segment. The project must serve a significant purpose even if a second, related project is not built.

- **Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements:** A project must not preclude the opportunity to consider alternatives for a future, related transportation improvement. Project termini must be selected to prevent a highway improvement from “forcing” further improvements that may have negative consequences not addressed in environmental studies.

The proposed project meets these criteria, as described here.

- **The project has logical termini and is of sufficient length to address environmental matters on a broad scope:** The alternatives (and their fundable first phases) of the proposed project involve comprehensive interchange improvements, freeway auxiliary lanes, and connecting ramps and collector-distributor roadways to address the congestion and safety issues associated with the I-80/I-680/SR 12 interchange complex. The end points, inclusive of all alternatives, for the proposed project are as follows.
  - **I-80:** approximately 6.2 miles from west of Red Top Road in the west to west of West Texas Street in the east.
– **I-680**: approximately 3.0 miles from Gold Hill Road in the south to I-80 in the north.
– **SR 12W**: approximately 1.1 miles from west of Red Top Road in the west to I-80 in the east.
– **SR 12E**: approximately 3.0 miles from I-80 in the west to the Fairfield Overhead (railroad tracks) in the east.

The transportation needs discussed above fall within these segments. These needs can be addressed without creating needs upstream or downstream. Because the project area encompasses a geographic area of sufficient size and scope for improvements, environmental issues are assessed at a comprehensive study area level related to each particular resource and discussed in Chapter 3.

- **Other improvements would not be needed for the proposed project to improve traffic conditions**: As described in the 2009 *Traffic Operations Report*, the proposed project (and the fundable first phase) would provide substantial improvement over no-project conditions by clearing bottlenecks within the I-80 portion of the project corridor during the a.m. peak hour and substantially reducing queues in the p.m. peak hour. The facilities at each end of the project corridor would be designed to Department standards to conform to main freeway lanes; the proposed project would clear all mainline sections of deficiencies experienced under no-project conditions in the a.m. peak hour, and would greatly improve conditions in the p.m. peak hour over the no build. Some congestion would remain in the p.m. peak hour because of queuing some 6 miles outside the project area. This congestion will be addressed by a separate project.

- **The project does not need to be physically connected or otherwise related to another project to function. Rather, it can function as a separate and independent project**: The fundable first phase of the proposed project is included in the Metropolitan Transportation Commission’s (MTC’s) 2009 *Transportation 2035 Plan for the San Francisco Bay Area* and STA’s 2004 MIS, which identified a set of independent, implementable projects to improve traffic flow on all Solano County freeways, including the I-80/I-680/SR 12 interchange improvements. The analysis presented in this document looks beyond the direct project area to ensure that the proposed project will not result in impacts outside the project area. As a result, the scope of the proposed project includes end points that extend beyond the actual interchange complex; further, because the proposed improvements are of sufficient length and scope, implementing the proposed project would not substantially increase congestion or safety problems outside the defined project area beyond those that would occur under no-project conditions. Therefore, the proposed project would not force immediate transportation improvements on the remaining segments of the freeways outside the project footprint. The proposed project would not confine future improvements to the facilities to which it connects.
Figure 1-1
Project Location

Project Location

Napa Co.
Solano Co.

Fairfield

Rockville

Cordelia

Napa

Vallejo

Martinez

San Pablo Bay

Suisun Bay

Sacramento River

Contra Costa Co.

Solano Co.

Pittsburg

Antioch

Martinez

Cordelia

Rockville

Fairfield

Project Location

Napa Co.
Solano Co.

Sacramento

Figure 1-1
Project Location
Chapter 2  Project Alternatives

2.1  Project Description

This chapter describes the proposed action and the design alternatives that were developed to achieve the project purpose and need while avoiding or minimizing environmental impacts. The alternatives are Alternative B and Alternative C; and the “No Build” Alternative. The purpose of the proposed project, described in detail in Chapter 1, is to reduce congestion through the I-80/I-680/SR 12 interchange complex, reduce the amount of cut-through traffic on local roads, accommodate current and future truck volumes on highways, facilitate adequate inspection and enforcement at the westbound truck scales, improve safety conditions, and encourage the use of high occupancy vehicle (HOV) lanes and ridesharing.

The proposed project is located along I-80, I-680, and SR 12 in Solano County, California (Figure 2-1). The proposed project involves improvements on an approximately 6.2-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximately 3.1-mile-long segment of I-680 between Gold Hill Road and I-80, an approximately 1.1-mile-long segment of SR 12W between 0.5 mile west of Red Top Road and I-80, and an approximately 3.0-mile-long segment of SR 12E between I-80 and Civic Center Boulevard. Within the limits of the project area, I-80 is a six- to ten-lane freeway, SR 12E is a divided four-lane highway, I-680 is a four-lane freeway, and SR 12W is currently an undivided two-lane highway. Because of the geographical extent of the proposed project, for the purpose of discussion in this study, the project area is divided into three segments: western, central, and eastern (Figure 2-1). The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/Suisun Valley Road interchange. The central segment begins at the I-80/Suisun Valley Road interchange and ends at the SR 12E/Chadbourne Road interchange. The eastern segment begins at the SR 12E/Chadbourne Road interchange and ends at the Fairfield overhead, where SR 12E crosses over the Union Pacific Railroad (UPRR) tracks just west of Suisun City.

2.2  Approach to Alternatives

2.2.1  Scope of Alternatives in this EIR/EIS

The I-80/I-680/SR 12 Interchange Project is a project by the Department and is subject to state and federal environmental review requirements, including the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). In developing the scope of this environmental impact report/environmental impact statement (EIR/EIS) and the project alternatives, three main factors were considered for the NEPA and CEQA analysis:

- Project alternatives need to meet the future traffic demand within the 20-year planning horizon.
Chapter 2. Project Alternatives

- CEQA project alternatives must be comprehensive enough to allow for a Notice of Determination (NOD) under CEQA to be issued and project right-of-way to be acquired for the first phase and preserved for the full build alternative.

- A Phase 1 for each alternative that is “fundable” must be developed so that a Record of Decision (ROD) under NEPA can be issued.

Two alternatives, Alternative B and Alternative C, have been developed, as well as a fundable first phase for each respective alternative. Completing a CEQA analysis on the full build (albeit not fundable within MTC’s RTP 2035 horizon) project alternative also facilitates environmental review of the project in the future, and allows STA and local agencies in the project area to proceed with planning activities and protecting land for future right-of-way needs. Local jurisdictions—in this case the City of Fairfield and Solano County—will be able to use the CEQA analysis in this EIR/EIS for planning purposes. The necessary right-of-way can be taken into account in local planning and development. This approach also provides analysis of a fully fundable first phase for each alternative that meets NEPA and FHWA criteria so that a Record of Decision can be issued while providing analysis and approval of the long-term interchange design for the proposed project.

2.2.2 Alternatives Analyzed in the EIR/EIS

In light of these requirements that are unique to CEQA and NEPA, two alternatives (Alternatives B and C) each with a corresponding fundable first phase (Alternative B, Phase 1, and Alternative C, Phase 1) are being evaluated in this EIR/EIS. Alternatives B and C are full build alternatives addressing comprehensive improvements to the I-80/I-680/SR 12 interchange complex; the widening of I-680 and I-80; and the relocation, upgrade, and expansion of the westbound truck scales on I-80. It is anticipated that at the end of the environmental review, the Department, as lead agency under CEQA, will adopt one of the alternatives so that STA and local agencies in the project area (as responsible agencies under CEQA) can proceed with planning activities and protecting land for future right-of-way needs. Additionally, the Department, as the lead agency under NEPA (assigned from FHWA under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA-LU]), can proceed with issuing a Record of Decision on Alternative B, Phase 1 or Alternative C, Phase 1. The Phase 1s of the alternatives in this EIR/EIS represent the fundable first phases of the alternatives. Phase 1 construction is expected to begin in 2013 and be completed by 2016.\(^1\) There are no projected dates for construction of improvements beyond Phase 1 at this time. The total escalated cost for Alternative B, Phase 1 is estimated to be $580,000,000 and $690,000,000 for Alternative C, Phase 1. (Costs are more fully discussed in Section 2.4, and illustrated in Table 2-4.) All of the alternatives are discussed more completely below.

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\(^1\) This EIR/EIS uses the analysis year of 2015 to represent the construction-year for the project. The construction year analysis (2015) represents conditions and effects of the project alternatives upon completion of the fundable first phase (Phase 1s). Year 2015 was deemed appropriate for the construction-year because traffic forecasts and other environmental information is readily available for the year 2015 and the fundable first phase is anticipated to be complete in essentially the same time period (year 2016).
Both alternatives and both fundable first phases (Phase 1) meet the logical termini criteria and have independent utility. The intended project approvals are shown in Table 2-1. While the fundable first phases (Phase 1) for both alternatives would not address all project needs, they would reduce congestion and cut-through traffic on local roads, and improve safety conditions (Table 2-2). The fundable first phases (Phase 1) for both alternatives would be usable and function even if the full build project were not constructed.

Table 2-1. Required CEQA and NEPA Approvals

<table>
<thead>
<tr>
<th>Agency</th>
<th>Approval</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Department of Transportation</td>
<td>Adopt either Alternative B or Alternative C as the interchange and adopt a NOD under CEQA.</td>
<td>To be adopted upon completion of Final EIR/EIS</td>
</tr>
<tr>
<td>(lead agency under CEQA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Department of Transportation</td>
<td>Adopt either Alternative B, Phase 1 or Alternative C, Phase 1. May issue a ROD under NEPA.</td>
<td>To be adopted upon completion of Final EIS</td>
</tr>
<tr>
<td>(lead agency under NEPA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solano Transportation Authority</td>
<td>Adopt either Alternative B or Alternative C as the interchange and adopt a NOD under CEQA.</td>
<td>To be adopted after the Department adopts NOD for EIR</td>
</tr>
<tr>
<td>(responsible agency under CEQA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Transportation Commission</td>
<td>Adopt either Alternative B or Alternative C as the interchange and adopt a NOD under CEQA.</td>
<td>To be adopted upon completion of the Final EIR/EIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Chapter 2. Project Alternatives

#### Table 2-2. Phase 1 of Alternatives Addressing Key Project Purpose and Need

<table>
<thead>
<tr>
<th>Underlying Need</th>
<th>Existing Conditions</th>
<th>No Project 2035</th>
<th>Alternative B 1 2035</th>
<th>Alternative C 1 2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestion</td>
<td>Duration of Congestion:</td>
<td>Duration of Congestion:</td>
<td>Duration of Congestion:</td>
<td>Duration of Congestion:</td>
</tr>
<tr>
<td></td>
<td>A.M.: 1–2 hours</td>
<td>Increase to</td>
<td>A.M.: 1.5 hours</td>
<td>Decrease to</td>
</tr>
<tr>
<td></td>
<td>P.M.: 1.5–2.5 hours</td>
<td>A.M.: 3 hours</td>
<td>P.M.: 4.5 hours</td>
<td>A.M.: 2.5 hours</td>
</tr>
<tr>
<td></td>
<td>Accumulated vehicle hours of delay during a.m. peak hour is 1,140 hours and during p.m. peak hour is 1,885 hours</td>
<td>P.M.: 6 hours</td>
<td></td>
<td>P.M.: 5 hours</td>
</tr>
<tr>
<td></td>
<td>Bottleneck on SR 12E reduces traffic on I-80; not at capacity during a.m. peak</td>
<td>Bottleneck on SR 12E at Beck and Pennsylvania, with associated queuing on I-80 back to Green Valley Road in p.m. peak hours</td>
<td>Nearly 100% reduction of vehicle hours of delay in a.m. and 47% in p.m. peak hours in 2035</td>
<td>18% reduction in vehicle hours of delay in 2035</td>
</tr>
<tr>
<td></td>
<td>Bottleneck on SR 12E at Beck and Pennsylvania, with associated queuing on I-80 back to Green Valley Road in p.m. peak hours</td>
<td>Bottleneck on WB I-80 due to breakdown of Suisun Valley Road/I-80 interchange</td>
<td>Partial relief of bottlenecks on SR 12E during a.m. peak</td>
<td>5–20% reduction in travel times during a.m. peak hour</td>
</tr>
<tr>
<td></td>
<td>Bottleneck on WB I-80 due to breakdown of Suisun Valley Road/I-80 interchange</td>
<td></td>
<td>Improved operations on WB I-80 during a.m. peak</td>
<td>Increase in travel time over no-project in the EB direction (due, to some extent, to increased distances) and 70% decrease in WB direction during p.m. peak hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial relief of p.m. bottleneck at SR 12E and improved operations on WB I-80 in p.m. peak hours</td>
<td></td>
<td>Improved operations for WB SR 12E from Main Street to Pennsylvania Ave during a.m. peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No improvements to SR 12W, I-80/Red Top Road Interchange; I-80 Red Top Road Interchange</td>
<td></td>
<td>Queue on WB SR 12E during p.m. hours remains, but is reduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reduced congestion on WB I-80 and SR 12W during a.m. peak hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bottleneck at EB SR 12E would result in congestion on EB I-80 during p.m. peak hours</td>
<td></td>
</tr>
<tr>
<td>Reduce cut through traffic</td>
<td>Congestion on mainline causes freeway traffic to use local roads</td>
<td>Substantial increase in diversions to local roads; Gridlock conditions on freeway would force traffic onto local roads</td>
<td>Reduced congestion on mainline would reduce cut-through traffic to local roads</td>
<td>Reduced congestion on mainline would reduce cut-through traffic to local roads</td>
</tr>
<tr>
<td>Accommodate truck volumes</td>
<td>Substantial congestion from truck weaving and backup to mainline from facility queuing</td>
<td>Congestion to worsen significantly, causing worsened truck weaving conditions</td>
<td>Phase 1 of both alternatives will accommodate current and future truck volumes to the extent that they increase overall highway capacity and reduce overall congestion, but the westbound truck scales will not be constructed in either Phase 1 alternative.</td>
<td>Phase 1 of both alternatives will not address WB Truck Scales</td>
</tr>
<tr>
<td>Facilitate truck inspection and enforcement</td>
<td>Westbound truck scales cause substantial congestion due to truck back up on the mainline and weaving</td>
<td>Westbound truck inspection and enforcement impaired due to substantially worsened conditions on mainline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve safety</td>
<td>Fatal/injury accidents rates exceed statewide average</td>
<td>Reduced safety due to increased congestion and weaving</td>
<td>Reduced weaving and congestion would improve safety</td>
<td></td>
</tr>
<tr>
<td>Encourage HOV use</td>
<td>No HOV lane connectors proposed</td>
<td>No HOV lane connectors proposed</td>
<td>Direct connectors between HOV lanes on I-80 and I-680 would allow for improved efficacy of HOV lanes</td>
<td>Direct connectors between HOV lanes on I-80 and I-680 would allow for improved efficacy of HOV lanes</td>
</tr>
</tbody>
</table>
2.3 Project Alternatives

This section describes the build alternatives. The alternatives are discussed first, with both common and unique features described in detail. The fundable first phases of the alternatives, subsets of the full build alternatives, have few common features and no discussion of such features is presented. The unique features of the Alternative B, Phase 1 and Alternative C, Phase 1 are described in detail.

2.3.1 Features Common to Alternatives (Alternatives B and C)

Western Segment

Mainline Improvements
Under both alternatives, I-80 and I-680 would be widened. I-80 would be widened to a minimum of ten lanes (four mixed-flow lanes and one HOV lane in each direction) near the eastern and western ends of the project and a maximum of 19 lanes extending east of the interchange with I-680 to approximately the westbound truck scales (Figures 2-2 and 2-3). I-680 would be widened to a minimum of six lanes (two mixed-flow lanes and one HOV lane in each direction) and a maximum of eight lanes (three mixed-flow lanes and one HOV lane in each direction) north of the Red Top Road interchange.

Freeway-to-Freeway Interchange Improvements
Under both alternatives, the connector ramps between SR 12W (Jameson Canyon Road) and eastbound I-80 would be reconstructed as two-lane connectors on new alignments. These connectors would also be braided with the new ramps for the I-80/Green Valley Road interchange. The existing UPRR underpass at I-80 would be replaced 45 feet west of the existing structure.

Interchange Improvements

SR 12W/Red Top Road/Business Center Drive Interchange Improvements
A new diamond interchange would be constructed where the relocated Red Top Road and the extension of Business Center Drive meet at SR 12W. The existing Red Top Road undercrossing at I-80 would be widened to accommodate additional HOV lanes on I-80. The westbound on- and off-ramps would be realigned. Under both alternatives, traffic in both directions traveling between I-80 west of Red Top Road and SR 12W (Jameson Canyon Road) would use the realigned portion of Red Top Road.

I-680/Red Top Road Interchange Improvements
A new interchange would be constructed at I-680/Red Top Road, consisting of an extension of Red Top Road from Lopes Road to an overcrossing over I-680 connecting to on- and off-ramps. Southbound I-680 on- and off-ramps would be located within the existing curve at Lopes Road. Ramsey Road would be realigned to accommodate the northbound on- and off-ramps, but would
Chapter 2. Project Alternatives

not be connected to the interchange. There would be a loop on-ramp to northbound I-680. Access between the interchange and Ramsey Road would not be provided.

**I-80/Green Valley Road Interchange Improvements**
The I-80/Green Valley Road interchange would be reconstructed under both alternatives. The general configuration would be the same under each alternative, with diagonal westbound off- and on-ramps and a diagonal off-ramp and loop on-ramp in the eastbound direction. The addition of the diagonal westbound off-ramp would allow the removal of Neitzel Road, the frontage road connecting Suisun Valley Road to Green Valley Road.

**Local Road Improvements**
A new road would be constructed to connect the I-80/Red Top Road interchange with Business Center Drive. Between I-80 and SR 12W, Red Top Road would be realigned to cross over the UPRR tracks and SR 12W approximately 0.25 mile west of the existing SR 12W/Red Top Road intersection. From SR 12W to Business Center Drive, the new road would be an extension of Business Center Drive, originally proposed as part of the overall North Connector project. However, improvements to the interchange at SR 12W would necessitate a slight realignment of the extended road. Therefore, this improvement is included as a component in this proposed project. Construction of the new road would necessitate considerable excavation, and the excavated soils would be used as fill in the construction of embankment associated with the proposed project.

**Bicycle and Pedestrian Facilities**
Under both alternatives the existing I-80 bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection would be closed. After construction is complete, bicyclists and pedestrians would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR12W, the UPRR tracks and connect with Red Top and McGary Road.

**Central Segment**

**Mainline Improvements**
Both alternatives propose the same basic improvements for I-80 east of Dan Wilson Creek. There would be 19 lanes on I-80 in the central segment, dropping to 12 lanes at the I-80/SR 12E interchange. Single-span bridges would replace existing bridges over Dan Wilson and Suisun Creeks. Additionally, a new single-span bridge would be constructed over Suisun Creek to accommodate traffic from the westbound truck scales.

The westbound truck scales would be relocated east of the existing truck scales and east of Suisun Creek, and they would be upgraded and expanded. The truck scales’ connectivity from SR 12E would be improved by a new direct connection from westbound SR 12E to the westbound truck scales. The ramp from I-80 to the truck scales would be braided with (pass under) the connector from SR 12E to westbound I-80.
Freeway-to-Freeway Interchange Improvements
The I-80/SR 12E interchange would be improved by grade-separating the I-80/SR 12E connector from the off-ramp from I-80 into the westbound truck scales. Westbound SR 12E would be widened to three lanes, and a separate exit into the westbound truck scales facility would be added. Access from westbound I-80 to eastbound SR 12E and from westbound SR 12E to eastbound I-80 would continue to be provided by the I-80/Abernathy Road (Suisun Parkway) and SR 12E/Chadbourne Road interchanges.

Interchange Improvements
The I-80/Suisun Valley Road overcrossing would be rebuilt with four lanes under each alternative. The ramp configurations are different under each alternative. The I-80/Abernathy Road interchange would be improved. The existing westbound on- and off-ramps would be reconstructed to accommodate a loop on-ramp. This interchange would become the I-80/Suisun Parkway interchange with completion of the eastern segment of STA’s North Connector project.

Eastern Segment

Mainline Improvements
SR 12E would be widened from four to six mixed-flow lanes (three in each direction), and the at-grade intersections of SR 12E with Beck and Pennsylvania Avenues would be replaced with overcrossings. To accommodate additional lanes on SR 12E, two box culverts containing Ledgewood Creek and a drainage canal (Alonzo Drain) west of Ledgewood Creek would be lengthened.

Interchange Improvements
The Chadbourne Road undercrossing at SR 12E would be widened on each side to accommodate additional SR 12E lanes.

Local Road Improvements
Beck Avenue would be reconstructed on a retaining wall–supported embankment between Meyer and Diamond Ways. Beck Avenue (between Meyer Way and SR 12E) would be widened by one through lane northbound.

Pennsylvania Avenue would be reconstructed on fill from 1,000 feet south of SR 12E to Illinois Street. Between Illinois Street and SR 12E, Pennsylvania Avenue would be widened by one through lane southbound. On the south side of SR 12E, Pennsylvania Avenue would be widened from one through lane in each direction to two through lanes in each direction.

A road located south of SR 12E (the southern frontage road—Meyer Way—under Alternative B, and the eastbound off-ramp to Pennsylvania Avenue under Alternative C) would intersect with Pennsylvania Avenue and then cross above the UPRR tracks, connecting to an extended West Street in Suisun City. West Street in Suisun City would be extended from Solano Street north to Spring Street. It would be on an embankment supported by retaining walls to intersect the roadway crossing over the UPRR tracks.
Utilities
As part of both alternatives, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield, Vallejo, and Benicia; the California Department of Water Resources; and the Suisun-Solano Water Authority. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

Pacific Gas and Electric Company (PG&E)–owned electrical and gas lines within the project area will be affected by construction and operation. Towers for two 115-kilovolt (kV) electrical transmission lines that cross I-80 at the SR 12E interchange (Vaca-Dixon-Ignacio Line 1 and Line 2) and one tower on Line 1 in the vicinity of the extension of Red Top Road between I-80 and SR 12W would be relocated. Additionally, the Suisun Tap 115–kV line that crosses SR 12E at Pennsylvania Avenue would be relocated perpendicular to the highway. The Vaca-Suisun-Jameson tower line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. Under both alternatives, the line would be raised to accommodate the proposed project. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges would be modified or realigned, and it may be necessary to acquire new easements. Cable lines belonging to Comcast and located within local roads will be relocated where necessary. Qwest Communications has a fiber conduit mounted on the UPRR bridge that will be relocated along the new bridge.

Kinder Morgan operates a liquid fuel line that runs along the UPRR line near Suisun City and leaves the UPRR right-of-way along the proposed West Street realignment. The extension of West Street would necessitate relocation of this pipeline.

Telephone facilities within the project area include local, long-distance, and local service (i.e., TelNet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department’s procedures.

Bicycle and Pedestrian Facilities
As part of the proposed project, existing Fairfield Linear Park would be reconstructed north of the proposed project prior to project construction so that there would be no interruption of use. It would be realigned along the north side of the roadway in the vicinity of the Abernathy Road/I-80 interchange.
2.3.2 Unique Features of Alternative B

This section describes improvements under Alternative B that are different from those under Alternative C.

Western Segment

Mainline Improvements
Eastbound I-80 would be realigned to the south in the vicinity of Green Valley Creek to accommodate both the I-680 connectors and through I-80 HOV lanes in the median (Figure 2-2). The UPRR overhead on I-680 (where I-680 crosses the UPRR tracks) would be widened to accommodate the widening of the highway. Westbound I-80 would be realigned to the north in the vicinity of Green Valley Creek to accommodate both the I-680 connectors and through I-80 HOV lanes in the median.

Freeway-to-Freeway Interchange Improvements
Improvements to the I-80/SR 12W interchange would include widening existing facilities and braiding the ramps for SR 12W and Green Valley Road. A new, wider grade-separation structure between SR 12W and I-80 accommodating three mixed-flow lanes would be constructed to provide access from SR 12W to eastbound I-80 and southbound I-680. The connector would split after the bridge, with a two-lane branch providing access to eastbound I-80, and a one-lane branch providing access to southbound I-680 with an undercrossing at Lopes Road. The existing connector ramp from westbound I-80 to westbound SR 12W would be reconstructed to the north and would cross over the on-ramp to westbound I-80 from Green Valley Road.

The I-80/I-680 interchange would be reconstructed at the existing location. Access from northbound I-680 to eastbound I-80 would be via a grade separation crossing the eastbound lanes of I-80 and entering the highway between the mixed-flow and through HOV lanes on eastbound I-80. This connector would have three lanes—two mixed-flow and one HOV—with the mixed-flow lanes adding lanes to I-80 and the HOV lane merging with the through HOV lane on eastbound I-80. A two-lane connector from northbound I-680 would provide access to Suisun Valley Road and eastbound I-80 (for trucks accessing the truck scales). This connector would include single-span bridges over Green Valley Creek and the Suisun Valley Road off-ramp from I-80.

The two left mixed-flow lanes from westbound I-80 would transition to southbound I-680, together with a single HOV lane diverging from the through HOV lane of I-80. A separate right-side connector accommodating trucks leaving the westbound truck scales for southbound I-680 would be provided, crossing underneath the Suisun Valley Road overcrossing before crossing I-80. Access to this connector from Suisun Valley Road would also be provided.

The through HOV lanes on I-80 would pass through the I-680 interchange on their own alignment between the three-lane connectors described above.

Eastbound traffic on I-80 would access southbound I-680 via a slip ramp from the eastbound I-80 off-ramp to Green Valley Road, and then transition to the adjacent connector from westbound SR 12W to southbound I-680.
There would be no freeway-to-freeway connection from northbound I-680 to westbound I-80. This connection would be made via Lopes Road and the Green Valley Road interchange, from a new I-680 interchange to the existing I-80 interchange. The northbound I-680 to westbound I-80 movement is an out-of-direction movement and the traffic volumes for it are forecast to be at or below 50 vehicles per hour during the peak hour in 2035. A number of alternatives were analyzed to provide a direct connection for this movement, but none were considered feasible due to constrained connection points, out-of-direction movements, high costs of right-of-way acquisition, and impacts, in addition to the low projected traffic demand. However, it should be noted that FHWA’s preference is that interstate freeway to interstate freeway interchanges include all movements (connections).

**Interchange Improvements**
The I-80/Green Valley Road interchange would be reconstructed with a four-lane overcrossing connecting to existing Lopes Road on the south side of I-80. Access from Green Valley Road to southbound I-680 via the loop ramp connecting eastbound I-80 with I-680 would be removed (traffic would continue down Green Valley Road/Lopes Road to the proposed I-680/Red Top Road interchange). See the discussion of common features for a description of the proposed ramps.

The northbound I-680 exit to Central Way would be removed. Alternate traffic routes would be via the new off-ramp from I-680 to Red Top Road and then Lopes Road, or via the new ramp from I-680 to Suisun Valley Road.

The I-80/Suisun Valley Road interchange would be reconstructed, incorporating a loop on-ramp in the eastbound direction. The road would be realigned, and a replacement Suisun Valley Road overcrossing would be constructed over I-80. The right-side connector for trucks from westbound I-80 to southbound I-680 would also pass underneath the Suisun Valley Road overcrossing. In the westbound direction, ramps would be elevated to meet the overcrossing in a tight diamond configuration. The westbound on-ramp would provide access to I-80 and southbound I-680. The eastbound on-ramp would loop under the overcrossing, and the eastbound off-ramp would be accessible from eastbound I-80 and northbound I-680.

**Local Road Improvements**
Central Way would be realigned to accommodate the I-80/I-680 interchange. A new single-span bridge would be constructed on Central Way over Green Valley Creek to accommodate two lanes of traffic.

**Eastern Segment**

**Interchange Improvements**
Alternative B would construct a combined diamond interchange to serve both Beck and Pennsylvania Avenues, with one-way frontage road couplet between Beck and Pennsylvania Avenues. The existing SR 12E ramps at Jackson and Webster Streets (both in Fairfield) would remain.

The eastbound off-ramp from SR 12E to Beck Avenue would become a two-lane, one-way eastbound frontage road on the south side of the highway between Beck and Pennsylvania...
Avenues. There would be a two-lane, one-way westbound frontage road on the north side of the highway from Pennsylvania Avenue to Beck Avenue, where it would become the westbound on-ramp to SR 12E. Midway between Beck and Pennsylvania Avenues, there would be a central overcrossing connecting the one-way frontage road couplet and extending south to intersect the Meyer Way extension. Eastbound traffic to Pennsylvania Avenue would exit SR 12E west of Beck Avenue and continue on the south-side eastbound frontage road, past the on-ramp to SR 12E to access Pennsylvania Avenue. Traffic from Pennsylvania Avenue would access westbound SR 12E via the north-side frontage road and the on-ramp at Beck Avenue. Westbound traffic on SR 12E would exit the highway west of Pennsylvania Avenue to the north-side westbound frontage road and continue onto Beck Avenue. Traffic from Pennsylvania Avenue would access eastbound SR 12E by heading west on the north-side westbound frontage road and then circling back to use the south-side eastbound on-ramp at the central overcrossing.

Separate bridges over Ledgewood Creek would be constructed to support the frontage road couplet.

**Local Road Improvements**

The intersection at Beck Avenue and Meyer Way would be widened, and Meyer Way would be extended east from Beck Avenue to Pennsylvania Avenue as a four-lane, two-way road with a new three-span bridge constructed over Ledgewood Creek. A “T” intersection on Meyer Way just east of Ledgewood Creek would provide access to the new central SR 12E interchange. Meyer Way would continue east through a new intersection with Pennsylvania Avenue and over the UPRR tracks to extend West Street in Suisun City.

### 2.3.3 Unique Features of Alternative C

This section describes improvements under Alternative C that are different from those under Alternative B.

**Western Segment**

**Mainline Improvements**

I-680 would be realigned to the west to connect with SR 12W. The former alignment of I-680 would likely be relinquished to the City of Fairfield and become Lopes Road (Figure 2-3). The existing bridges over Green Valley Creek on eastbound and westbound I-80 would be replaced with single-span structures, and a westbound diagonal off-ramp would be constructed (including a bridge crossing Green Valley Creek).

**Freeway-to-Freeway Interchange Improvements**

The I-80/I-680/SR 12W interchange would be consolidated in the location of the existing I-80/SR 12W interchange. Both I-680/SR 12W movements would be via direct connectors. These direct connectors would cross over I-80, the UPRR tracks, and Fulton Drive before merging/diverging with the connectors between I-680 and the eastern leg of I-80.

I-80/I-680 movements would be via freeway-to-freeway connectors. Motorist access from northbound I-680 to westbound I-80 would be served by a loop ramp off the I-680 to SR 12W
connector. A separate direct connector structure would be provided for HOV traffic between the median of I-680 and the median of the eastern leg of I-80; the two directions would be separated by a barrier. A two-lane mixed-flow connector ramp would cross over the UPRR tracks and local roads, and would allow traffic to transfer from northbound I-680 to eastbound I-80. Traffic from eastbound I-80 to southbound I-680 would use a new two-lane ramp. A connector would carry traffic from westbound I-80 to southbound I-680 over I-80, the UPRR tracks, Fulton Drive, and Lopes Road.

**Interchange Improvements**

Improvements to I-680 would include the construction of an interchange at Red Top Road. Green Valley Road would be realigned and connected with the former location of I-680 south of I-80 to provide access for local residents, as well as a north-south arterial. The I-80/Green Valley Road interchange would be reconstructed with a seven-lane overcrossing. The westbound on-ramp to I-80 and eastbound off-ramp from I-80 would be braided with the ramps between I-80 and SR 12W and therefore would not provide access to and from SR 12W (this connection is provided by Business Center Drive connecting to the proposed SR 12W/Red Top Road interchange).

The I-80/Suisun Valley Road interchange would be improved, incorporating a loop off-ramp and diagonal on-ramp in the westbound direction. Suisun Valley Road would be realigned, and the overcrossing at I-80 would be reconstructed. The eastbound on- and off-ramps would be reconstructed in a tight diamond configuration.

**Local Road Improvements**

An undercrossing would be constructed at Lopes Road and I-680. Lopes Road would be realigned approximately 100 feet to the west of its current location between Fermi Drive and Red Top Road. Although realigning Lopes Road would move the road closer to Rodriguez High School, it would not impact any portion of the school including its recreational fields. Fermi Drive would be realigned to intersect Lopes Road west of I-680. Between the UPRR overhead and the Green Valley Road overcrossing of I-80, Auto Plaza Court would be extended to provide access to Old Lopes Road/Green Valley Road and Central Way. There would be new at-grade intersections on Auto Plaza Court with Old Green Valley Road, Lopes Road (formerly the I-680 embankment), and Central Way. Old Lopes Road would have a cul-de-sac between Fulton Drive and Jameson Creek.

**Eastern Segment**

**Interchange Improvements**

Alternative C would construct separate interchanges at Beck and Pennsylvania Avenues. The existing SR 12E ramps between Jackson and Webster Streets (both in Fairfield) would be removed.

A tight diamond interchange, including an overcrossing, would be constructed at Beck Avenue. Elevated two-lane on- and off-ramps would intersect the overcrossing of SR 12E. The Ledgewood Creek box culvert would be lengthened to accommodate the westbound off-ramp, eastbound on-ramp, and additional lanes on SR 12E.
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The interchange at Pennsylvania Avenue would include an overcrossing and loop on-ramps in both directions. The westbound off-ramp would provide access to northbound and southbound Pennsylvania Avenue.

Local Road Improvements
Jackson Street would terminate at Illinois Street. Webster Street would continue south under SR 12E, connecting to the proposed south-side frontage road west of the proposed UPRR crossing. A two-way street would connect to Pennsylvania Avenue at the eastbound ramp terminal, providing access to Suisun City (as under Alternative B) and also to an extension of Webster Street.

Utilities
In addition to the utility modifications and relocations common to both alternatives, under Alternative C, further modifications would be made to the Vaca-Suisun-Jameson tower line that runs parallel to and southeast of I-80. To accommodate the proposed connectors, one tower would be relocated, two to six existing truss towers would be replaced with steel-tube towers, and the line height would be raised by 90 feet (twice the height of the existing line) between Dittmer Road and the Jameson substation on Watt Court.

The existing power line south of Fulton Drive would be raised by 40 feet to accommodate the height of I-680 as it rises to pass over Fulton Drive. Two existing utility towers will be replaced by four towers.

PG&E gas transmission facilities would need to be relocated in the vicinity of the I-80/I-680 interchange and at Green Valley and Lopes Roads. It may be necessary to acquire a parcel adjacent to I-680, just south of the I-80/I-680 interchange, to house a gas transmission facility. The Vaca-Dixon 115–kV line that crosses I-680 between Fermi and Fulton Drives tower would be relocated and potentially raised by 40 feet.

2.3.4 Unique Features of Alternative B, Phase 1

The discussion below describes a subset of Alternative B that represents a fundable first phase with logical termini and independent utility; it is being analyzed in this document as the fundable first phase of Alternative B for the purposes of federal approval. It includes improvements to the I-80/Green Valley Road interchange, the I-80/I-680 interchange, and the I-80/Suisun Valley Road interchange, as well as improvements to the SR 12E/Beck Avenue interchange (Figure 2-4).

Western Segment

Mainline Improvements
Eastbound I-80 would be widened from six lanes to eight lanes between I-680 and the eastbound truck scales off-ramp, where it would conform to the existing lane configuration after construction of the I-80 Eastbound Cordelia Truck Scales project. Westbound I-80 would be widened from six lanes to seven lanes between the existing westbound truck scales and I-680. New single-span bridges over Green Valley Creek would replace the current bridges to
accommodate the realignment of the through lanes on I-80 and the separate HOV lane in the new interchange with I-680. The existing bridge for I-80 at Dan Wilson Creek would be widened on both sides to accommodate the additional through lanes between I-680 and the truck scales.

A third mixed-flow lane would be added to northbound I-680 beginning about 1,000 feet south of the Cordelia overhead, and an HOV lane would be added just north of the Cordelia overhead. Southbound I-680 would be widened per the full build Alternative B in the vicinity of the I-80/I-680 interchange, continuing with four lanes (three mixed-flow and one HOV) from just after the merge from the outside truck connector to around the future I-80/Red Top Road interchange. From that point to just north of the I-680/Gold Hill Road interchange, there will be three mixed-flow lanes, with the third lane dropping at the Gold Hill Road exit. The southbound HOV designation will drop within the limits of the I-80/Red Top Road interchange.

Freeway-to-Freeway Interchange Improvements
Improvements to the I-80/I-680 interchange would include all four connectors between I-680 and I-80 to the east described in Alternative B, and would provide for direct connection between HOV facilities on I-80 to the east and I-680 (see the detailed discussion of this interchange in the Alternative B discussion above). The improvements include the direct ramp from northbound I-680 to Suisun Valley Road. The outside truck connector from westbound I-80 to southbound I-680 would exit from I-80 just west of the Suisun Valley Road overcrossing in this phase, forcing the postponement of the direct connection from Suisun Valley Road to westbound I-80 and southbound I-680 until the full build. (This movement will continue to use a relocated Neitzel Road to Green Valley Road to I-680 or westbound I-80.)

The ramp from northbound I-680 to westbound I-80 would be removed, consistent with improvements for Alternative B. Traffic from northbound I-680 to westbound I-80 and SR 12W would exit on the Suisun Valley Road off-ramp, cross over the freeway on the overcrossing, take Neitzel Road to Business Center Drive to Green Valley Road, and use the westbound Green Valley Road on-ramp.

Interchange Improvements
The Green Valley Road overcrossing at I-80 would be replaced to accommodate the proposed realignment and widening of I-80. The overcrossing would consist of the four western lanes of the seven-lane structure described in the full build alternative. Green Valley Road approaching from the north would be widened. The on- and off-ramps would be realigned in Phase 1 and changed in later phases, as would the Neitzel Road off-ramp at Suisun Valley Road.

Improvements to the I-80/Suisun Valley Road interchange would include reconstructing the Suisun Valley Road interchange and realigning the eastbound on- and off-ramps. Eastbound on- and off-ramps would be the same as under the full build Alternative B, incorporating a loop on-ramp. The westbound off-ramp and access to Neitzel Road (the westbound frontage road) would be realigned slightly to accommodate the widening of westbound I-80 and the Suisun Valley Road overcrossing. This realignment would be temporary, and Neitzel Road would be removed under the full build Alternative B when a new westbound I-80 off-ramp is built to Green Valley Road.
Eastern Segment

Interchange Improvements
A tight diamond interchange with an overcrossing would be constructed at Beck Avenue on SR 12E. Improvements to the associated on- and off-ramps would include lengthening the existing culverts carrying Ledgewood Creek and the Alonzo Drain.

Local Road Improvements
The intersections at Beck Avenue/Diamond Way (north of the highway) and Beck Avenue/Courage Drive (south of the highway) would be improved.

Utilities
As part of the proposed project, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield and Vallejo. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

PG&E-owned electrical and gas lines within the project area will be affected by construction and operation. The Vaca-Suisun-Jameson (115-kV) power line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. The line would be raised by 25 feet to accommodate the project. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges, would be modified or realigned, and new easements will likely need to be acquired. Although the specific plan lines of the new easements have not been established, they are expected to be within the proposed project limits. Cable lines belonging to Comcast and located within local roads will be relocated where necessary.

Telephone facilities within the project area include local, long-distance, and local services (i.e., telnet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long-distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department’s procedures.

2.3.5 Unique Features of Alternative C, Phase 1

The discussion below describes a subset of Alternative C that represents a fundable phase with logical termini and independent utility; it is being analyzed in this document as the fundable first phase of Alternative C for the purposes of federal approval. It would improve the connections
from westbound I-80 to I-680 and SR 12W; directly connect northbound I-680 and SR 12W; connect the I-80/Red Top Road interchange with Business Center Drive; and construct or improve interchanges at SR 12W/Red Top Road, I-80/Red Top Road, I-80/Green Valley Road, and I-680/Red Top Road (Figure 2-5).

**Western Segment**

**Mainline Improvements**
Westbound I-80 would be realigned between a point west of Suisun Valley Road to just west of the SR 12W/I-680 interchange by constructing a new six-lane highway alignment north of the existing highway alignment. The realignment would create space in the median for direct HOV connector ramps to be built between I-80 and I-680, as well as future widening of the eastbound lanes. The realigned westbound I-80 would have six lanes, including an HOV lane and an auxiliary lane matching the existing cross section at the existing Suisun Valley Road overcrossing. Immediately west of the Suisun Valley Road overcrossing, a seventh lane would be added, as well as an eighth lane with the on-ramp from Suisun Valley Road. A ninth lane would be added immediately west of the Green Valley Road off-ramp. The four right lanes would exit from I-80 to connect to SR 12W and I-680. There would be a left exit from the HOV lane to an HOV connector to I-680. A wider, single-span bridge would replace the existing bridge over Green Valley Creek. The existing loop on-ramp from northbound I-680 to westbound I-80 would be removed. The connector from northbound I-680 to SR 12W would be constructed to replace this movement. The segment of I-680 north of Red Top Road would be realigned.

**Freeway-to-Freeway Interchange Improvements**
New connector ramps from westbound I-80 to westbound SR 12W and southbound I-680 would be constructed, similar to those described under Alternative C. The proposed westbound I-80 to southbound I-680 connector would cross over I-80, the eastbound SR 12W connector to eastbound I-80, the UPRR tracks, Fulton Drive, and the realigned Lopes Road. Access from westbound I-80 to westbound SR 12W would be braided with (cross over) the Green Valley Road on-ramp to westbound I-80. A separate direct connector structure would be built to carry the HOV lanes in both directions between I-680 and I-80 east of the I-80/I-680/SR 12 interchange. Direct connectors between northbound I-680 and westbound I-80 and eastbound I-80 and southbound I-680 would be constructed similar to those described under Alternative C. Motorist access from northbound I-680 to westbound I-80 would be served by a loop ramp off the I-680 to SR 12W connector. Traffic from eastbound I-80 to southbound I-680 would use a new two-lane ramp.

The direct connection from SR 12W to southbound I-680 would not be built as part of Phase 1; traffic would use Red Top Road from the new SR 12W/Red Top Road interchange to the new I-680/Red Top Road interchange. Motorists traveling eastbound on SR 12W who wish to go to southbound I-680 would exit SR 12W at the proposed SR 12W/Red Top Road interchange and continue along Red Top Road to an on-ramp at the new I-680/Red Top Road interchange.

**Interchange Improvements**
The I-80/Green Valley Road interchange would have a tight diamond configuration westbound and a partial cloverleaf (loop on-ramp) configuration eastbound. The same interchange and
overcrossing would provide access to the existing alignment of I-680 (which would be relinquished as a local arterial, as described earlier in this chapter).

The connection from eastbound SR 12W and eastbound I-80 to southbound I-680 would be removed, with traffic expected to use Red Top Road from the new SR 12W/Red Top Road interchange to the new I-680/Red Top Road interchange. A new on-ramp at Green Valley Road would provide access to the new westbound I-80 alignment.

The I-80/Red Top Road interchange would be partially reconstructed to have a westbound exit loop. Red Top Road would be realigned to connect this interchange on I-80 with a new SR 12W/Red Top Road interchange, as under Alternative C. The I-680/Red Top Road interchange would be constructed as under Alternative C.

**Local Road Improvements**
During the initial construction of Phase 1, a bicycle path would be relocated along the western boundary of the business park at the west end of the existing Business Center Drive parking lot, and along the north side of the new connector from westbound I-80 to westbound SR 12W to maintain access between the existing bicycle path along Jameson Canyon Road (SR 12W) and Business Center Drive. This path would be removed when Business Center Drive is extended to the SR 12W/Red Top Road interchange because bicyclists would be able to utilize the extension of Business Center Drive to reach Red Top Road and points west. The existing Green Valley Road overcrossing at I-80 would be removed, and a new one would be constructed on a different alignment. The overcrossing would consist of the western four lanes of the seven-lane structure described in the full build alternative.

**Eastern Segment**

**Mainline Improvements**
A third lane would be added to eastbound SR 12E. This lane would connect (start) at the eastbound SR 12E/Chadbourn Road interchange and would extend east, connecting and ending at the eastbound SR 12E/Webster Street exit.

**Utilities**
As part of the proposed project, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield, Vallejo, and Benicia. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

PG&E-owned electrical and gas lines within the project area will be affected by construction and operation. One 115-kV electrical transmission line that crosses I-680 between Fermi and Fulton Drives would be realigned, and towers would be relocated. The Vaca-Suisun-Jameson tower line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. The line would be raised by 45 feet to accommodate the project. Additionally, to accommodate the proposed connectors, one tower would be relocated and the line height raised by 90 feet between Dittmer
Road and the Jameson substation on Watt Court. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges, would be modified or realigned, and it may be necessary to acquire new easements.

A PG&E valve lot, a gas transmission facility, would be relocated to a vacant parcel owned by the Fairfield-Suisun Unified School District (FSUSD) at the former Green Valley Middle School location at 3630 Ritchie Road in Fairfield. The relocated valve lot would occupy a 1.3-acres portion of the larger 7.69-acre FSUSD parcel. This relocation would require the acquisition of 1.3 acres from FSUSD, as well as securing permanent and temporary easements needed for operation, maintenance, and construction staging purposes.

Cable lines belonging to Comcast and located within local roads will be relocated where necessary. Qwest Communications has a fiber conduit mounted on the UPRR bridge that will be relocated along the new bridge.

Telephone facilities within the project area include local, long–distance, and local services (i.e., TelNet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department’s procedures.

### 2.3.6 Transportation System Management and Transportation Demand Management Alternatives

**Transportation System Management**

Transportation System Management (TSM) strategies focus on improving the efficiency of existing facilities without increasing the number of through lanes. Options such as ramp metering, auxiliary lanes, and reversible lanes are generally implemented under TSM and help reduce traffic congestion. TSM strategies are a critical component of STA’s Comprehensive Transportation Plan (CTP) as part of the Arterials, Highways, and Freeways Element. The CTP integrates TSM strategies into a comprehensive approach to address transportation needs within the County over the next 20 years. Some TSM strategies, such as the Interstate 80 High-Occupancy Vehicle Lane Project, which consisted of high-occupancy lanes, auxiliary lanes, and ramp metering, are identified in the CTP as standalone projects. Other TSM strategies are identified as critical components of larger improvements. For example, the I-80/I-680/SR 12 Interchange Project includes specific TSM measures such as direct ramps to HOV lanes and auxiliary lanes.
Transportation Demand Management

STA is implementing numerous Transportation Demand Management (TDM) strategies as part of its ongoing operations and programs to reduce the number of vehicle trips and vehicle miles travelled and increase vehicle occupancy in its service area. TDM strategies are critical components of STA’s CTP as part of the Transit and Alternative Modes Elements. The CTP integrates TDM strategies into a comprehensive approach to address the transportation needs within the County over the next 20 years.

One of STA’s primary goals is improving mass transit systems (bus and train) and providing incentives for carpooling and using alternate forms of transportation, and many such programs are currently offered by STA through its Solano Napa Commuter Information (SNCI) program. The SNCI program focuses on encouraging the use of non-drive alone travel modes to maximize roadway efficiencies, improve air quality, present mobility options, and address climate change issues. The program includes nine major elements: Customer Service, Employer Program; Vanpool Program; Incentives, Emergency Ride Home, SNCI Awareness Campaign; Bike to Work Campaign; General Marketing, and Partnerships (Solano Transportation Authority 2009).

Additionally, the following TDM programs and plans are currently being implemented by STA, Solano County, and communities within the project area to reduce vehicle trips and promote alternative modes of transportation:

- Intercity Express Bus Plan.
- SR 12 Transit Corridor Plan.
- Employer programs (e.g., Emergency Ride Home, vanpool support, bike-to-work week, Solano Commute Challenge, commuter tax benefits).
- Rideshare measures (HOV lanes, park-and-ride lots, rideshare matching).
- Alternative Modes Element in the Solano County Comprehensive Transportation Plan.
- Community-Based Transportation Plan for Cordelia/Fairfield/Suisun Project Area.
- Solano Countywide Bicycle Plan.

No-Project (No-Build) Alternative

NEPA, CEQA, and the State CEQA Guidelines require that an EIS and EIR include an evaluation of a no-project/no-build alternative. The purpose of including a no-project/no-build alternative is to allow the lead agencies to consider the effects of not implementing the proposed project. Under the No-Project Alternative for the proposed project, the facilities associated with the interchange project (freeway lanes, interchanges, ramps, westbound truck scales, and HOV lane direct connectors from I-80 to I-680) would not be constructed, and impacts that would occur from project construction would be avoided. However, traffic congestion in the project vicinity would deteriorate substantially, extending the peak periods up to six hours forcing traffic onto local roads. These effects would occur during the 3+ hour a.m. and p.m. peak commute periods, for both the immediate near-term, construction year (2015) and design year (2035). Worsened congestion will further exacerbate congestion from truck weaving and backup to the freeway mainlines from the truck scale facilities in the westbound direction, and truck inspection and enforcement would be impaired because of substantially deteriorated conditions on the
mainline in both directions. Fatal/injury accidents in the project limits, which already exceed the statewide average, will likely worsen from the increased congestion.

### 2.4 Comparison of Build Alternatives

The primary difference between the build alternatives is that Alternative B would improve the I-80/I-680 and I-80/SR 12W interchanges in their current locations. Alternative C would relocate I-680 north of Red Top Road to combine the interchanges into a single interchange in the current location of the I-80/SR 12W interchange. Though the configurations of the Green Valley and Suisun Valley interchanges would be different, they would both provide equal access. On SR 12E, the alternatives would take different approaches to providing access to the highway. Under Alternative B, there would be a single, central interchange with access provided by frontage roads. Under Alternative C, there would be interchanges at both Beck and Pennsylvania Avenues. While both alternatives would provide access to Suisun City via an overcrossing over the Union Pacific Railroad, access to that overpass under Alternative B would be from an extension of Myer Lane.

Overall, Alternative C has a slightly smaller footprint than that of Alternative B, allowing it to have a lesser impact on agricultural land than Alternative B would have, and to result in the acquisition of less acreage (though more parcels) than Alternative B would require. Impacts on hydrology and floodplain, water quality, geology, air quality, traffic, and visual resources are essentially the same for both alternatives. The fundable first phases of the alternatives would have a lesser impact on these resources.

Both alternatives would result in one residential relocation, though Alternative B would result in seven more business relocations than Alternative C. More sensitive receptors would experience increased noise levels as a result of Alternative B, than would as a result of Alternative C.

Generally, both alternatives would result in similar impacts on most biological resources. Alternative B would result in more California red-legged frog upland and critically habitat being temporarily affected, but the permanent impact acreages would be slightly higher under Alternative C. Alternative B would have a greater impact on Swainson’s hawk habitat, and on seasonal and alkalai marsh. Alternative C would have a greater impact on pappose tarplant and Contra Costa goldfields. Alternative C would affect slightly more acreage of seasonal wetlands and perennial drainage, while Alternative B would affect slightly more jurisdictional seasonal drainages.

The STA Board of Directors formally identified the Locally Preferred Alternative as Alternative C (and the fundable first phase) on July 14, 2010.

Both full build alternatives meet the project purpose and need in its entirety. The initial phases of the alternatives do not address inspection and enforcement of truck traffic at the truck scales. However, both fundable first phases meet the remaining purpose and need elements, thought not to the degree that would be realized under the full build alternatives. The fundable first phases of the alternatives will reduce congestion, reduce cut through traffic, accommodate current and future truck volumes, improve safety, and encourage HOV use. An analysis of the impacts and
consideration of comments from agencies and the public will be considered in selecting a preferred alternative.

In accordance with CEQA, the Department will certify that the proposed 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 Department will then file a Notice of Determination with the State Clearinghouse that will identify whether the proposed 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. With respect to NEPA, the Department, as assigned by FHWA, may document and explain its decision regarding the selected alternative, project impacts, and mitigation measures in a Record of Decision in accordance with NEPA.

2.5 Identification of the Preferred Alternative

After the public circulation period, all comments were considered, and Alternative C was identified by the Project Development Team as the Preferred Alternative. The Preferred Alternative will be documented in the Project Report, and then approved by the Department.

Alternative C was identified by the project development team (PDT) as their preferred alternative. Alternative C represents the long term vision for improvements to the I-80/I-680/SR12 Interchange complex. The PDT based its decision upon the following reasons:

- Traffic operations of Alternative C would be superior to Alternative B. Alternative C would include all freeway to freeway movements between I-80 and I-680 via direct connectors, whereas Alternative B would not have a direct connector between I-680 North and I-80 West.

- Alternative C would encourage regional traffic to stay off local roads by providing a high-capacity connection from I-680 to SR 12 West/I-80 West that would carry an acceptable level of traffic during peak hours (500 vehicles per hour in 2035). Without this connection, traffic making the same movement using Alternative B would need to use local roads, either Red Top Road (which would pass by Rodriguez High School) or Lopes Road to the Green Valley Interchange.

- Alternative C would provide drivers on I-680 with standard, outside-lane entrances/exits to I-80. Alternative B would provide these entrances/exits in the median, potentially increasing driver confusion.

- Alternative C would create relatively less traffic friction (less merging on and off the freeway) in the area between Green Valley and Suisun Valley Roads. Alternative B would leave two partial interchanges (I-80/SR 12 West and I-80/I-680) that, together with the median-lane I-680 to I-80 merge and the outer lane braided traffic, could lead to greater traffic friction and driver confusion.
• Alternative C would move I-680 away from the residential areas in Cordelia, reducing noise impacts on an existing community and potential impacts to the Village of Cordelia Historic District.

• The environmental impacts of Alternatives B and C would be similar, including impacts to biology, farmland and other areas of environmental concern.

• Alternative C offers more favorable construction phasing and staging opportunities, as it will be constructed on a new alignment. Staging and construction for Alternative B would be more complicated because the improvements would be constructed essentially in the same alignment and existing traffic would need to be accommodated.

• The Alternative C alignment would impact light industrial areas that are relatively less difficult to relocate, whereas the Alternative B alignment would impact freeway commercial areas that are relatively more difficult to relocate.

The PDT’s decision to identify Alternative C as the preferred alternative was made with the following intended results:

• To establish Alternative C as the long-term vision for meeting the identified transportation needs.

• To acknowledge that Alternative C must be implemented in phases due to funding limitations and constraints, and may not be completed until beyond the twenty year planning horizon.

• To recognize that each phase of Alternative C will have independent utility.

• To work towards the ultimate Alternative C one phase at a time.

• To extend identification of the preferred alternative to Alternative C, Phase 1, upon which additional decisions—LEDPA, a Record of Decision under NEPA, the Project Report, permits, final design, and right-of-way work—may be taken.

• To plan for future phases through updating, amending, or adopting new general plans, zoning, transportation plans, and transportation improvement programs.

• To perform additional or supplemental planning, environmental, and engineering work and reach decisions for each future phase as funding becomes possible and as long as there are identified transportation needs that remain.

The Department consulted with state and Federal resource agencies (including the Regional Water Quality Control Board, California Department of Fish and Game, US Army Corps of Engineers, US Environmental Protection Agency, US Fish and Wildlife Service, and NOAA’s National Marine Fisheries Service) under the NEPA/Section 404 integration process. The Department, the US Environmental Protection Agency, and the US Army Corps of Engineers concurred in the determination of Alternative C, Phase 1 as the least environmentally damaging practical alternative (LEDPA). Alternative C, Phase 1 was also determined to be the preferred alternative under NEPA for which a Record of Decision may be issued.

In evaluating Alternative B, Phase 1 and Alternative C, Phase 1 as with Alternative B and C, the impact of the alternatives in most topic areas is very similar. The two Phase 1 alternatives would
have comparable impacts with regard to displacements, visual quality, hydrology, floodplains and air quality. With regard to most biological resources the two Phase 1 alternatives are also similar.

Where the alternatives differ is with regard to impacts to jurisdictional waters. Alternative C, Phase 1 would result in more impacts to jurisdictional waters (6.37 acres of permanent fill) when compared to Alternative B, Phase 1 (3.48 acres of permanent fill). However, it is important to consider this impact in the context of the long term Alternatives B and C which have almost identical impacts to jurisdictional waters. In this context, Alternative C, Phase 1 can be viewed as incurring impacts earlier in the long term build-out of the interchange when compared to Alternative B, Phase 1.

Other than impacts to jurisdictional waters, the areas where Alternative B, Phase 1 and Alternative C, Phase 1 differ are in terms of traffic, engineering and operational issues.

Similar to the long-term Alternative C, Phase 1 would result in several traffic, engineering and operational benefits over Alternative B, Phase 1 that support its selection as the Preferred and most practicable alternative.

Alternative C, Phase 1 would provide all freeway to freeway movements whereas Alternative B, Phase 1 would not. As described above for the long-term Alternatives, this is a critical issue in obtaining Engineering and Operational Acceptability (EOA) from the FHWA. Alternative B, Phase 1 is not able to provide the freeway to freeway connection between northbound I-680 and westbound I-80/State Route 12 west. Providing this connection under Alternative B, Phase 1, as discussed above for Alternative B, would result in significant and substantial impacts to both Green Valley Creek and the mitigation site constructed as part of the Green Valley Corporate Park. These impacts were determined to be too severe to warrant inclusion of this movement into Alternative B or Alternative B, Phase 1. In addition, providing all freeway to freeway connections, notwithstanding the substantial environmental impact associated with doing so, the cost for Alternative B, Phase 1 would increase by approximately $150 million, which would result in Alternative B, Phase 1 exceeding the currently available funding. This would result in Alternative B, Phase 1 no longer being a feasible first phase and receiving NEPA clearance and a ROD.

Alternative C, Phase 1 would provide much improved interchange spacing along I-80 when compared to Alternative B, Phase 1. Moving I-680 to the west to connect with State Route 12 west eliminates adverse weaving that would occur under Alternative B-1.

Alternative C, Phase 1 would provide drivers on I-680 with standard outside-lane entrances/exits to I-80. Alternative B, Phase 1 would provide these connections in the median which could potentially create driver confusion as it is not the typical freeway configuration.

Additionally the constructability of Alternative C, Phase 1 is much better than Alternative B, Phase 1. This is because the majority of the improvements can be constructed without impacting existing highway operations. Alternative B, Phase 1, because it primarily involves widening the existing freeway interchange would have substantially more impact on existing traffic during construction.
Finally, FHWA provided Engineering and Operational Acceptability (EOA) preliminary approval of Alternative C, Phase 1 in a letter date September 20, 2011. The Department recently held a meeting with FHWA (December 8, 2011, conference call), in which FHWA reiterated the substantial operational deficiencies with Alternative B, Phase 1 particularly that the left entrance/exit design associated with Alternative B, Phase 1 is a significant weakness and potential fatal flaw to this design obtaining EOA.

### 2.5.1 Conclusion

Based on the extensive evaluations of the alternatives conducted in the EIS/R, comments received from the public and agencies during the EIS/R review process, and considering the traffic, engineering and operational aspects of all the alternatives, the STA and the Department determined Alternative C, and Alternative C, Phase 1 to be the preferred alternative and that Alternative B, and Alternative B, Phase 1 was no longer a practicable or feasible alternative given the significant traffic, engineering and operational issues associated with this alternative, including the fact that obtaining EOA acceptability from FHWA would be highly unlikely.

### 2.6 Alternatives Considered but Eliminated from Further Discussion Prior to the Draft EIR/EIS

#### 2.6.1 Overview of Alternatives Screening Process

The Department, in working with FHWA and STA, developed a preliminary set of potential alternatives that could meet the project purpose and need. Alternative screening was used to determine a set of reasonable and feasible alternatives to be studied in detail in this EIR/EIS. Information used in the screening process was based on preliminary studies and evaluations, including traffic forecast modeling, field studies and mapping, literature and data reviews, and discussions with federal, state, and local agency officials.

#### 2.6.2 First-Level Screening and Alternatives Eliminated

Through an initial screening evaluation, 12 different interchange alternatives and variations were developed and evaluated. These original 12 alternatives were reduced to four feasible alternatives through a first-level screening process. The first-level screening process involved weighing the initial alternatives qualitatively for fatal flaws against critical criteria, including ability to meet the proposed project’s defined purpose and need, potential for unavoidable environmental impacts, overall project cost, and ability to provide adequate traffic operation improvements.

Several of the initial alternatives included elimination of various interchanges with local roadways. However, traffic analysis of these alternatives showed that elimination of even one local road interchange within the greater project limits would push so much local traffic to an adjacent local interchange that the affected interchange would then operate at level of service.
(LOS) F, even with modifications to improve traffic flow and capacity. An LOS F for any interchange was considered an unacceptable result of implementing an alternative.

Alternatives that included I-680 connecting with I-80 on the outside (i.e., right-side connections) at the current I-80/I-680 interchange location were determined to be operationally unacceptable because there are too many vehicles using the outside (right) lanes of I-80 entering from SR 12W and SR 12E. Because the I-680 ramps are connecting with I-80 between them, there is not enough distance for the incoming traffic from SR 12W and SR 12E to shift to median lanes, and the weaves with I-680 traffic become problematic.

Additionally, transit-oriented and non-traditional alternatives were considered in the initial set of alternatives. These alternatives, as stand-alone alternatives, were determined insufficient to meet the project purpose and need. These alternatives, and the reasons for eliminating them as stand-alone alternatives, are described below.

**Eliminate I-80/Green Valley Road Interchange Alternative**
This alternative would have involved removing the I-80/Green Valley Road interchange and routing traffic through Suisun Valley Road, two proposed Red Top Road interchanges (SR 12W, I-680), and the existing Red Top Road interchange on I-80. This alternative was removed from further consideration because it would not sufficiently address traffic operations.

**Combine I-80/Green Valley Road and I-80/Suisun Valley Road Interchanges Alternative**
This alternative would have combined the I-80/Green Valley Road and I-80/Suisun Valley Road interchanges as a couplet by eliminating the ramps between them and routing traffic through frontage roads to the adjacent interchange. This alternative was removed from further consideration because it would not sufficiently address traffic operations.

**Eliminate I-80/Suisun Valley Road Interchanges Alternative**
This alternative would have removed the I-80/Suisun Valley Road interchange and routed traffic through Green Valley Road and two of the three proposed Red Top Road interchanges (SR 12, I-680). This alternative was removed from further consideration because it would not sufficiently address traffic operations.

**South Parkway—Four-Lane Arterial Alternative**
This alternative would have involved widening Cordelia Road to a four-lane facility to connect I-680 and SR 12E. This alternative was rejected because of the proposed use of the local road network for regional trips and because it would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974).

**South Parkway—Expressway/Freeway Alternative**
This alternative proposed a parallel arterial south of I-80 intended to connect I-680 and SR 12E. This alternative was rejected because it would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974).
South Parkway—Frontage Alignment Alternative
This alternative would have constructed a new alignment parallel to the existing freeways east of I-680 and south of I-80, to connect I-680 and SR 12E. This alternative was rejected because of impacts on historic resources and its limited ability to improve traffic operations, which provided minimal incentive for commuters to travel an arterial with multiple signals instead of a freeway segment of the same length.

I-80 Viaduct
This alternative proposed double-decking westbound I-80 for three lanes of regional traffic in both directions. This alternative was rejected due to the extremely high cost without appreciable benefit over other alternative, as well as the potential to create driver confusion.

I-680 to the Outside
This alternative proposed aligning I-680 to enter and exit along the outside of I-80, similar to Alternative A discussed below in Section 2.6.3. This alternative was rejected based on a preliminary traffic operations analyses.

Transportation System Management (TSM) Alternative
The objective of TSM is to reduce congestion using the existing infrastructure. A stand-alone TSM alternative would typically involve construction of auxiliary lanes, reversible HOV lanes, and ramp metering facilities to improve the efficiency of the existing facilities without increasing the number of through lanes on the freeways. However, HOV lanes, auxiliary lanes, and ramp metering are already in operation or planned in the project area under other, separate projects (i.e., I-80 HOV lanes, auxiliary lanes associated with I-80 improvements through Fairfield) which are the primary TSM strategies for maximizing efficiency of the existing facilities. In addition, the project alternatives include specific TSM components such as construction of HOV lanes on I-680 within the project limits and HOV direct connector ramps between I-680 and I-80. As a result, TSM measures would not be effective as a stand-alone alternative to meet the purpose and need to reduce congestion and improve safety within the corridor. STA also will continue to implement TSM strategies throughout the County guided by plans and programs contained in the CTP regardless of the proposed project. Based on this assessment, the TSM alternative was withdrawn from further consideration.

Transportation Demand Management (TDM) Alternative
A stand-alone TDM alternative would consist of programs and projects to improve mass transit systems (i.e., bus and train) by providing incentives for using alternate forms of transportation to reduce the number of vehicle trips and reduce vehicle miles traveled within the project area. As discussed in Section 2.3.6, STA is already implementing numerous TDM strategies as part of its ongoing programs and projects. TDM strategies are critical components of STA’s CTP, as part of both the Transit and Alternative Modes Elements. The CTP integrates TDM strategies into a comprehensive approach to address transportation needs within the County over the next 20 years.

STA and its member and partner agencies currently operate or are planning rail, ferry and intercity bus systems that serve the project area.
The Capitol Corridor intercity rail service which is operated by the Capitol Corridor Joint Powers Authority (CCJPA) provides train service paralleling the I-80 corridor between Sacramento and Oakland/San Francisco and is the third busiest intercity passenger rail service in the nation with a 12-month ridership of 1,723,422 between March 2008 and February 2009. The Capitol Corridor currently operates 32 weekday trains between Sacramento and Oakland, and 14 daily trains between Oakland and San Jose. The CCJPA has a Capital Improvement Program intended to increase reliability and capacity, upgrade track infrastructure, build or renovate stations, add rolling stock, and reduce travel times.¹

Nine public intercity bus routes are presently operated by Solano County transit agencies. One route (Route 20) connects Fairfield-Vacaville, another (Route 30) connects to Davis and Sacramento, two routes (Routes 40 and Benicia Route 1) connect to the Pleasant Hill BART Station, two routes (Route 85 and Benicia Route 1) connect to the Vallejo Ferry Terminal and three routes (Routes 80, 90 & 91) connect to the El Cerrito del Norte BART Station. Public intercity bus connections to Napa from Vallejo are provided by VINE Transit and YoloBus provides connections to Winters and Davis from Vacaville. No Sunday service is currently provided on these lines. Each of the transit providers that serve the project area have short-term plans focused on upgrading existing service and equipment. The Solano Comprehensive Transportation Plan, Transit Element (STA 2005) sets forth the long-term plan for improving transit, rail and ferry service in the region. A critical component of the local transit system is the Fairfield Transportation Center which was opened in 2001 with 400 parking spaces and has proven very successful. A 234 space Phase 2 expansion to the Center was completed at the end of 2004.

The I-80/I-680/I-780 Transit Corridor Study (STA July 2004) analyzes existing transit services and demand, and provides short and long range transit plans for intercity express bus services and auxiliary facility improvements, such as direct access ramps to center median High Occupancy Vehicle (HOV) lanes, park and ride, and transit center demand & site planning. This study indicated that bus service quality and efficiency along with patronage are all impacted by congestion. Under current traffic conditions, there are hot spots of peak period congestion on Solano County’s freeways. Without investment in the transportation infrastructure, this congestion will worsen and spread. In the a.m. peak period, congestion occurs in the following locations: I-80 westbound from east of SR 12E to the SR 12W exit and westbound from I-780 to the Carquinez Bridge; I-680 southbound to the Benicia Bridge; and I-780 eastbound leading up to the Benicia Bridge. In the p.m. peak period, congestion occurs in the following locations: I-680 northbound and I-80 eastbound before the I-80/680 merge; and I-80 eastbound from SR 12E to North Texas. At the time of this study there were no HOV lanes in Solano County. The report concluded that the buses are simply delayed along with general traffic on these segments at peak commute times.² Since this study was published in 2004, HOV lanes have been constructed along the portion of I-80 between SR 12W and Airbase Parkway. The proposed I-80/I-680/SR 12 Interchange project would include HOV direct connector ramps between I-80 and I-680 which are specifically called out in the Transit Corridor Study as important to improving transit efficiency.

As described above, numerous TDM programs are already in place within the project area including substantial rail and transit options and programs. As indicated in the I-80/I-680/I-780 Transit Corridor Study, transit service is greatly affected by existing and future congestion on the freeway system. The proposed project alternatives would involve substantial improvements to reduce congestion and include HOV direct connectors which would directly benefit transit users. In addition, there are well established existing rail and transit options available to the public in the project area and plans to continue to improve and expand these services. Finally, a stand-alone TDM alternative would not be able to meet key elements of the project purpose and need, particularly the need to reduce truck congestion and improve automobile safety and truck inspection. For these reasons, a stand-alone TDM alternative was withdrawn from further study.

**Smart Growth/Sustainable Communities Land Use Policy Alternative**

A smart-growth alternative would help redefine commuter’s transportation choices by providing them with more options in housing, shopping, communities, and transportation, which is a key objective of smart growth. Communities are increasingly seeking these choices (especially a wider range of transportation options) in an effort to improve congested roadways and stressed transportation systems. Under a smart-growth alternative, new approaches to transportation planning, such as better coordinating land use and transportation; increasing the availability of high-quality transit service; creating redundancy, resiliency and connectivity within the local road networks; and ensuring connectivity between pedestrian, bike, transit, and road facilities, would be implemented. Essentially, a multi-modal approach to transportation with supportive development patterns would be implemented to create a variety of transportation options. This alternative was considered as a stand-alone option, but removed because it would not achieve many of the objectives of the proposed project, and neither the Department nor STA has the authority to require local governments to implement specific land use policies tied to smart growth. Therefore this is not a viable alternative for the proposed project. However, as explained above under TSM/TDM alternatives, elements of this stand-alone alternative are being implemented by STA, including providing transit service and incentives for carpooling and using alternate forms of transportation. These programs include an employer program; a vanpool program; emergency ride home, an outreach /awareness campaign; a bike to work campaign; a general marketing; and partnerships. These programs are being implemented by STA as part of its overall operations program, independent of any particular project.

### 2.6.3 Second-Level Screening and Alternatives Eliminated

Only four of the 12 alternatives were determined feasible from the initial first-level screening process and were carried forward for further analysis as Alternatives A to D. Alternative A would realign I-680 to connect with I-80 in the I-80 median with parallel collector-distributor (C-D) roads constructed along the outside edges of I-80. Alternative B would realign I-680 to connect with I-80 in the I-80 median, but with minor variations to allow the C-D roads to be eliminated. Alternative C would realign I-680 westward to connect with I-80 at the existing I-80/SR 12W interchange. Alternative D would realign I-680 along a viaduct to connect with I-80 east of the existing truck scales.

Alternatives A to D were then further developed and evaluated along with a no-project/no-build alternative through a second-level screening process, which involved a more rigorous and
quantitative assessment of the alternatives against several measures and objectives. Alternatives A and D were eliminated from further consideration, and are described below. The second-level screening process identified Alternatives B and C as the two most reasonable and feasible alternatives to be carried forward and studied in detail in this EIR/EIS.

**Alternative A—I-680 to Median with Collector-Distributor Roads Alternative**

Alternative A would have retained the same basic alignments that exist today, but would have included eastbound and westbound C-D roads parallel to I-80 to handle local traffic from the I-80/Green Valley Road and Suisun Valley Road interchanges. The I-80/SR 12W interchange would have been braided with C-D roads. The I-80/I-680 interchange would have been reconfigured so that the I-680 connectors come into and out of the median of I-80, along with the HOV connectors. Local traffic would have used C-D roads to access the I-80/Suisun Valley Road interchange, and trucks would have used them to travel between the truck scales and I-680 without having to weave across the median or I-80. There would have been no direct connections from northbound I-680 to westbound I-80 or westbound SR 12. Traffic would have needed to use local arterial roads. The truck scales would have been reconstructed and braided ramps with the C-D roads and the SR 12E interchange would have been provided. All proposed project changes on I-80 east of Suisun Creek would have been identical to Alternatives B and C.

Traffic analysis indicated that Alternative A would have greater environmental and right-of-way impacts than Alternative B would have but with little added benefit. This alternative had the highest anticipated impact on wetlands and waters of the United States, and would have been the most problematic for effective operation of the truck scales. Additionally, this alternative had the second-highest estimated overall cost after Alternative D. Because of the higher cost and greater environmental impacts and right-of-way acquisition, this alternative was eliminated.

**Alternative D—I-680 Viaduct Alternative**

Alternative D would have retained the same basic alignment as the existing interchange complex, but would have replaced the I-80/I-680 connectors with parallel viaducts running along the outside of I-80 between I-680 and SR 12E to allow traffic commuting between I-680 and I-80 to bypass the I-80/Suisun Valley Road interchange and the truck scales. The viaducts would have connected to I-80 near the relocated truck scales and would have been braided with SR 12E. Direct connector ramps would have also been maintained between eastbound I-80 and southbound I-680, allowing access from I-680 to the I-80/Suisun Valley Road interchange, the truck scales, and SR 12E via I-80. There would have been no direct connections from I-680 northbound to I-80 westbound and SR 12 westbound. Traffic would have needed to use local arterials. HOV connectors between I-680 and I-80 would have been provided. The I-80 viaduct would have been braided with the SR 12E connector ramps. The truck scales would have been reconstructed and would have braided ramps on the east. SR 12W would have been braided with the I-80/Green Valley Road interchange, and the slip ramps would have been braided with the I-80/Suisun Valley Road interchange.

Although Alternative D would have provided some operational benefits during peak-hour traffic periods, it would have performed less effectively during uncongested travel periods. This alternative would have had the greatest negative visual impact because of the elevated structures (viaducts) and would have affected a much larger area of wetlands, waters of the United States, and riparian habitat than Alternatives B and C. This alternative also lacked political support.
because it reduced access to commercial land uses in the area. Finally, it was the most expensive of the alternatives. Therefore, Alternative D was removed from consideration because the significant visual impact, alteration of access to commercial areas, greater environmental impacts, and high cost.

2.7 Permits and Approvals Needed

Table 2-3 lists the permits and other approvals that would likely be necessary for the various project elements.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Permit, Approval, or Consultation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Fish and Wildlife Service</td>
<td>Consultation under Section 7 of the federal Endangered Species Act for Phase 1 project</td>
<td>A Biological Opinion has been issued by the USFWS and is included in Appendix H</td>
</tr>
<tr>
<td>NOAA’s National Marine Fisheries Service</td>
<td>Consultation under Section 7 of the federal Endangered Species Act for Phase 1 project</td>
<td>A concurrence letter has been issued by NOAA’s NMFS and is included in Appendix H</td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Clean Water Act Section 404 individual permit for placement of fill for Phase 1 project</td>
<td>Application to be submitted after NEPA is completed</td>
</tr>
<tr>
<td>California Department of Fish and Game</td>
<td>California Fish and Game Code Section 1602 streambed alteration agreement for waters of the state</td>
<td>To be completed after CEQA is completed</td>
</tr>
<tr>
<td>San Francisco Bay Regional Water Quality Control Board</td>
<td>Non-point Clean Water Act Section 402 National Pollutant Discharge Elimination System permit (General Construction Permit), Clean Water Act Section 401 water quality certification for Phase 1 project</td>
<td>Application to be submitted after CEQA is completed</td>
</tr>
<tr>
<td>Bay Area Air Quality Management District</td>
<td>Permit for air pollutant emission–generating equipment</td>
<td>Application to be submitted if portable engines and certain other equipment have not previously been registered with the California Air Resources Board after CEQA is completed</td>
</tr>
<tr>
<td>California Public Utilities Commission</td>
<td>General Order 131-D filing requirements for high-voltage electrical lines</td>
<td>Application to be submitted after CEQA is completed</td>
</tr>
<tr>
<td>San Francisco Bay Conservation and Development Commission</td>
<td>Marsh development permit</td>
<td>Application to be submitted after CEQA is completed</td>
</tr>
<tr>
<td>Federal Highway Administration</td>
<td>Air Quality Conformity Concurrence</td>
<td>FHWA concurrence letter signed on April 13, 2011</td>
</tr>
<tr>
<td>State Historic Preservation Office</td>
<td>Section 106 Compliance and Programmatic Agreement</td>
<td>Programmatic Agreement approved November 8, 2011</td>
</tr>
</tbody>
</table>
2.8 Project Cost, Funding and Schedule

2.8.1 Cost

Two alternatives were developed for this project. These were developed to meet the transportation demands of the project area, taking into consideration engineering, environmental, and other constraints with little focus on near-term financial constraints (i.e., to meet local agency CEQA and right-of-way acquisition needs). The fundable first phase of each alternative (Phase 1) was developed as a subset of the alternative and represents a fundable project based on near-term Department and FHWA financial constraints.

The total escalated cost is $2.24 billion for Alternative B and $2.12 billion for Alternative C. The total escalated cost for Alternative B, Phase 1 is $580 million and $690 million for Alternative C, Phase 1. The cost estimates for the project alternatives are provided in Table 2.4.

Table 2-4. Construction Cost Estimate Summary

<table>
<thead>
<tr>
<th></th>
<th>Alternative B (Including SR12 East Option 2)</th>
<th>Alternative C (Including SR12 East Option 1)</th>
<th>Alternative B1 (Fundable First Phase of Alternative B)</th>
<th>Alternative C1 (Fundable First Phase of Alternative C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total roadway items</td>
<td>$667,000,000</td>
<td>$625,000,000</td>
<td>$231,000,000</td>
<td>$229,000,000</td>
</tr>
<tr>
<td>Total structure items</td>
<td>$210,000,000</td>
<td>$277,000,000</td>
<td>$101,000,000</td>
<td>$181,000,000</td>
</tr>
<tr>
<td>Truck scales</td>
<td>$25,000,000</td>
<td>$25,000,000</td>
<td>$–</td>
<td>$–</td>
</tr>
<tr>
<td>Subtotal construction costs</td>
<td>$902,000,000</td>
<td>$927,000,000</td>
<td>$332,000,000</td>
<td>$410,000,000</td>
</tr>
<tr>
<td>Total right of way items</td>
<td>$180,000,000</td>
<td>$170,000,000</td>
<td>$80,000,000</td>
<td>$120,000,000</td>
</tr>
<tr>
<td>Support</td>
<td>$232,000,000</td>
<td>$239,000,000</td>
<td>$89,000,000</td>
<td>$105,000,000</td>
</tr>
<tr>
<td>Environmental mitigation</td>
<td>$13,100,000</td>
<td>$12,470,000</td>
<td>$1,500,000</td>
<td>$5,300,000</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$245,100,000</td>
<td>$251,400,000</td>
<td>$90,500,000</td>
<td>$110,300,000</td>
</tr>
<tr>
<td>Total alternative cost (2010 $)</td>
<td>$1,327,100,000</td>
<td>$1,348,400,000</td>
<td>$502,500,000</td>
<td>$640,300,000</td>
</tr>
<tr>
<td>Escalated total alternative cost</td>
<td>$2,257,000,000</td>
<td>$2,166,000,000</td>
<td>$537,000,000</td>
<td>$664,000,000</td>
</tr>
</tbody>
</table>

The cost escalation was calculated beginning with 2010 dollars. No escalation was assumed through the year 2013. An escalation rate of 0.05% per year was used for both right-of-way and construction and support costs through 2014. For 2015 through 2019 an escalation rate of 2% for right-of-way costs and 5% for construction and support costs was used. After 2019, an escalation rate of 2% for right-of-way costs and 3% for construction and support costs was assumed.

2.8.2 Funding

Revenues for transportation improvement projects are generated from a variety of sources. The primary traditional sources for state transportation projects are state gasoline and diesel fuel taxes, vehicle weight fees, and federal revenues. Additional sources include regional bridge toll funds, local funds, and private funds.

In order for a project to obtain NEPA approval, one project phase must be in the federal Transportation Improvement Program, while other phases must be in the current Regional
Transportation Plan (RTP) and, if necessary, future RTPs. The Metropolitan Transportation Commission (MTC) is responsible for adopting the Bay Area’s RTP. The current version is titled as the Transportation 2035 Plan. Adopted by MTC on April 22, 2009, the Transportation 2035 Plan describes the strategies and investments required to maintain, manage, and improve the transportation network within the nine-county San Francisco Bay Area. MTC now updates the RTP every four years.

The I-80/I-680/SR12 Interchange Project is included in the current RTP, in the Financially Constrained Element, as part of several identified improvements and projects, with a combination of programmed and planned local, state, and federal funds available over the long term of the Transportation 2035 Plan. Table 2-5 presents the proposed funding sources for specific portions for the first phase of either alternative.

<table>
<thead>
<tr>
<th>RTP Reference Number</th>
<th>Funding Type and Source</th>
<th>Funding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>230326</td>
<td>Improve I-80/I-680/SR12 Interchange, including connecting I-680 northbound to Route 12 westbound (Jamieson Canyon), adding connectors and reconstructing local interchanges (Phase 1)</td>
<td>$487.9</td>
</tr>
<tr>
<td>22700</td>
<td>Construct Parallel Corridor north of I-80 from Red Top Road to Business Center Drive (portion of funding shown in RTP)</td>
<td>$35.0</td>
</tr>
<tr>
<td>230687</td>
<td>I-680/I-80 interchange in Solano County — widen to add an express lane direct connector (portion of funding shown in RTP)</td>
<td>$228.0</td>
</tr>
<tr>
<td></td>
<td>Total Funding</td>
<td>$750.9</td>
</tr>
</tbody>
</table>

### 2.8.3 Schedule

This Final EIR/EIS will be available for review for 30 days. After that time, the Department, as assigned by FHWA, may (1) give environmental approval to the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is appropriated, the preferred alternative will be selected, and documented in the Project Report. After the preferred alternative has been selected, a Notice of Determination will be issued on one of the alternatives under CEQA, and a Record of Decision will issued on the corresponding fundable first phase under NEPA.

Construction of Phase 1 of the selected project is expected to begin in 2013 and be completed by 2016.4

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4 This EIR/EIS uses the analysis year of 2015 to represent the construction-year for the project. The construction year analysis (2015) represents conditions and effects of the project alternatives upon completion of the fundable first phase (Phase 1s). Year 2015 was deemed appropriate for the construction-year because traffic forecasts and other environmental information is readily available for the year 2015 and the fundable first phase is anticipated to be complete in essentially the same time period (year 2016).
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Figure 2-1b
Project Area Map - Central Segment
Figure 2-1c
Project Area Map - Eastern Segment
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Figure 2-2
Alternative B Project Features

Legend
- **Proposed New or Expanded/Improved Road**
- **Features Common to both Alternatives**
- **Proposed New or Expanded/Improved Bridge/Overcrossing**
- **Creek**

Mile
0.5 1.00

**Legend**
- Proposed New or Expanded/Improved Road
- Features Common to both Alternatives
- Proposed New or Expanded/Improved Bridge/Overcrossing
- Creek

**Figure 2-2**
Alternative B Project Features
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Figure 2-4
Alternative B Phase 1 Features

Legend
- Proposed New or Expanded/Improved Roads
- Proposed New or Expanded/Improved Bridge/Overcrossing

Mile
0
0.25

Figure 2-5

Alternative C Phase 1 Features

Legend
- Proposed New or Expanded/Improved Roads
- Proposed New or Expanded/Improved Bridge/Overcrossing
- Creek

Chapter 3  Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures

The sections in Chapter 3 include the regulatory setting applicable to the environmental topic, the methodology of impact analysis, a description of the affected environment, environmental effects resulting from the build and no build alternatives, a discussion of environmental effects, and measures to avoid, minimize, or mitigate adverse impacts of the build alternatives. Graphic exhibits, and data matrices are included throughout Chapter 3 where applicable to support the impact analyses.

This chapter presents the analyses of environmental effects and the measures developed to address them. The resource areas listed below are addressed in this chapter.

- **Human Environment:**
  - Land Use (except Coastal Zone and Wild and Scenic Rivers).
  - Growth.
  - Farmlands.
  - Community Impacts.
  - Utilities and Emergency Services.
  - Traffic and Transportation/Pedestrian and Bicycle Facilities.
  - Visual and Aesthetic Resources.
  - Cultural Resources.

- **Physical Environment:**
  - Hydrology and Floodplain.
  - Water Quality and Stormwater Runoff.
  - Geology/Soils/Seismic/Topography.
  - Paleontology.
  - Hazardous Waste/Materials.
  - Air Quality.
  - Noise.
  - Energy.

- **Biological Environment:**
  - Natural Communities.
– Wetlands and Other Waters.
– Plant Species.
– Animal Species.
– Threatened and Endangered Species.
– Invasive Species.
– Native Trees.
– Suisun Marsh Secondary Management Area.

• Relationship between Local Short-Term Uses of the Human Environment and the Maintenance of Long-Term Productivity.
• Irreversible and Irretrievable Commitments of Resources.
• Cumulative Impacts.

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

• Timberlands. There are no Timberlands in the project area.
• Coastal Zone (within Land Use). The project area is not within a Coastal Zone.
• Wild and Scenic Rivers (within Land Use). The proposed project does not have the potential to affect a Wild and Scenic River or a river under study for designation as a Wild and Scenic River.
3.1 Human Environment

3.1.1 Land Use

The I-80/I-680/SR 12 Interchange Community Impact Assessment (CIA) was prepared for the project in 2009, and this discussion is based largely upon that document.

3.1.1.1 Existing and Future Land Use

The I-80/I-680/SR 12 interchange was originally constructed during the 1960s. At the time, the interchange was located in a rural setting and surrounded entirely by agricultural lands. The Bay Area and Northern California region have since experienced substantial population growth; the Bay Area’s population has grown by 86% since the interchange’s original construction, and the population of Solano County has tripled. Over time, I-80 and I-680 have become major commute corridors linking Solano County and the Sacramento region beyond to the San Francisco Bay area. Solano County, including the Cities of Fairfield and Suisun City, contributes substantial numbers of commuters to traffic on I-80, I-680, and SR 12.

The population growth in Northern California, the Bay Area and surrounding communities has made the I-80/I-680/SR 12 interchange one of the most congested stretches of roadway in the state. Additionally, population growth in the City of Fairfield has caused extensive changes in the land uses surrounding the interchange area over the past several decades. The general land uses along the proposed project area are discussed below by segment.

Land Use

In order to characterize the setting which the project would unfold, a study area was established that represents a much larger area than the project area. Statistical information for Solano County, the Cities of Fairfield and Suisun City, and nine 2000 Census Tract Block Group areas in which the project is situated is used to describe the study area.

Western Segment

The Western Segment begins just east of Red Top Road and ends at the I-80/Suisun Valley Road interchanged. Land uses at the western end of this segment consist primarily of grazing lands. Areas of current development (gas stations, fast food) are located at the I-80/Red Top Road interchange. Industrial (a dairy distribution facility) and rural residential uses are located between I-80 and SR 12W and to the north of SR 12W.

As I-80 and SR 12W converge, land uses change dramatically. To the northeast of this intersection is a major retail shopping and commercial center that includes a Costco, Safeway, and other regional retailers. To the south, the predominant land use is industrial with many warehouses and distribution businesses. Land uses to the east include residential and retail uses in the town of Cordelia. Commercial uses such as gas stations, car dealerships, and smaller retail outlets are located in areas immediately visible from the I-80 and I-680 freeways.
Along I-680, land uses to the west are dominated by residential subdivisions with commercial and retail uses located at major intersections. Rodriguez High School occupies a large amount of land along the north side of Red Top Road, west of its intersection with I-680. In general, lands south of Cordelia Road and east of I-680 are within the Suisun Marsh and support agriculture and open space uses.

Land uses along I-80 between I-680 and Suisun Valley Road are characterized by a large commercial/office park to the north and smaller retail/highway commercial uses to the south, including many gas stations and fast food outlets centered around the I-80/Suisun Valley Road interchange.

**Central Segment**

The Central Segment begins at the I-80/Suisun Valley Road interchange and ends at the Abernathy/Chadbourne Road interchange. Along I-80 from Suisun Valley Road to SR 12E, land uses on the north side between Suisun Valley Road and Suisun Creek include the currently vacant lands that are now under development for the mixed-use Fairfield Corporate Commons Project and the existing westbound truck scales facility. East of Suisun Creek, land uses are primarily agricultural with scattered residential and commercial uses (farm equipment sales). Land uses on the south side of I-80 include the freeway commercial (hotels and RV sales) and retail (fast food outlets and gas stations) uses located immediately east of the I-80/Suisun Valley Road interchange. Further east, land uses are agricultural with scattered residential uses and the eastbound truck scales facility (which is planned to be relocated to the east as part of a separate project). At the eastern end of this segment, land uses include a large industrial use (Budweiser brewery) that extends along SR 12E.

**Eastern Segment**

The Eastern Segment begins at the Abernathy/Chadbourne Road interchange and ends on Civic Center Boulevard in downtown Suisun City. Land uses along the north side of SR 12E include commercial uses focused along Chadbourne Road, such as several large auto dealerships. Farther east, land uses are dominated by residential neighborhoods with scattered commercial/retail uses along Beck and Pennsylvania Avenues. Land uses along the south side of SR 12E include industrial warehouse and distribution centers located off Beck and Pennsylvania Avenues. Further east of Pennsylvania Avenue to Suisun City, the predominant land use to the north is residential while to the south is predominately undeveloped land designated for general industrial development. Suisun City is separated from Fairfield by the Union Pacific Railroad (UPRR) alignment and SR 12E. The only currently operational passenger rail terminal in Solano County is located in Suisun City and is directly north of the proposed eastern terminus of the proposed project at West Road. The portions of the study area within Suisun City are devoted to residential and commercial uses east of the UPRR tracks and undeveloped land west of the UPRR tracks.

**Development Trends**

Solano County and Fairfield have experienced substantial growth in population over the past several decades. Suisun City, while experiencing a brief decline in population following the construction of I-80 in the 1960s, has also demonstrated a general trend toward increased...
population growth. The population in all three jurisdictions is expected to continue growing, with substantial future growth centered on Fairfield and, to a lesser extent, Suisun City. Effects of the proposed project on growth are discussed in Section 3.1.2, “Growth.”

**Solano County**

As an agricultural county, Solano County typically channels large development projects into its cities, and limits development in its unincorporated areas to small residential subdivisions. According to the CIA prepared for the proposed project, there are currently no proposed development projects on unincorporated land within the immediate project area. Future urban growth identified in the Solano County General Plan, such as the area adjoining Nelson Hill, will be allowed only upon annexation to the appropriate city.

**City of Fairfield**

Table 3.1.1-1 shows current and planned development projects in the city of Fairfield. The predominant type of development currently taking place in Fairfield is residential, with more than 8,000 residential units currently under development or planned for development. In addition, several commercial and office development projects are also planned or currently under development. Planning is also underway for a new train station in northeast Fairfield, providing service to the residents of Fairfield and neighboring Vacaville on the Amtrak Capitol Corridor commuter line between Sacramento and Oakland.

**Table 3.1.1-1. Current and Planned Development Projects as of April 2009—City of Fairfield**

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Project Status</th>
<th>Project Location</th>
<th>Type of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillside Terrace</td>
<td>Completed</td>
<td>North Texas Street and Dickson Hill Road</td>
<td>Community Commercial/Retail—33,035 square feet</td>
</tr>
<tr>
<td>Oakmont Plaza Phase II</td>
<td>Completed</td>
<td>North Texas Street and Acacia Street</td>
<td>Thoroughfare Commercial Retail—35,000 square feet</td>
</tr>
<tr>
<td>Del Taco Retail</td>
<td>Completed</td>
<td>Pittman Road and Central Way</td>
<td>Regional Commercial/Retail—9,875 square feet</td>
</tr>
<tr>
<td>Staples</td>
<td>Under construction</td>
<td>Oliver Road and Hartford Avenue</td>
<td>Regional Commercial/Retail—25,000 square feet</td>
</tr>
<tr>
<td>Residence Inn</td>
<td>Plan check (Building Division)</td>
<td>Holiday Lane and Travis Boulevard</td>
<td>Regional Commercial/Hotel—70,000 square feet</td>
</tr>
<tr>
<td>Fresh-N-Easy</td>
<td>Tenant improvements largely completed; project is delayed</td>
<td>Beck Avenue and West Texas Street</td>
<td>Community Commercial/Grocery—20,000 square feet</td>
</tr>
<tr>
<td>Orchard Supply</td>
<td>Tenant improvements approved and underway</td>
<td>Travis Boulevard and North Texas Street</td>
<td>Community Commercial/Home Store—20,000 square feet</td>
</tr>
<tr>
<td>Wal Mart</td>
<td>Approved</td>
<td>North Texas Street and Air Base Parkway</td>
<td>Community Commercial/Retail—187,480-square-foot building, 15,130-square-foot seasonal garden center, 1,103-square-foot parking spaces</td>
</tr>
<tr>
<td>Ortega Meat Market</td>
<td>Approved; in plan check</td>
<td>Travis Boulevard and North Texas Street</td>
<td>Mixed Commercial/Retail—2,400 square feet</td>
</tr>
</tbody>
</table>
### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Land Use

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Project Status</th>
<th>Project Location</th>
<th>Type of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Valley Ranch</td>
<td>Project approved for approximately 115,000-square-foot retail center and hotel; 40,000-square-foot hotel already completed and occupied; Dave Reilly received approval for 6,800-square-foot retail building</td>
<td>Central Way and Pittman Road</td>
<td>Regional Commercial/Retail—75,000 square feet</td>
</tr>
<tr>
<td>Laurel Creek Plaza</td>
<td>Approved; currently planning for infrastructure improvements to accompany the Villages at Fairfield project</td>
<td>Air Base Parkway and Claybank Road</td>
<td>Community Commercial/Retail—110,186 square feet</td>
</tr>
<tr>
<td>Green Valley Corporate Park Retail</td>
<td>Approved</td>
<td>Business Center Drive and Neitzel Road</td>
<td>Regional Commercial/Retail—8,450 square feet</td>
</tr>
<tr>
<td>Saturn</td>
<td>Approved</td>
<td>Auto Mall Court</td>
<td>Regional Commercial/Auto Dealer—24,160 square feet</td>
</tr>
<tr>
<td>Texas Corners</td>
<td>Approved</td>
<td>North Texas Street and West Texas Street</td>
<td>Thoroughfare Commercial/Retail—5,994 square feet</td>
</tr>
<tr>
<td>Texas Roadhouse</td>
<td>Approved</td>
<td>North Texas Street and Marigold Drive</td>
<td>Regional Commercial—7,200 square feet</td>
</tr>
<tr>
<td>Mercedes Benz</td>
<td>Approved</td>
<td>Auto Mall Parkway and Abernathy Road</td>
<td>Regional Commercial—Auto Dealer—77,914 square feet</td>
</tr>
<tr>
<td>Premium Auto Mall</td>
<td>Application under review</td>
<td>Auto Plaza Court</td>
<td>Regional Commercial—10,000 +/- square feet</td>
</tr>
<tr>
<td>Sparkles Express Car Wash</td>
<td>Application under review</td>
<td>North Texas Street and Marigold Drive</td>
<td>Regional Commercial—3,000 square feet</td>
</tr>
<tr>
<td>KFC/Long John Silvers</td>
<td>Application under review</td>
<td>North Texas Street and Pacific Avenue</td>
<td>Thoroughfare Commercial/Retail—3,000 square feet</td>
</tr>
<tr>
<td>COSTCO Expansion</td>
<td>Submitted, but on hold</td>
<td>Business Center Parkway and Business Center Drive</td>
<td>Regional Commercial/Retail—22,168 square feet</td>
</tr>
<tr>
<td>Green Valley Plaza</td>
<td>Application incomplete</td>
<td>Suisun Valley Road and Rockville Road</td>
<td>Regional Commercial—455,000 square feet</td>
</tr>
<tr>
<td>Fairfield Corporate Commons</td>
<td>Under construction</td>
<td>Suisun Valley Road and Mangels Boulevard</td>
<td>Mixed-Use Office and Commercial—72 acres, parcel sizes range from 1.4 acres to 47 acres; 846,000 sf of office and hotel use, 269 multi-family housing units, 167 single-family housing units; Four office buildings at four stories each: Building 1: 73,000 square feet of office space; Building 2: 110,000 square feet of office space; Building 3: 130,000 square feet of office space; Building 4: 59,000 square feet of office space</td>
</tr>
<tr>
<td>Pony Express Business Park</td>
<td>Construction complete; space available</td>
<td>West America Drive and Mason Street</td>
<td>Office Commercial—45,660 square feet</td>
</tr>
<tr>
<td>Horizon Business Park</td>
<td>Under construction</td>
<td>Horizon Drive and Western Street</td>
<td>Service Commercial/Flex Space—62,179 square feet</td>
</tr>
<tr>
<td>Name of Project</td>
<td>Project Status</td>
<td>Project Location</td>
<td>Type of Project</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>--------------------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Northbay Healthcare Corporate Headquarters</td>
<td>Under construction</td>
<td>Business Center Drive and Neitzel Road</td>
<td>Office Commercial/Headquarters—69,000 square feet</td>
</tr>
<tr>
<td>Western Business Center II</td>
<td>Under construction</td>
<td>Horizon Drive and Western Street</td>
<td>Service Commercial/Flex Space—29,600 square feet</td>
</tr>
<tr>
<td>Busch Campus Park (CDI)</td>
<td>Plan check (Building Division)</td>
<td>Chadbourne Road and Courage Drive</td>
<td>Office Commercial/Office—12,000 square feet</td>
</tr>
<tr>
<td>Sierra Pacific Cordelia</td>
<td>Plan check (Building Division)</td>
<td>Fermi Drive and Pascal Court</td>
<td>Limited Industrial/Flex Space—115,350 square feet</td>
</tr>
<tr>
<td>Buntain Phase IV</td>
<td>Approved; awaiting Plan check submittals</td>
<td>Courage Drive</td>
<td>Limited Industrial/Industrial—74,440 square feet</td>
</tr>
<tr>
<td>Diamond Services</td>
<td>Approved; time extension April 2007</td>
<td>Commerce Court and Central Road</td>
<td>Service Commercial/Truck Rental—13,200 square feet</td>
</tr>
<tr>
<td>Meyer Expansion</td>
<td>Approved</td>
<td>2000 Meyer Way</td>
<td>Limited Industrial/Warehouse—363,400 square feet</td>
</tr>
<tr>
<td>Penske Truck Rental</td>
<td>Approved</td>
<td>Pennsylvania Avenue and Illinois Street</td>
<td>Service Commercial/Truck Rental—13,200 square feet</td>
</tr>
<tr>
<td>Rinker Materials</td>
<td>Approved</td>
<td>Huntington Drive and Crocker Circle</td>
<td>General Industrial/Heavy Industrial—22,500 square feet</td>
</tr>
<tr>
<td>Green Valley Corporate Park Professional Building III</td>
<td>Approved</td>
<td>Business Center Drive and Neitzel Road</td>
<td>Industrial and Business Park—9,800 square feet</td>
</tr>
<tr>
<td>Green Valley Corporate Park Professional Building IV</td>
<td>Approved</td>
<td>Business Center Drive and Neitzel Road</td>
<td>Industrial and Business Park—9,800 square feet</td>
</tr>
<tr>
<td>Verizon MSC</td>
<td>Approved</td>
<td>North Watney Way and Courage Drive</td>
<td>Limited Industrial/Data Center—49,235 square feet</td>
</tr>
<tr>
<td>Amir Watney</td>
<td>Approved</td>
<td>South Watney Way and Courage Drive</td>
<td>Limited Industrial/Flex Space—50,677 square feet</td>
</tr>
<tr>
<td>NOI Industrial</td>
<td>Approved</td>
<td>Industrial Drive and Dobe Lane</td>
<td>Limited Industrial—42,000 square feet</td>
</tr>
<tr>
<td>Lincoln Cordelia Road</td>
<td>Under review</td>
<td>Cordelia Road and Chadbourne Road</td>
<td>Limited Industrial/Flex Space—177,000 square feet</td>
</tr>
<tr>
<td>Bella Vita (Cordelia Heights)</td>
<td>Approved</td>
<td>587 Via de Bella</td>
<td>Total units—25 Permits Issued—23 Permits Remaining—2</td>
</tr>
<tr>
<td>East Tabor Townhomes</td>
<td>Approved</td>
<td>855 E Tabor Avenue</td>
<td>Attached or multi-family housing units with single-story house plans Total Units—94 Permits Issued—0 Permits Remaining—94</td>
</tr>
<tr>
<td>Eastridge</td>
<td>Approved</td>
<td>902 Eastridge Drive</td>
<td>Single-story house plans Total Units—217 Permits Issued—155 Permits Remaining—62</td>
</tr>
<tr>
<td>Fieldcrest</td>
<td>Approved</td>
<td>Southwest of Red Top Road/Oakbrook Drive intersection</td>
<td>Single-story house plans Total Units—394 Permits Issued—0 Permits Remaining—394</td>
</tr>
<tr>
<td>Garibaldi Ranch</td>
<td>Approved</td>
<td>Far south side of the city Between Lopes and Gold Hill Road</td>
<td>Single-story house plans Total Units—673 Permits Issued—0 Permits Remaining—673</td>
</tr>
<tr>
<td>Name of Project</td>
<td>Project Status</td>
<td>Project Location</td>
<td>Type of Project</td>
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</tr>
<tr>
<td>Goldridge</td>
<td>Approved</td>
<td>Southeast of Joseph Gerevas Drive/Peabody Road intersection</td>
<td>Single-story house plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total Units—1458</td>
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<td>Permits Issued—864</td>
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<td>Permits Remaining—594</td>
</tr>
<tr>
<td>Green Valley Lake</td>
<td>Approved</td>
<td>5100 Lake Shore Road</td>
<td>Single-story house plans</td>
</tr>
<tr>
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<td>Total Units—475</td>
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<td>Permits Remaining—3</td>
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<tr>
<td>Hidden Meadows</td>
<td>Approved</td>
<td>North side of the city along Mangles Boulevard</td>
<td>Single-story house plans: 157 homes plus 53 second dwellings</td>
</tr>
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<td>Total Units—210</td>
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<td>Permits Issued—196</td>
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<td>Permits Remaining—14</td>
</tr>
<tr>
<td>Hidden Oaks</td>
<td>Approved</td>
<td>West side of Suisun Valley Road 100 yards north of West America Drive</td>
<td>Attached or multi-family housing units</td>
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<td>Total Units—55</td>
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<td>Permits Issued—0</td>
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<tr>
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<td>Permits Remaining—55</td>
</tr>
<tr>
<td>Ivy Wreath</td>
<td>Approved</td>
<td>Eastern end of East Tabor Avenue near Walters Road</td>
<td>Medium-density single-family detached housing with lots below 4,500 square feet in area</td>
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<td>Total Units—73</td>
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<td>Permits Issued—0</td>
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<td>Permits Remaining—73</td>
</tr>
<tr>
<td>Madison Square</td>
<td>Approved</td>
<td>2728 Midtown Lane</td>
<td>Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units</td>
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<td>Total Units—221</td>
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<td>Permits Issued—27</td>
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<td>Permits Remaining—194</td>
</tr>
<tr>
<td>Paradise Valley:</td>
<td>Approved</td>
<td>North of Dover Road/Foothill Parkway intersection; Paradise Valley Golf Course</td>
<td>Single-story house plans</td>
</tr>
<tr>
<td>The Masters Collection</td>
<td></td>
<td></td>
<td>Total Units—164</td>
</tr>
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<td></td>
<td>Permits Issued—129</td>
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<td>Permits Remaining—35</td>
</tr>
<tr>
<td>Paradise Valley:</td>
<td>Approved</td>
<td>North of Dover Road/Foothill Parkway intersection; Paradise Valley Golf Course</td>
<td>Attached or multi-family housing units</td>
</tr>
<tr>
<td>Paradise Valley</td>
<td></td>
<td></td>
<td>Total Units—220</td>
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<tr>
<td>Townhomes</td>
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<td>Permits Issued—0</td>
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<td>Permits Remaining—220</td>
</tr>
<tr>
<td>Brush Creek</td>
<td>Approved</td>
<td>4405 Avondale Circle; Paradise Valley Golf Course</td>
<td>Single-story house plans</td>
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<td>Total Units—150</td>
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<td>Permits Remaining—149</td>
</tr>
<tr>
<td>Paradise Crest</td>
<td>Approved</td>
<td>Manuel Campos Parkway/Mystic Drive intersection; Paradise Valley Golf Course</td>
<td>Single-story house plans</td>
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<td>Total Units—334</td>
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<td>Permits Remaining—226</td>
</tr>
<tr>
<td>Rancho Solano Phase III</td>
<td>Approved</td>
<td>3250 Rancho Solano Parkway; Rancho Solano Golf Course</td>
<td>Single-story house plans</td>
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<td>Total Units—217</td>
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<td>Permits Issued—170</td>
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<td>Permits Remaining—47</td>
</tr>
<tr>
<td>River Oaks</td>
<td>Approved</td>
<td>East of Pittman Road/Link Road intersection</td>
<td>Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units</td>
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<td></td>
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<td>Total Units—28</td>
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<td>Permits Issued—7</td>
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<td>Permits Remaining—21</td>
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### Table 3.1.1-2

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Project Status</th>
<th>Project Location</th>
<th>Type of Project</th>
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<tbody>
<tr>
<td>Southbrook</td>
<td>Approved</td>
<td>West of I-680/Smith Drive undercrossing</td>
<td>Single-story house plans</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Total Units—1,355</td>
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<td>Permits Issued—1,340</td>
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<td>Permits Remaining—15</td>
</tr>
<tr>
<td>Strawberry Fields</td>
<td>Approved</td>
<td>Southwest corner of east Tabor Avenue and Walters Road</td>
<td>Medium-density single-family detached housing with lots below 4,500 square feet</td>
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<td>in area with attached or multi-family housing units</td>
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<td>Total Units—39</td>
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<td>Permits Issued—0</td>
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<tr>
<td></td>
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<td>Permits Remaining—39</td>
</tr>
<tr>
<td>Turnstone</td>
<td>Approved</td>
<td>4587 Turnstone Way</td>
<td>Medium-density single-family detached housing with lots below 4,500 square feet</td>
</tr>
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<td>in area with attached or multi-family housing units</td>
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<td>Total Units—136</td>
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<td>Permits Issued—106</td>
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<td>Permits Remaining—30</td>
</tr>
<tr>
<td>Villages at Fairfield</td>
<td>Approved</td>
<td>North of Air Base Parkway, between Clay Bank Road and Peabody Road</td>
<td>Single-family projects with single-story house plans</td>
</tr>
<tr>
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<td></td>
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<td>Total Units—611</td>
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<tr>
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<td>Permits Issued—0</td>
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<td>Permits Remaining—611</td>
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<td></td>
<td>Medium-density residential with attached or multi-family housing units and lots</td>
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<td>below 4,500 square feet in area</td>
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<td>Total Units—872</td>
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<td>Permits Issued—0</td>
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<td>Permits Remaining—872</td>
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<td></td>
<td></td>
<td>Apartments with attached or multi-family housing units</td>
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<td>Total Units—923</td>
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<td>Permits Issued—0</td>
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<tr>
<td></td>
<td></td>
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<td>Permits Remaining—923</td>
</tr>
</tbody>
</table>

Shaded Boxes = Current or Planned Projects located within or in close proximity to the I-80/I-680/SR 12 Interchange project study area.

**Source:** City of Fairfield Planning Commission 2008; I80/I-680/SR 12 Community Impact Assessment

### Suisun City

Table 3.1.1-2 describes the current and planned development projects in Suisun City. Several projects are focused on revitalizing the downtown area of Suisun City and other projects involve residential, mixed-use, and commercial development in areas outside Suisun City limits but within the city’s sphere of influence and proposed for incorporation into the city.
<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Project Status</th>
<th>Project Location</th>
<th>Type of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suiren-Gentry Development</td>
<td>In planning</td>
<td>SR 12 and Pennsylvania Avenue&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Mixed-use—retail/commercial/residential Residential area (medium to high density, small lot single-family attached and/or detached townhomes and condominiums)—17.1 acres</td>
</tr>
<tr>
<td>Four Seasons RV, Boat and Self Storage</td>
<td>Under construction</td>
<td>1600 Peterson Road</td>
<td>Open and covered RV and boat storage, plus enclosed self-storage units with office and on-site caretaker’s residence on 4.76-acre parcel</td>
</tr>
<tr>
<td>Bank of America Kiosk</td>
<td>Under construction</td>
<td>Sunset Avenue and Highway 12</td>
<td>Walk-up ATM kiosk in Sunset Shopping Center</td>
</tr>
<tr>
<td>Rick's Auto Spa</td>
<td>Under construction</td>
<td>Anderson Drive and McCoy Creek Way</td>
<td>Three-bay full-service car wash center with detached 1,975-square-foot two-unit retail building</td>
</tr>
<tr>
<td>Hampton Inn &amp; Suites</td>
<td>Under construction</td>
<td>Harbor Center and Lotz Way</td>
<td>Four-story 63,412-square-foot hotel with 102 suites, conference room, indoor swimming pool, and a number of other amenities</td>
</tr>
<tr>
<td>McCoy Creek</td>
<td>Building permit for office is ready to issue, mixed-use units are under construction</td>
<td>South side of Highway 12—between McCoy Creek Way and Suisun Marsh, and between Grizzly Island Road and Crescent Elementary School</td>
<td>Office building—6,818-square-foot, four-unit, one-story building with potential 2,234-square-foot mezzanine area Residential area—19 units Live-work units—ten units are single-family homes with additional commercial/business area; five units include an apartment Work/retail portion: five units with 533-square-foot business area plus additional 732-square-foot apartment above; five units with 693-square-foot business area with no additional apartment</td>
</tr>
<tr>
<td>Dollar Tree</td>
<td>Building permit ready to issue</td>
<td>Corner of Highway 12 and Sunset Avenue</td>
<td>10,944-square-foot tenant improvement</td>
</tr>
<tr>
<td>Washington Mutual Drive-Thru ATM</td>
<td>In plan review</td>
<td>Corner of Sunset Avenue and Merganser Drive</td>
<td>New drive-through ATM</td>
</tr>
<tr>
<td>Travis Credit Union</td>
<td>Awaiting construction drawings</td>
<td>SR 12 and Sunset Avenue</td>
<td>2,100-square-foot tenant improvement for new branch office</td>
</tr>
<tr>
<td>Main Street West Development: Parcels 1 &amp; 2</td>
<td>Under construction</td>
<td>Southeast corner of Main Street and Solano Street</td>
<td>Two-story 34,456-square-foot commercial building: first floor 17,956 square feet of retail sales possibly including a restaurant; second floor 16,500 square feet of office space. Building configuration would be U-shaped, creating a public courtyard to the south, which would contain an open fireplace/firepit feature</td>
</tr>
<tr>
<td>Main Street West Development: Parcel 3</td>
<td>In plan review</td>
<td>Northeast corner of Main Street and Solano Street</td>
<td>Two-story 10,579-square-foot commercial or mixed-use building: first floor 5,437 square feet of retail sales possibly including a restaurant; second floor 5,142 square feet of office space or residential units</td>
</tr>
<tr>
<td>Main Street West Development: Parcel 7</td>
<td>In plan review</td>
<td>Solano Street and Suisun Street</td>
<td>Two-story 7,626-square-foot restaurant and banquet room overlooking the marina and Harbor Plaza: Ground floor restaurant 4,060 square feet; upstairs banquet room 3,616 square feet.</td>
</tr>
<tr>
<td>Almond Tree Storage</td>
<td>Awaiting construction drawings</td>
<td>West of Olive Avenue, between East Tabor Avenue and Railroad Avenue&lt;sup&gt;a&lt;/sup&gt;</td>
<td>59,050-square-foot expansion of existing self-storage complex that includes five new buildings and extension of one existing building</td>
</tr>
<tr>
<td>Walters Road West Development</td>
<td>Awaiting construction drawings</td>
<td>Highway 12 and Walters Road</td>
<td>175,000-square-foot Wal-Mart Supercenter, plus restaurant, garden center, and service station with market and car wash on 20.86 acres</td>
</tr>
</tbody>
</table>

<sup>a</sup> Source: Final Environmental Impact Report/Environmental Impact Statement October 2012 Interstate 80/Interstate 680/State Route 12 Interchange Project 3.1.1-8
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Land Use

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Project Status</th>
<th>Project Location</th>
<th>Type of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peterson Ranch</td>
<td>Under construction</td>
<td>Between East Tabor Avenue and Bella Vista Drive</td>
<td>546 detached single-family homes</td>
</tr>
<tr>
<td>Main Street West: Parcel 10</td>
<td>Awaiting construction drawings</td>
<td>North of Lotz Way, between Civic Center Boulevard and Port Way/Alder Street</td>
<td>16 detached single-family homes</td>
</tr>
<tr>
<td>Courtyards at Sunset/Summerwood</td>
<td>Construction temporarily suspended due to market</td>
<td>North of Railroad Avenue and west of Sunset Avenue</td>
<td>69 detached courtyard-style single-family units; 30 units have been built</td>
</tr>
</tbody>
</table>

Note: Shaded boxes indicate projects that occur within or in close proximity to the eastern project area.

* Within the project area.

b This project would include the rerouting of the eastern portion of Railroad Avenue, which would connect directly to Olive Avenue. This is phase one of the Railroad Avenue Reroute Project.

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

Suisun Marsh Protection Act

In 1974, the California Legislature passed the Suisun Marsh Protection Act (Public Resources Code Section 29000 et seq.), designed to preserve Suisun Marsh from residential, commercial, and industrial development. The Act directs the Bay Conservation and Development Commission and the California Department of Fish and Game (DFG) to prepare a protection plan for Suisun Marsh “to preserve the integrity and assure continued wildlife use” of the marsh. The objectives of the protection plan are to preserve and enhance the quality and diversity of the Suisun Marsh’s aquatic and wildlife habitats and to ensure retention of upland areas adjacent to the marsh in uses compatible with its protection.

Under the Suisun Marsh Protection Act, Solano County and other agencies having jurisdiction within the Suisun Marsh were required to bring their policies, regulations, programs, and operating procedures into conformity with the provision of the Suisun Marsh Protection Act and the Suisun Marsh Protection Plan through the preparation of a Local Protection Program. Solano County’s component of the Local Protection Program includes General Plan policies and other policies, programs, and regulations to preserve and enhance the wildlife habitat of the Suisun Marsh and to assure retention of upland areas adjacent to the marsh in uses compatible with its protection. The Solano County General Plan policies are discussed below.

Alternative B, Alternative C, and Alternative C, Phase 1 would encroach on portions of the Suisun Marsh Secondary Management Area which are privately owned. Construction would involve installation of culverts and placement of fill for construction of the Red Top Road/I-680 interchange and realignment of Ramsey Road, resulting in direct disturbance of jurisdictional seasonal drainages in the Suisun Marsh secondary management area. Construction in this area will additionally remove nonnative annual grassland within the secondary management area. These activities would be subject to issuance of a Marsh Development Permit by the San Francisco Bay Conservation and Development Commission (BCDC). All conditions that are

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2 “Secondary management area” means the upland grasslands, cultivated lands, and low-lying areas adjacent to the primary management area as shown on the Suisun Marsh Protection Plan Map. Suisun Marsh Protection Plan, December 1976.
attached to the permit will be implemented as part of the proposed project and included in the Environmental Commitments Record (ECR) for the project (see Appendix I). The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance. With issuance of that permit, the alternative would be consistent with the General Plan, as well as the Suisun Marsh Protection Act.

**Farmland Mapping and Monitoring Program**

The California Department of Conservation’s Farmland Mapping and Monitoring Program (FMMP) keeps track of changes in farmland use, including the conversion of farmland to urban use. This program is informational only, and does not regulate land uses. The FMMP classifies farmland according to four types: Prime Farmland is considered land with the best physical and chemical features able to sustain long-term production of crops; Farmland of Statewide Importance is land that is similar to Prime Farmland but has minor faults such as slopes or limited ability to store soil moisture; Unique Farmland has lesser-quality soils, is used for the production of the state’s leading crops, and may be irrigated or include non-irrigated orchards or vineyards (together, these three farmland classifications constitute “Important Farmland”); and Grazing Land contains existing vegetation suitable for livestock. This is a program for identifying agricultural lands and tracking the conversion of such lands to other uses. It is not a plan, per se, and does not require any consistency from the proposed project.

**Regional Transportation Plan & Transportation Improvement Program—Metropolitan Transportation Commission**

The MTC is responsible for preparation and adoption of the Bay Area’s RTP. The current RTP, *Transportation 2035 Plan for the San Francisco Bay Area*, identifies the major transportation projects needed to accommodate the present and future demands of motorized and non-motorized transportation within the Bay Area. The proposed project is identified in the RTP as project number 230326.

Both Alternative B, Phase 1 and Alternative C, Phase 1 are fully funded in the financially constrained Regional Transportation Plan *Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion* (RTP). The project is also included in the MTC’s financially constrained 2009 Transportation Improvement Program as TIP ID SOL070020. The TIP is being updated to be consistent with the RTP as part of the 2011 TIP process. The 2009 RTP and 2009 TIP (Revised) were found to conform with the *State Implementation Plan* (SIP) by the MTC on April 22, 2009. The FHWA and FTA found the 2009 RTP to be in conformity with the SIP on May 29, 2009. The FHWA and FTA found the 2009 TIP (Revised) to be in conformity with the SIP also on May 29, 2009.

An air quality conformity concurrence letter was signed by the FHWA on April 13, 2011. Currently, only Alternative C, Phase 1 is listed in the 2035 RTP and 2009 TIP (Revised). The design concept and scope of Alternative C, Phase 1 is consistent with the project description in the most recent 2035 RTP and 2009 TIP (Revised). The design concept and scope of the proposed project are consistent with the project listings in the 2035 RTP and 2009 TIP (Revised) and would not interfere with timely implementation of TCMs.
The STA, as sponsor of the project, would be required to submit a TIP amendment if the selected alternative is other than Alternative C, Phase 1.

**Solano Transportation Authority**

The Solano Transportation Authority (STA) was created in 1990 through a Joint Powers Agreement between Solano County and the cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo to serve as the congestion management agency for the jurisdictions within Solano County. The STA is also responsible for countywide transportation planning and programming transportation funds. The proposed project is identified in the STA’s Comprehensive Transportation Plan (CTP 2030), which identifies the proposed project as the “top transportation priority for Solano County” (Metropolitan Transportation Commission 2009; Solano Transportation Authority 2005).

The proposed project is included in, and therefore conforms to, the adopted transportation plans and programs of the STA and the MTC.

**Habitat Conservation Plan/Natural Communities Conservation Plan**

There is currently no approved Habitat Conservation Plan (HCP) or Natural Communities Conservation Plan in effect for the project area.

A multi-species habitat conservation plan is being prepared for Solano County by the Solano County Water Agency. A final administrative draft HCP was prepared in June 2009 but has not been formally adopted. The proposed Solano HCP establishes a framework for complying with state and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operation and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within the Plan Area.³

As the proposed Solano HCP is currently in the administrative draft state, the final text included in the HCP has not been finalized. Pending CEQA and public review, the HCP may be subject to substantial changes. Although the Solano County Water Agency plans to adopt the HCP in the fall of 2012,⁴ the Department is not required to find consistency with draft documents.

**Solano County General Plan**

Solano County has land use jurisdiction over lands that are outside the incorporated city limits of the cities of Fairfield and Suisun City. The county establishes formal goals and policies for the regulation of land uses through its General Plan. This follows from California Planning Law, which requires each city and county to adopt a comprehensive general plan that acts as a “blueprint” for growth from the perspectives of land use, housing, open space, conservation, circulation, noise, and safety (Solano County 2008).

In November 2008 the people of Solano County approved Measure T which confirmed approval of a new County General Plan including an amendment to Solano County’s 1994 Orderly Growth Initiative that updates certain provisions of the Solano County General Plan relating to

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agricultural and open space policies and land use designations, and extends the initiative until December 2028. A cornerstone principal of the new General Plan and Orderly Growth Initiative is the direction of new urban growth and development toward municipal areas.

Lands within the Suisun Marsh to the south of Fairfield and east of I-680 are protected by strict limitations on development within the primary and secondary management areas of the Marsh under the Solano County General Plan (Solano County 2008). Portions of the proposed project would encroach into the secondary management area of the Marsh as discussed above.

Unincorporated lands adjoining the proposed project are designated as “Agriculture” on the Solano County General Plan land use map. The Agriculture designation “provides areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy, and allows for secondary uses that support the economic viability of agriculture. Agricultural land use designations protect these areas from intrusion by nonagricultural uses and other uses that do not directly support the economic viability of agriculture” (Solano County 2008).

An area on the east side of Nelson Hill, south of the proposed project alignment, is designated an “Urban Project Area” with a “Neighborhood Agricultural/Tourist Center” adjoining it. The Urban Project Area designation “reflects city-designated master plan, specific plan, or other future plan areas. This designation is applied to these areas to reflect the current city designation for this area. Once specific land uses have been applied to these areas by the cities, the County will amend the General Plan to reflect such changes” (Solano County 2008).

The Neighborhood Agricultural/Tourist Center designation provides for areas supporting complementary agricultural and tourism commercial facilities that are compatible with surrounding agricultural uses. In addition, permitted uses should enhance the agricultural character of surrounding areas, develop brand recognition, and create a destination for tourists. Permitted uses include small hotels, restaurants, retail shops, and facilities for the sale of local produce (Solano County 2008).

Lands within the Suisun Marsh, to the south of Fairfield and east of I-680 are designated “Marsh,” with a “Resource Conservation” overlay. The Marsh designation “provides for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands.” The Resource Conservation overlay “identifies and protects areas of the county with special resource management needs. This designation recognizes the presence of certain important natural resources in the county while maintaining the validity of underlying land use designations. The overlay protects resources by (1) requiring study of potential effects if development is proposed in these locations, and (2) providing mitigation to support urban development in cities” (Solano County 2008).

The General Plan’s Suisun Marsh Policy Addendum’s “Utilities, Facilities, and Transportation” Policy 1(e) provides that:
New roadways (highways, primary and secondary roads) and rail lines that form barriers to movement of terrestrial wildlife should not be constructed in the Suisun Marsh or in adjacent uplands necessary to protect the Marsh except where such roadways and rail lines are necessary in the secondary management area for the operation of water-related industry and port uses within the area designated by the Protection Plan as a water-related industry reserve area at Collinsville. Rail access to serve the water-related industrial reserve area may be permitted within the existing Sacramento Northern Railroad right-of-way or along the east side of the Marsh, whichever route would result in the least disturbance to wetlands and wildlife. Wherever possible, rail access to the Sacramento River and through the area designated as a water-related industrial reserve area should be located above the ten-foot contour in order to avoid adverse effects to wetlands. Whenever the reconstructed line would pass through wetland areas, it should be constructed on trestles or in a manner which allows for the natural movement of water and wildlife beneath the alignment.

Policy 1(f) further provides:

The Solano County General Plan acknowledges the need for the possible future expansion of Highway 12. When future traffic loads warrant the widening of Highway 12, such expansion must be designed so as to minimize adverse environmental effects on the Marsh.

The County component of the Marsh Protection Plan contains several Wildlife Habitat Management and Preservation, and Water Quality policies that would pertain to the project. These include:

Wildlife Policy 1

The diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced wherever possible to maintain the unique wildlife resource.

Wildlife Policy 2

The Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection.

The project alternatives would have minimal impacts on lands within the Suisun Marsh secondary management area. Impacts of the project on waterways, wetlands, and marshes would be mitigated as described in Section 3.2.2 of the Draft EIR/EIS. These mitigation measures would require compensation for affected waterways, wetlands, and marsh areas at a 1:1 ratio to ensure no net loss of these habitats as a result of the project.

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6 Solano County is required to prepare and adopt a component of the local protection program required under the 1977 Suisun Marsh Preservation Act (Marsh Act) to implement the Suisun Marsh Protection Plan within the Suisun Marsh Management area. The County component of the LPP is comprised of polices contained in the County General Plan; County Code provisions including the Zoning Code (Chapter 28), Drainage and Flood Control (Chapter 9), and Grading and Erosion Control (Chapter 31); policies regulating sewage disposal systems; and findings of consistency between the Marsh Act and existing county policy.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Land Use

Water Quality Policy 3

Disruption or impediments to runoff and stream flow in the Suisun Marsh watershed should not be permitted if it would result in adverse effects on the quality of water entering the Marsh. Riparian vegetation in the immediate Suisun Marsh watershed should be preserved, and stream modification permitted only if it is necessary to ensure the protection of life and existing structures from floods. Only the minimum amount of modification necessary should be allowed in such cases.

Chapter 3.2.1 of the Draft EIR/EIS describes the potential water quality impacts of the project alternatives and describes both permanent and temporary (during construction) best management practices that would be implemented to protect water quality, preserve existing vegetation, and treat stormwater runoff before entering the Suisun Marsh.

Water Quality Policy 6

Riparian vegetation in the immediate Suisun Marsh watershed should be preserved due to its importance in the maintenance of water quality and its value as Marsh—related wildlife habitat. Stream modification should only be permitted if it is proved necessary to ensure the protection of life and existing structures from floods and only the minimum amount of modification necessary should be allowed.

The project would not affect any riparian habitat located within the Suisun Marsh area.

Project activities occurring within the Suisun Marsh Secondary Management Area would be subject to the issuance of a Marsh Development Permit by the BCDC and all conditions attached to the permit will be implemented as part of the project. Issuance of a Marsh Development Permit by BCDC would ensure project activities are consistent with the Suisun Marsh Protection Act policies and Solano County General Plan.

The Solano County General Plan continues the county’s long-time commitment to preserving agricultural land by limiting urbanized development outside of the incorporated cities and their “municipal service areas.” The Solano County General Plan Land Use Element establishes the following goals.

- **LUG-1:** Preserve and protect the current development pattern of distinct and identifiable cities and communities.

- **LUG-2:** Encourage a development pattern that first seeks to maintain existing communities, second, to develop vacant lands within existing communities presently served by public services, and third, to develop lands immediately adjacent to existing communities where services can easily be provided.

- **LUG-3:** Create sustainable communities with areas for employment, shopping, housing, public facilities and services, and recreation in close proximity to each other.

- **LUG-4:** Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.
Key Solano County General Plan Land Use Element policies include the following.

**LUP-1:** Collaborate with cities to guide development to the county’s urban centers and promote sustainable development patterns.

**LUP-2:** A cornerstone principle of this General Plan is the direction of new urban development and growth toward municipal areas. In furtherance of this central goal, the people of Solano County, by initiative measure, have adopted and affirmed the following provisions to assure the continued preservation of those lands designated “Agriculture”, “Watershed”, “Marsh”, “Park & Recreation”, or “Water Bodies & Courses”; Land Use policy LUP-3 and Agricultural policies AGP-31, AGP-32, AGP-33, AGP-34, AGP-35, and AGP-36. The General Plan may be reorganized, and individual goals and policies may be renumbered or reordered in the course of ongoing updates of the General Plan in accord with the requirements of state law, but the provisions enumerated in this paragraph shall continue to be included in the General Plan until December 31, 2028, unless earlier repealed or amended by the voters of the County.

**LUP-3:** The designation of specific lands and water bodies as “Agriculture”, “Watershed”, “Marsh”, “Park & Recreation”, or “Water Bodies & Courses” on the Solano County Land Use Diagram, adopted by the Solano County Board of Supervisors on December 19, 1980, and as amended subsequently consistent with Proposition A, and the Orderly Growth Initiative, shall remain in effect until December 31, 2028 except lands designated Agriculture may be redesignated pursuant to the procedure specified in Agricultural Policies AGP-32 through AGP-36 (providing for re-designation upon the making of specific findings, or as necessary to comply with state law requirements regarding provision of low and very low income housing, or permitting certain re-designations to open space).

In addition, these agricultural and open space lands may also be redesignated after a final judgment by a court of competent jurisdiction determining that the absence of a redesignation would constitute an unauthorized taking of private property or is otherwise unconstitutional, but only to the minimum geographical extent and intensity of use necessary to avoid such unconstitutional result. Any such redesignation shall be designed to carry out the goals and provisions of this policy to the maximum extent possible.

Further, the precise boundaries of land use designations may be subject to minor adjustment and refinement prior to development, or upon request of an affected landowner, provided such refinements reflect the overall boundaries indicated on the General Plan Land Use Diagram and are consistent with all other General Plan policies, in particular, the General Plan policies prohibiting piecemeal conversions of agricultural lands to nonagricultural uses.

The Solano County General Plan Agricultural Element has the following policies that are relevant to the proposed project.

**AGP-1:** Ensure that agricultural parcels are maintained at a sufficient minimum parcel size so as to remain a farmable unit. Farmable units are defined as the size of parcels a farmer would consider viable for leasing or purchasing for different agricultural purposes. A farmable unit is not considered the sole economic function that will internally support a farm household.

**AGP-3:** Encourage consolidation of the fragmented pattern of agricultural preserves and contracts established under the Land Conservation Act (Williamson Act) and the retention of agricultural preserves and contracts in agricultural, watershed, and marshland areas.
AG.P-4: Require farmland conversion mitigation for either of the following actions:

a. General Plan amendment that changes the designation of any land from an agricultural to a nonagricultural use, or

b. an application for a development permit that changes the use of land from production agriculture to a nonagricultural use, regardless of the General Plan designation.

The Solano County General Plan Transportation Element contains the following policies that are relevant to the proposed project.

TC.P-1: Maintain and improve current transportation systems to remedy safety and congestion issues, and establish specific actions to address these issues when they occur.

TC.P-6: Participate in transportation programs that promote technical solutions resulting in more efficient use of energy, reduced greenhouse gas emissions and noise levels, and improved air quality.

TC.P-8: Actively participate with the California Department of Transportation, Solano Transportation Authority, cities, and other agencies to plan for any proposed future realignments of current interregional routes.

TC.P-11: Maintain and improve the current roadways and highway system to meet recommended design standards set forth by the County, including streets that also carry transit and nonmotorized traffic.

Solano County has entered into Williamson Act contracts on several parcels of agricultural land in the project area. These contracts encumber approximately 388 acres in the project area (see Table 3.1.3-2).

In addition, the project area includes lands restricted by conservation easements. Typically, conservation easements are legal agreements between property owners and government agencies or non-profit organizations that permanently limit land development. Easements can restrict land to a prior use or preserve land for purposes of creating and maintaining open space or agricultural uses. In the project area, there is approximately 72 acres encumbered by conservation easements (see Table 3.1.3-3).

The portion of the study area east of I-680 between the Gold Hill Road overpass and just south of Jameson Canyon Creek is within the Suisun Marsh Secondary Management Area (SMA). The secondary management area provides a buffer of upland grasslands and cultivated areas between the primary marsh and development. Development in the SMA is regulated by the BCDC through marsh development permits. This part of the study area supports nonnative annual grassland, with stands of eucalyptus trees, several seasonal wetlands, and ruderal vegetation adjacent to I-680.

The proposed project is generally consistent with the goals and objectives included in the Land Use Element of the Solano County General Plan. The proposed project is linear in nature and would not result in substantial changes in land uses that would conflict with the General Plan. A primary goal of the General Plan is to “provide and maintain a safe, economical, and efficient
circulation and transportation system to ensure adequate multi-modal movement of people and goods within, to, and from the county while incurring the least social, economic, and environmental harm to existing or planned activities and land uses.” As a transportation improvement project, the proposed project directly serves and is consistent with this goal.

A second objective of the Solano County General Plan Land Use Element is to encourage land use development patterns and circulation and transportation systems that minimize energy consumption. The proposed project is fully consistent with this objective. By widening the existing roadway and building new access to I-80, I-680, and SR 12, the proposed project would provide for a reduction in traffic congestion within the project area, reducing the amount of fuel utilized by idling automobiles and the amount of emissions produced as a result of congestion.

Another Solano County land use goal applicable to the proposed project calls for “orderly growth which assures a harmonious relationship of land uses and maintains the distinctive character of each community.”

**City of Fairfield General Plan**

The City of Fairfield General Plan Land Use Element policies restrict urban development to areas within the City’s defined Urban Limit Line, reflecting a commitment on the part of the city to preserve the character of rural areas surrounding the city. In general, the City of Fairfield General Plan supports a buffer, or greenbelt, separating the city from other urban areas in Solano County. The Land Use and Agriculture Elements of the City of Fairfield General Plan include the following objectives, policies, and programs that are relevant to implementation of the proposed project.

**Objective LU 2**—Achieve a pattern of development that reinforces the city’s desired image.

**Policy LU 2.1**—Encourage the preservation of agricultural land surrounding the city and permanently preserve agriculture in the Suisun Valley.

The City of Fairfield General Plan Circulation Element includes the following goal, objectives, policies, and programs that are relevant to the proposed project.

**Goal**—The goal of the Circulation Element is to create and maintain an efficient, safe, and coordinated multi-modal circulation system, serving the needs of a variety of users.

**Objective CI 1**—Establish a circulation system that is consistent with the land use patterns of the city. (See Objective LU 4 and Policy LU 4.2)

**Policy CI 1.1**—Develop a network of roads that is compatible with the general land use patterns of the city.

**Objective CI 2**—Achieve a coordinated regional and local transportation system that minimizes traffic congestion and efficiently serves users.

**Policy CI 2.3**—Work with the California Department of Transportation (Caltrans) to identify needed improvements to its highway/interstate facilities in the city and implement necessary programs on the state highway system and its interchanges/intersections with local roadways.
Policy CI 2.4—Work with Caltrans and adjacent jurisdictions to improve the operational performance of I-80, I-680, and SR 12 as regional facilities.

The build alternatives are consistent with the applicable City of Fairfield General Plan land use policies and programs. The primary focus of the City of Fairfield General Plan Land Use Element is the preservation of lands used for agricultural purposes within the City of Fairfield. Within Fairfield city limits, the majority of land used for agricultural purposes is located north of the city and Travis Air Force Base, well outside the project area.

City of Suisun City General Plan
The City of Suisun City 1992 General Plan Land Use Element addresses future land use in light of the county policy of directing growth to the cities and Suisun City’s constraints from its location between two areas with very limited development potential: Travis Air Force Base on the east (land uses on lands surrounding the base are restricted in order to avoid conflicts with base operations) and Suisun Marsh to the south (state law limits development within the geographic marsh area). Whereas Fairfield is several miles long and adjoins most of the proposed project, Suisun City is relatively compact and is affected only by the eastern terminus of the proposed project.

The affected portion of Suisun City is located within the city’s 1999 Downtown/Waterfront Specific Plan. The policies of the Specific Plan are intended to enhance the city’s attractiveness to visitors, leading to potential development of water and tourist-oriented commercial services in the downtown area. SR 12 and the Capitol Corridor/UPRR line are emphasized as infrastructure important to attracting new commercial and light industrial development in adjacent areas of the city. The Downtown/Waterfront Specific Plan’s circulation system map indicates that a “bypass road” is to be built on the east side of the railroad tracks from Cordelia Street north to Spring Street at the train station.

The Land Use Element of the City of Suisun City General Plan includes the following land use policy that is relevant to implementation of the proposed project.

Policy 20: Gentry-Pierce Property. The Gentry-Pierce property, located south of SR 12 and east of the Southern Pacific Railroad tracks, is appropriate for business park land uses and should be developed as such. The intersection of Pennsylvania Avenue and SR 12 is also appropriate for a retail commercial center because of its location at this key intersection and as part of the entryway to the development. The retail center would serve businesses and employees of the development as well as the community at large. For this reason, the area immediately adjacent to the intersection on both sides of Pennsylvania Avenue is designated general commercial. The exact size and shape of the general commercial area would be determined through the development review process, but would not be less than 30 net acres (net area is defined as gross area less public right-of-way dedicated for arterial streets and non-developable areas such as wetlands).

The City of Suisun City General Plan Circulation and Transportation Element includes the following goal and objective that are relevant to the proposed project.

Goal—To develop a street and highway system which provides for both local and regional vehicular circulation needs while maintaining a level of service (LOS) “E” on public streets wherever feasible. This level of service represents stable, high-volume traffic flows.
Objective 1—Construct SR 12 to a four-lane expressway standard to Walters Road. Add an additional two lanes when conditions on any segment east of Sunset Avenue fall below LOS “E.” Provide for the long-term possibility of a grade separation at Sunset Avenue.

A major development project, referred to as the Gentry-Suisun Project, was proposed for the unincorporated portion of the city’s sphere of influence south of SR 12E and west of the extension of Pennsylvania Avenue. The Gentry-Suisun Project proposed to annex this site to the city and amend the City of Suisun City General Plan to allow mixed-use residential, commercial/retail, and business park uses on the site. The proposal did not progress beyond the environmental analysis stage and is no longer active.

The build alternatives are generally consistent with the City of Suisun City General Plan and Downtown/Waterfront Specific Plan. The eastern terminus includes improvements that will improve access to the transit center west of Main Street, as discussed in the City of Suisun City General Plan Downtown/Waterfront Specific Plan. Improvements to SR 12E are consistent with city policies for widening the state highway.

The build alternatives would be consistent with local land use plans and not induce growth beyond that envisioned in the General Plan.

3.1.1.3 Parks and Recreational Facilities

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” Under the National Environmental Policy Act (NEPA) assignment provisions, the Department is responsible for undertaking Section 4(f) analysis for the proposed project.

The Department’s analysis is prepared in accordance with federal requirements. Per FHWA and FTA regulations at 23 CFR 774.17, a Section 4(f) “use” occurs when 1) land is permanently incorporated into a transportation facility, 2) there is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute’s preservationist purpose as determined by the criteria in Section 774.13(d); or 3) when there is a constructive use of a Section 4(f) property as determined by the criteria in Section 774.15.

To note, the requirements of Section 4(f) will also be considered satisfied with respect to a Section 4(f) resource if it is determined that a transportation project will have only a “de minimis impact” on the 4(f) resource. The provision allows avoidance, minimization, mitigation, and enhancement measures to be considered in making the de minimis determination. The agencies with jurisdiction must concur in writing with the determination. Additional requirements for a de minimis impact finding include providing the public an opportunity to review and comment on the effects of the proposed project on the Section 4(f) resource. De minimis impact is defined in 23 CFR 774.17. For parks and recreation areas, a de minimis impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). Per 49 U.S.C. 303 and 23 U.S.C. 138, once the U.S. Department of Transportation determines that a transportation use of Section 4(f) property results in a de minimis impact on the
property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete.

Recreational Resources
There are a number of parks and recreational resources in the general area of the proposed project. In addition, Rodriguez High School is located along I-680.

Fairfield Linear Park: The linear park is a 94-acre “rails-to-trails” publicly owned park located entirely within Fairfield. The length of the park is approximately five miles, reaching from the intersection of North Texas Street and East Tabor Avenue at the eastern terminus to Solano Community College at the western terminus. Within the project area, the trail parallels the northern side (westbound lanes) of I-80. Future plans include an extension of the park’s eastern boundary to the Fairfield city limits, which would bring the park’s total length to approximately eight miles.

The park is a multi-use facility that provides opportunities for both active and passive outdoor recreation. Some of the more common activities that occur at the park include jogging, bicycling, and walking, all of which mostly take place on a concrete/asphalt path that spans the entire distance between the park’s termini. The path is eight to ten feet wide, on average, and is located entirely within the park right-of-way, which varies between 40 and 100 feet in width, depending on location. Jogging, bicycling, and walking are all permitted on the path.

The Fairfield City Council amended the General Plan designation of a portion of the Fairfield Linear Park between Abernathy Road and Solano Community College from open space recreation (OSR) to public facility (PF) on September 16, 2008. The change in designation allows this approximately 2-mile long segment of the Fairfield Linear Park to be replaced by a new joint-use pathway to be constructed as part of the North Connector Project (now referred to as the Suisun Parkway Project). The new joint-use pathway would connect with the Fairfield Linear Park at Abernathy Road and Suisun Valley Creek.

Vintage Green Valley Park: This city park is located at the northeast corner of Vintage Valley Drive and Mangels Boulevard, north of the intersection of Business Center Drive and Green Valley Road. It has a picnic area and landscaped open space.

Rodriguez High School: The high school is located west of I-680, adjoining the north side of Red Top Road. The school has a track and playing fields.

Ridgeview Neighborhood Park: This small city park is located on the north side of Silver Creek Road, in the residential neighborhood west of Lopes Road. It has a picnic area, basketball courts, and play fields.

American Canyon Creek Trail: This is a linear city park that runs along American Canyon Creek from Lopes Road on the east to Silverado Drive on the north. It consists of passive open space land and adjoins the north side of Ridgeview Neighborhood Park.

Suisun Marsh: Lands within the Suisun Marsh, to the south of Fairfield and east of I-680 are designated “Marsh,” with a “Resource Conservation” overlay. The Marsh designation “provides
for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands.”

**Bay Area Ridge Trail:** A new segment of the Bay Area Ridge Trail was dedicated by the City of Fairfield and the Bay Area Ridge Trail Council in September 2010. This segment, which lies to the south of I-80 along McGary Road from Red Top Road to Hiddenbrooke Drive, is located immediately adjacent to the western segment of the project alignment. Approximately 3.5 miles long, this trail is designated for multi-uses including hiking, biking, and equestrian uses.

**Impacts on Facilities**
Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be relocated prior to construction of the proposed project. The park is considered a 4(f) resource. There would be no effect to the recreational activities, features, or attributes of this facility because the resource would be replaced and there would be no interruption of use.

Because both project alternatives are located approximately 0.5 mile from Vintage Green Valley Park, the project would not affect access to the park. The project would not affect the qualities, attributes, or features of Vintage Green Valley Park either directly or indirectly.

Under Alternative C and Alternative C Phase 1, Lopes Road would be realigned approximately 100 feet west of its current location between Fermi Road and Red Top Road. This realignment would move the road closer to Rodriguez High School, but would not affect any portion of the school including its recreational fields. Thus, the project would not affect the recreational activities, features, or attributes of the recreational fields.

Given the distance from Ridgeview Park from the project alternatives (approximately 500 feet), and intervening homes, commercial buildings, and/or businesses between the project and the park, the project would not affect the qualities, attributes, or features of Ridgeview Park either directly or indirectly. Further, access to the park would not change with implementation of the project alternatives.

American Canyon Creek is located approximately 50 feet away from the proposed project improvements. Given the existing proximity of the trail to I-680, trail users are already exposed to the noise effects of having a transportation facility nearby. Implementation of the project would not result in a significant increase in project noise levels; the increase in projected noise level with the project is barely perceptible (i.e., one dBA or less). Although construction of the project would result in minor visual effects for trail users during construction, these effects would be temporary in nature and would only occur during the construction period. Thus, project alternatives would not substantially impair the protected activities, features, or attributes of the trail. As such, the provisions of Section 4(f) are not triggered.

Both full build alternatives would involve improvements, including a new interchange at I-680 and Red Top Road and realigning Ramsey Road following construction of the new interchange, within the Suisun Marsh Secondary Management Area. These improvements would introduce
new roadway facilities to this portion of the Suisun Marsh Secondary Management Area. However, as these improvements occur on land which is privately owned, this portion of the Suisun Marsh is not a Section 4(f) resource. Therefore, the provisions of Section 4(f) are not triggered.

Although both project alternatives could indirectly affect access to the McGary segment of the Bay Area Ridge Trail in the project area during construction, implementation of the project would beneficially open up several alternatives for completing the gap between the existing segments of the Bay Area Ridge Trail between Green Valley Road and McGary Road. The project alternatives, once completed, would not impede access nor create a barrier to completing and opening segments of the planned Bay Area Ridge Trail in the project area. Further, the build alternatives would not cause a constructive use of the Bay Area Ridge Trail because the proximity impacts will not substantially impair the protected activities, features, or attributes of the trail. Thus, the provisions of Section 4(f) are not triggered.

The No-Build Alternative would not alter existing conditions and therefore would have no effect on parks or recreation facilities.

Appendix B contains additional information regarding resource evaluated relative to the requirements of Section 4(f).

**Impact on Fairfield Linear Park**

As noted above, the Linear Park Trail is a multi-use facility that provides opportunities for both active and passive outdoor recreation. Bicycling, running, and walking are all permitted on the path. Because the Linear Park Trail is a Class I publicly owned trail, is used for recreational purposes, and is not used primarily for transportation or as part of a local transportation system, it is considered a Section 4(f) resource.

**Impacts on the Linear Park Trail**

Alternative B and Alternative C include an improvement common to both that would have an impact on the Linear Park Trail.

Both alternatives include changes to the Abernathy Road/I-80 interchange. The existing westbound on- and off-ramps would be reconstructed to accommodate a loop on-ramp. This interchange would become the Suisun Parkway/I-80 interchange with completion of the eastern segment of the North Connector Project. Approximately 0.65 mile of the existing Linear Park Trail would potentially be affected under both of the alternatives (Figure 3.1.1-1).

However, as part of the project design, both alternatives would permanently realign the existing trail north of the proposed improvements at the Abernathy Road/I-80 interchange prior to construction. This realignment would allow for the continued use of the trail facilities during and after construction activities for either alternative. The Linear Park Trail would remain open and in use under both alternatives. Some minor visual effects for trail users would occur during construction, but these effects would be temporary in nature and would occur only during the construction period. This temporary change in view would not affect the use of Linear Park Trail. The proposed project would not adversely affect the activities, features, and attributes that qualify the trail for protection under Section 4(f).
Potential indirect impacts on the Linear Park Trail were also evaluated. As part of the traffic noise modeling study, the noise level at one prediction site, located 500 feet north of I-80 and the trail, was analyzed for existing and future conditions with and without the proposed project. At this location, the existing traffic noise level at the loudest hour was predicted to be 63 dBA. The future noise level (2035) at this site was predicted to be 65 dBA with the buildout of the four build alternatives and 64 dBA without buildout of the proposed project. Although the alternatives would be one dBA higher under design-year with-project conditions compared to design-year no-project conditions, noise levels do not approach or exceed the NAC for the land use (67 dBA) under 23 CFR 772. Therefore, there would be no noise-related impacts on this Section 4(f) resource due to implementation of the proposed project.

The proposed project would not result in any violations of CO NAAQS, is not considered a project of air quality concern (POAQC) for PM10 or PM2.5, would not exceed operational thresholds for ROG, NOx, CO, and PM10 emissions, and would result in decreases (not increases) in all MSAT emissions. With implementation of measures outlined in Section 3.2-6 (Air Quality) in the EIR/EIS, construction of the project would not result in a significant increase in ROG, NOx, CO, and particulate matter emissions. Therefore, no air quality-related effects on this Section 4(f) resource would occur as a result of this project.

No natural communities of special concern or special-status plant species are present within this portion of the proposed project. The full build alternatives could have adverse effects on potential nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors found within this area. However, implementation of the measures outlined in Section 3.3 “Biological Resources” in the EIR/EIS would minimize these potential effects. A stormwater pollution prevention program (SWPPP) would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality occur as a result of project construction (see Chapter 3, Section 3.2-2, “Water Quality” in the EIR/EIS for additional information). There would be no vegetation, wildlife or water quality related effects on this Section 4(f) resource as a result of the proposed project.

The preliminary determination is that the use of this property under Alternative B and Alternative C appears to qualify for a de minimis determination under Section 4(f). Thus, per 49 U.S.C. 303 and 23 U.S.C. 138, no discussion of avoidance alternatives is listed for this resource.

**Measures to Minimize Harm to the Linear Park Trail**
Measures to minimize harm to the Linear Park Trail would include realigning the existing trail north of both alternatives at the Abernathy Road/I-80 interchange prior to their construction. This realignment would allow for the continued use of the trail facilities while construction activities under the two alternatives were underway.

**Coordination for the Linear Park Trail**
In a letter dated November 22, 2010, the City of Fairfield concurred with the Department’s finding that the effects on this Section 4(f) resource as a result of implementation of Alternative B and alternative C would be minimal under Section 4(f) (see Appendix B).
**Concluding Statement for the Linear Park Trail**

The determination is that the effects on this Section 4(f) resource as a result of implementation of Alternative B and Alternative C would be *de minimis* under Section 4(f).
Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet: 1

Architectural APE
Existing ROW
Existing Approved Facilities/Development
Area of Project Impact

Project Alternatives

Alternative B, Phase 1
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources

Historic Resource
Trails

Existing ROW
Existing Approved Facilities/Development

Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008
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Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet: 2

- Alternative B, Phase 1
- Alternative C, Phase 1
- Initial Phase 1
- Historic Resource
- Trails

Q: PROJECTS | I80680 | 02166_02 | MAPDOC | APE | 4F_ANALYSIS | 20100520 | FIG_3_1_1_1_4F_ANALYSIS_BETH_RECREATION_SHEET_2_INSETS_20100520.MXD  SS  (05-20-10)
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Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet 3

Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Cordelia Historic District

Existing ROW
Existing Approved Facilities/Development
Area of Project Impact

Project Alternatives

Alternative B, Phase 1
Alternative C, Phase 1
Initial Phase 1

Architectural APE

Section 4(f) Resources

Historic Resource
Trails
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3.1.2 Growth

This discussion is based primarily on the CIA prepared for the proposed project.

Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act of 1969, requires evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

Affected Environment

For the purposes of this analysis, the study area was defined by available statistical data describing Solano County, the cities of Fairfield and Suisun City, and eleven 2000 Census Tract Block Group areas that encompass the project area and its environs.

Population and Housing Trends in the Study Area

The nine-county Bay Area region, or San Francisco–San Jose–Oakland Metropolitan Statistical Area (MSA), is the twelfth largest metropolitan area in the United States, with a population of 7,039,362 as of the 2000 U.S. Census. The 1990 U.S. Census reported the region’s population as 6,253,311; this change constitutes a 13% increase. Solano County has grown the fastest of the nine counties, with an increase of 68% between 1980 and 2000. Fairfield alone grew by 66% between 1980 and 2000. This trend is expected to continue well into the twenty-first century. Table 3.1.2-1 shows the projected increase in population for the Bay Area, Solano County, Fairfield, and Suisun City from 2000 to 2035.

Table 3.1.2-1. Regional and Local Population—2000 through 2035

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Area Region</td>
<td>6,783,762</td>
<td>7,096,100</td>
<td>7,412,500</td>
<td>7,730,000</td>
<td>8,069,700</td>
<td>8,389,600</td>
<td>8,712,800</td>
<td>9,031,500</td>
</tr>
<tr>
<td>Solano County</td>
<td>392,542</td>
<td>421,600</td>
<td>455,200</td>
<td>488,400</td>
<td>514,900</td>
<td>539,900</td>
<td>562,900</td>
<td>585,800</td>
</tr>
<tr>
<td>City of Fairfield</td>
<td>96,178</td>
<td>106,000</td>
<td>115,500</td>
<td>123,700</td>
<td>129,700</td>
<td>135,000</td>
<td>139,600</td>
<td>144,500</td>
</tr>
<tr>
<td>Suisun City</td>
<td>26,118</td>
<td>27,600</td>
<td>29,700</td>
<td>31,600</td>
<td>32,900</td>
<td>34,400</td>
<td>35,900</td>
<td>37,400</td>
</tr>
</tbody>
</table>


The Association of Bay Area Governments’ (ABAG’s) Projections 2007 places the 2000 Bay Area regional population at 6,783,762. By 2035, the region is expected to have a population of
9,031,500, a 25% increase. The population of Solano County is expected to increase by 49%, Fairfield by 50%, and Suisun City by 43% in that same period.

As would be expected with the increase in population described above, housing has grown rapidly in the study area, both in total number and in average household size.

Approximately 63% of housing units in the county and 61% of housing units in Fairfield–Suisun City are owner occupied. Average household size is larger in Fairfield–Suisun City than in Solano County as a whole. Table 3.1.2-2 shows housing characteristics for Solano County (including the incorporated cities of Benicia, Dixon, Vacaville, Vallejo, and Fairfield–Suisun City) and Fairfield–Suisun City as a discrete unit.

### Table 3.1.2-2. Housing Characteristics in 2000

<table>
<thead>
<tr>
<th></th>
<th>Solano County</th>
<th>Fairfield–Suisun City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Housing Units</td>
<td>134,513</td>
<td>41,635</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>2.9</td>
<td>3.02</td>
</tr>
<tr>
<td>Owner-Occupied Units</td>
<td>84,994</td>
<td>25,549</td>
</tr>
<tr>
<td>Renter-Occupied Units</td>
<td>45,409</td>
<td>14,920</td>
</tr>
<tr>
<td>Two-Person Household</td>
<td>33,062</td>
<td>10,347</td>
</tr>
<tr>
<td>Three-Person Household</td>
<td>22,778</td>
<td>7,340</td>
</tr>
<tr>
<td>Four-Person Household</td>
<td>21,946</td>
<td>7,375</td>
</tr>
<tr>
<td>Five-Person Household</td>
<td>11,331</td>
<td>3,890</td>
</tr>
<tr>
<td>Six-Person Household</td>
<td>4,777</td>
<td>1,634</td>
</tr>
<tr>
<td>Vacant Units</td>
<td>4,110</td>
<td>1,166</td>
</tr>
</tbody>
</table>


The number of households in the Bay Area region is anticipated to grow by 34% between 2000 and 2035. Solano County is expected to experience a 50% increase, Fairfield a 52% increase, and Suisun City a 43% increase during the same period. Table 3.1.2-3 shows the projected number of households for the Bay Area Region, Solano County, Fairfield, and Suisun City between 2000 and 2035.

### Table 3.1.2-3. Number of Regional and Local Households—2000 through 2035

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Area Region</td>
<td>2,466,020</td>
<td>2,583,080</td>
<td>2,696,580</td>
<td>2,819,030</td>
<td>2,941,760</td>
<td>3,059,130</td>
<td>3,177,440</td>
<td>3,292,530</td>
</tr>
<tr>
<td>Solano County</td>
<td>130,403</td>
<td>142,040</td>
<td>152,400</td>
<td>162,620</td>
<td>172,050</td>
<td>180,360</td>
<td>188,290</td>
<td>196,220</td>
</tr>
<tr>
<td>City of Fairfield</td>
<td>30,870</td>
<td>34,690</td>
<td>37,530</td>
<td>40,050</td>
<td>42,060</td>
<td>43,780</td>
<td>45,400</td>
<td>47,030</td>
</tr>
<tr>
<td>Suisun City</td>
<td>7,987</td>
<td>8,590</td>
<td>9,130</td>
<td>9,580</td>
<td>10,020</td>
<td>10,500</td>
<td>10,960</td>
<td>11,420</td>
</tr>
</tbody>
</table>


Persons per household in the Bay Area region overall has increased from 2.61 in 1990 to 2.73 in 2005. Again, there is substantial variation within the region. With fewer families and more young singles than the rest of the Bay Area, San Francisco has the smallest average household size, reported at 2.30 persons per household in 2000. Solano County, on the other hand, has the second-highest average household size, estimated at 2.90 persons per household in 2000. ABAG expects household sizes across the Bay Area to level off, projecting a ratio of 2.71 persons per household for the region in 2025.
Environmental Consequences

The Department’s *Environmental Handbook Volume 4, Community Impact Assessment* states that “growth inducement is defined as the relationship between the proposed transportation project and growth within the project area.” The Department has developed a checklist for determining if a project is considered to be growth inducing. The proposed alternatives were evaluated in accordance with this checklist as shown in Table 3.1.2-4.

### Table 3.1.2-4. Growth-Inducement Checklist

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Would the project attract more residential development or new population into the community or planning area?</td>
<td>No. Though the project would increase highway capacity and allow some growth, it would do so in accordance with local planning documents. The project would increase the capacity of the I-80/I-680/SR 12 interchange complex to accommodate existing and planned increases in traffic. These improvements would allow, to some extent, future population growth both locally and regionally to occur. However, the project would not result in the direct development of residential land uses nor would it provide access to areas that currently do not have access. Furthermore, increases in population and residential development have been planned for by the City of Fairfield and Suisun City.</td>
</tr>
<tr>
<td>2. Would the project encourage the development of more acreage of employment-generating land uses in the area (such as commercial, industrial, or office)?</td>
<td>No. The project would not encourage the acreage of employment-generating land uses in the area beyond what is accounted for in local planning documents. By increasing the capacity of the interchange, the project could result in population growth both regionally and locally. Locally, several locations within the study area could be developed with employment-generating land uses. However, these areas have been planned for such development by the City of Fairfield or Suisun City.</td>
</tr>
<tr>
<td>3. Would the project lead to the increase of roadway, intersection, sewer, water supply, or drainage capacity?</td>
<td>Yes. The project would lead to an increase of freeway capacity by improving the interchange complex. The project would involve the reconstruction of several local interchanges and one new interchange on SR 12W. However, beyond the interchanges there would not be substantial improvement to local streets that would increase their capacity. The project would not result in increased sewer, water, or drainage capacity.</td>
</tr>
<tr>
<td>4. Would the project encourage the rezoning or reclassification of lands in the community General Plan from agriculture, open space, or low-density residential to a more intensive land use?</td>
<td>No. Rezoning and intensification of land uses is most likely to occur in areas where interchanges are reconstructed or new interchanges provided. While the project (both build alternatives) would result in the reconstruction of several interchanges and the construction of new interchanges at I-80/Red Top Road and SR12W, most areas around these interchanges are already fully developed and intensification of land uses is highly unlikely, or current zoning is for continued agricultural use. Interchanges that would be reconstructed such as the I-80/Green Valley Road and I-80/Suisun Valley Road interchanges are already surrounded by commercial development making rezoning of existing land uses unlikely. The new interchange at I-80/Red Top Road is located in an area where Land uses to the west of the new interchanges at I-80/Red Top Road include residential areas and a high school to the west, and agricultural lands and the Suisun Marsh, which cannot be reclassified or rezoned, to the east. The new interchange at SR 12W is located in an area of the County zoned for continued agricultural use and due to the county’s strong agricultural preservation policies, is unlikely to see reclassification or rezoning.</td>
</tr>
<tr>
<td>5. Is the project not in conformance with the growth-related policies, goals, or objectives of the local General Plan or the area growth management plan?</td>
<td>No. While the project would increase the capacity of the freeway system to accommodate existing and future increases in traffic, the growth generating this increase in traffic has been planned for both locally and regionally in the general plans of the county, City of Fairfield and Suisun City, and regional transportation plans.</td>
</tr>
</tbody>
</table>
6. Would the project lead to the intensification of development densities or accelerate the schedule for development or would it facilitate actions by private interests to redevelop properties within four miles of a limited access highway interchange?

No. The project would not lead to intensification of development beyond that planned for by the cities. As stated above, the project could influence growth and intensification in the surrounding communities in some indirect way. However, the areas in which this intensification would occur have been planned for such development by the City of Fairfield or Suisun City.

7. Would the project measurably and significantly decrease home to work commuter travel times to and from or within the project area (more than 10% overall reduction or five minutes or more in commute time savings)?

Yes. Because the project would increase the capacity of the I-80/I-680/SR 12 interchange complex, it would result in decreasing commute times by more than 10% overall and five minutes or more in commute time savings.

8. Is the project directly related to the generation of cumulative effects as defined by the CEQA guidelines?

No. The project is not directly related to cumulative growth in Solano County and surrounding communities.

Potential to Induce Growth

The proposed alternatives would add capacity to the I-80/I-680/SR 12 interchange complex to accommodate existing and future projected increases in traffic. By doing so, the proposed project would result, to some extent, in accommodating growth both locally and regionally. This growth in traffic is the result of local and regional land use plans, which, in turn, have been considered in regional transportation plans. However, this development would most likely occur in areas already planned for such development by the County, City of Fairfield, and Suisun City. Therefore, the proposed alternatives would not foster local development or growth beyond that which is already planned.

In November 2008 the people of Solano County approved Measure T which confirmed approval of a new County General Plan including an amendment to Solano County’s 1994 Orderly Growth Initiative that updates certain provisions of the Solano County General Plan relating to agricultural and open space policies and land use designations, and extends the initiative until December 2028. A cornerstone principal of the new General Plan and Orderly Growth Initiative is the direction of new urban growth and development toward municipal areas. Adoption of the new County General Plan and extension of the Orderly Growth Initiative further supports the conclusion that the project alternatives would accommodate growth in areas already planned for such growth and that those areas are located within municipal areas.

Under the No-Build Alternative, no new effects associated with growth would occur.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are necessary because the project alternatives would not induce growth beyond areas that have been planned for such growth by the City of Fairfield and Suisun City.
3.1.3 Farmlands

As stated in the Department’s *Environmental Handbook Volume 4, Community Impact Assessment*, “The intent of the California Department of Transportation is to avoid, whenever practical, locating public improvements within agricultural preserves or acquiring high quality agricultural land for transportation improvements” (California Department of Transportation 1997). This section presents a discussion of the agricultural resources and nature of agriculture in the project area, including a description of state, county, and city farmland preservation policies.

**Regulatory Setting**

The National Environmental Policy Act (NEPA) and the Farmland Protection Policy Act (FPPA, 7 USC 4201-4209; and its regulations, 7 CFR Part 658) require federal agencies, such as the FHWA, to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

The California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to non-agricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to land owners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses.

**County of Solano**

The 2008 Solano County General Plan continues the County’s long-time commitment to preserving agricultural land by limiting urbanized development outside the incorporated cities and their “municipal service areas.” County voters have established policies, by initiative, which restrict the conversion of lands designated for agricultural use on the General Plan to other uses. Solano County administers the Williamson Act on lands outside city limits.

The Solano County 2008 General Plan Agriculture Element identifies the Suisun Valley and the Western Hills as two of ten agricultural regions within the county that will be the subject of additional strategic planning for the purpose of encouraging the conservation of agricultural uses. Minimum parcel size within the Suisun Valley and areas of the Western Hills is set at 20 acres, and general land use is intended to include “agricultural production, agricultural processing facilities, and facilities to support the sale of produce, and tourist services that are ancillary to agricultural production.”

At the present time, the County has issued a Draft Suisun Valley Strategic Plan that is intended to establish the means to implement the County’s vision for the Suisun Valley in support of family farms and increased economic vitality from farming (County of Solano 2009). The draft is still being prepared (three public workshops have been held in 2009) and has not been formally adopted. As the plan is being drafted, the following have emerged as the top five priorities of the area’s stakeholders, in order: maintain agricultural character; improve farm
production and income; create agri-tourism serving centers; provide infrastructure to support expanded use of Suisun Valley; and enable value-added agriculture.

The General Plan contains the following strategies for agriculture.

- Ensuring that agriculture endures as an essential part of Solano County’s identity and lifestyle.
- Maintaining and promoting agriculture as an important business and major contributor to Solano County’s economy.
- Preserving additional values of agricultural land, including important scenic value within the rural environment, providing habitat, providing options for recreation, and serving as community separators defining the county’s distinct cities.
- Providing opportunities for agriculture to serve as an educational tool and tourist draw.

The goals listed below, excerpted from the County Agriculture Element, are pertinent to the proposed project.

**AR.G-1**: Recognize, value, and support the critical roles of all agricultural lands in the stability and economic well-being of the county.

**AR.G-2**: Preserve and protect the county’s agricultural lands as irreplaceable resources for present and future generations.

**AR.G-5**: Reduce conflict between agricultural and nonagricultural uses in Agriculture-designated areas.

**AR.G-7**: Preserve and enhance the landscape and economy of the Vaca, Pleasants, Lagoon, and Suisun Valleys as rural agricultural communities.

In addition, the following policies from the County Agriculture Element are pertinent to the proposed project.

**AG.P-1**: Ensure that agricultural parcels are maintained at a sufficient minimum parcel size so as to remain a farmable unit. Farmable units are defined as the size of parcels a farmer would consider viable for leasing or purchasing for different agricultural purposes. A farmable unit is not considered the sole economic function that will internally support a farm household.

**AG.P-17**: Minimize potential conflicts between automobile and bicycle traffic and agricultural operations through transportation planning and capital improvement efforts.

**AG.P-29**: Support the unique agricultural uses found in the interior valleys (Suisun, Pleasants, Vaca, and Lagoon) and encourage the development of complementary agritourism, processing, and commercial uses in these regions.
The Agricultural Element also provides the following pertinent implementation recommendations.

**AG.I-1:** Create and adopt a farmland conversion mitigation program and ordinance. Require compensation for loss of agricultural land. Establish appropriate mitigation ratios for the program or utilize a graduated mitigation mechanism. The mitigation ratio shall be a minimum of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted). The program shall not present regulatory barriers to agritourism, agricultural services, and agricultural processing in regions and within land use designations where such uses are permitted and encouraged. The program shall also establish mitigation within the same agricultural region as the proposed development project, or within the Agricultural Reserve Overlay district, as a preferred strategy. The program shall incorporate a fee option, and shall provide an exemption for farmworker housing. Mitigation lands shall be of similar agricultural quality to the lands being converted.

**AG.I-8:** In coordination with programs in the Transportation and Circulation chapter, create a comprehensive plan for roadway improvements to support agricultural needs. The plan shall include increased connectivity across I-80 for farmers and their equipment, turnouts on agricultural roads, and grading/paving of unimproved roads. The plan shall also provide strategies to reduce automobile and bicycle conflicts with agricultural operations throughout the county. Recommendations shall be integrated into County transportation plans, recreation plans, and capital improvement programs. Partner with cities and the Solano Transportation Authority to address funding strategies for planned facilities.

**City of Fairfield**
The City of Fairfield General Plan Land Use Element includes the following goals, objectives, policies, and programs relevant to the proposed project.

**Goals [Goal A]**—Preserve agricultural and grazing lands within the General Plan area which define the visual setting of Fairfield; and, recognize the economic importance of agriculture in Solano County by directing the city’s growth away from Important Farmlands and prime agricultural soils.

**Objective AG 1**—Support preservation of existing agricultural lands.

**Policy AG 1.4**—Permanently preserve productive agricultural lands within the Suisun Valley by continuing to direct new urban development away from the Suisun Valley.

**Program 1.4A**—Where land is identified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the most recent Important Farmland maps prepared by the California Department of Conservation and is proposed for conversion to urban uses, the city shall arrange for preservation of an equal amount of the same class of farmland within the area. Such an arrangement may be through fee purchase, purchase of conservation easements, payment of an in-lieu fee, or other mechanisms.

**Objective AG 2**—Encourage the preservation and expansion of the local agricultural economy.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Farmlands

Policy AG 2.1—Cooperatively work with farmers, property owners, universities, colleges, and agricultural organizations and agencies to enhance the viability of agricultural uses and activities.

Policy AG 2.3—Development shall not encroach upon or consume productive cropland in areas such as the Suisun Valley.

Suisun City
The City of Suisun City General Plan Land Use Element includes the following policy relevant to the proposed project.

Policy 6—Open Space for Agriculture. Open spaces suitable for agricultural production within the city’s sphere of influence should be preserved under Solano County General Plan policies for agricultural preservation until such a time as these lands are needed and are determined to be feasible for urban development.

Affected Environment
The information below is summarized from the CIA prepared for the proposed project. Additional information comes from the County of Solano’s 2008 General Plan.

The California Department of Conservation’s FMMP tracks changes in farmland use, including the conversion of farmland to urban use. This program is informational only, and does not regulate land uses. The FMMP classifies farmland into four types. Prime Farmland is considered land with the best physical and chemical features able to sustain long-term production of crops. Farmland of Statewide Importance is land that is similar to Prime Farmland, but has minor faults, such as slopes or limited ability to store soil moisture. Unique Farmland has lesser quality soils used for the production of the state’s leading crops; it may be irrigated or include non-irrigated orchards or vineyards (together, these three farmland classifications constitute “Important Farmland”). Grazing Land contains existing vegetation suitable for livestock.

As of 2006, Solano County had a total of 360,562 acres of land under cultivation. Of this total, 139,536 acres were designated as Prime Farmland, 7,164 acres were designated as Farmland of Statewide Importance, 11,036 acres were designated as Unique Farmland, and 202,826 acres were used for grazing purposes (California Department of Conservation 2006). In 2006, the county produced a grand total of $233,505,000 worth of agricultural products, accounting for 10% of all county economic activity but also representing a 2.2% decline from 2005, when Solano County produced a record $238,689,600 worth of agricultural products (Solano County Department of Agriculture 2006). Farm production supports between 2,500 and 4,200 jobs and results in personal income of approximately $140 million. However, it is important to keep in mind that these numbers do not reflect the sum of agriculture’s contribution to the economy of Solano County. A “multiplier effect” exists, whereby transportation, processing, marketing, and other farm-related activities significantly increase these values to the benefit of the regional economy.
Fairfield contains 2,981 acres of farmland within its urban limit line. Of this total, 1,179 acres are Prime Farmland, 314 acres are Farmland of Statewide Importance and 1,488 acres are Unique Farmland. Most of this land is concentrated in areas north of Travis Air Force Base and between I-80 and I-680 on the city’s far western edge. According to the City of Fairfield General Plan, almonds, walnuts, and grapes are the city’s primary agricultural products. Apricots, cherries, peaches, pears, prunes, and row crops are also grown.

Areas designated for agricultural purposes within the Suisun City planning area are limited. Remaining agricultural areas are primarily located east of Walters Road and south of SR 12E. Because of the high water table and poor soil conditions, these lands are used for grazing purposes only. No higher-quality farmlands are located within Suisun City limits.

According to U.S. Agricultural Census figures, the total dollar value of agricultural output in Solano County has steadily increased over the past 20 years. This trend has occurred in spite of the fact that total farmland acreage in the county has declined over the same period. Table 3.1.3-1 illustrates the trend of farmland conversion in Solano County from 1984 to 2006.

Between 1984 and 2006, 40,537 acres (1,843 acres per year) of agricultural land was converted to non-agricultural uses in Solano County. This conversion included 23,221 acres of Important Farmland at a rate of 1,056 acres per year. Approximately half of the converted acreage, or 12,689 acres, was considered Prime Farmland (California Department of Conservation 2006). During this same period, about 13,000 acres inside the cities’ spheres of influence were converted to non-agricultural uses. This trend has caused local and regional governments to implement measures to preserve farmland.

In 2007, there were 265,629 acres of land held under Williamson Act contracts in Solano County. Table 3.1.3-2 and Figure 3.1.3-1 show parcels within the project area that are currently bound by Williamson Act contracts, as well as the acres that are being removed from the contract through cancellation or non-renewal.
Table 3.1.3-1. Historical Agricultural Conversion in Solano County, 1984–2006

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Acreage By Category</th>
<th>Net Change</th>
<th>Average Annual Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmland of Statewide Importance</td>
<td>12,620 12,620</td>
<td>12,293 12,084</td>
<td>12,125 11,580</td>
</tr>
<tr>
<td>Unique Farmland</td>
<td>16,112 15,972</td>
<td>17,211 13,641</td>
<td>13,469 13,380</td>
</tr>
<tr>
<td>Important Farmland Subtotal</td>
<td>180,957 180,526</td>
<td>181,339 177,561</td>
<td>176,574 175,521</td>
</tr>
<tr>
<td>Grazing Land</td>
<td>220,142 218,919</td>
<td>208,984 205,626</td>
<td>203,983 204,334</td>
</tr>
<tr>
<td>Urban and Built-Up Land</td>
<td>40,171 40,610</td>
<td>41,594 46,066</td>
<td>48,374 48,651</td>
</tr>
<tr>
<td>Other Land</td>
<td>90,489 91,791</td>
<td>99,832 102,497</td>
<td>102,714 101,548</td>
</tr>
<tr>
<td>Total Area Included in Inventory</td>
<td>582,371 582,370</td>
<td>582,371 582,371</td>
<td>582,371 582,371</td>
</tr>
</tbody>
</table>


a Figures are generated from the most current version of the GIS data. Files dating from 1984 through 1992 were reprocessed with a standardized county line in the Albers Equal Area Projection and other boundary improvements.

b Due to the incorporation of digital soil survey data (SSURGO) in 2000, acreages for farmland, grazing and other land categories may differ from those published in the 1998–2000 Farmland Conversion Report. Water acreage also changed due to improvements to more accurately reflect the shoreline of San Pablo Bay.

c Other Land consists of nonagricultural land larger than 40 acres in size, and vacant land.
Table 3.1.3-2. Affected Williamson Act Lands

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Contract Number</th>
<th>Total Acres in Contracta</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0027-251-330 0027-271-060</td>
<td>739</td>
<td>69.97</td>
</tr>
<tr>
<td>2</td>
<td>0148-260-010 0148-270-010</td>
<td>97</td>
<td>268.9</td>
</tr>
<tr>
<td>3</td>
<td>0148-270-340</td>
<td>1100</td>
<td>42.2</td>
</tr>
<tr>
<td>4</td>
<td>0150-270-050 0150-270-060</td>
<td>2</td>
<td>7.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>388.58</strong></td>
</tr>
</tbody>
</table>

Source: Solano Transportation Authority 2008.

a Acres for contracts 739 and 2 have been adjusted to account for land removed from these contracts by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

In addition to lands under Williamson Act contract, the project area includes lands restricted by conservation easements. Typically, conservation easements are legal agreements between property owners and government agencies or nonprofit organizations that permanently limit land development. Easements can restrict land to a prior use or preserve land for purposes of creating and maintaining open space. Some parcels in the project area are under both an agricultural easement and an open space easement. These easements are held by the Solano Land Trust. Table 3.1.3-3 shows the parcels in the project area that are restricted by conservation easements.

Table 3.1.3-3. Conservation Easements in the Project Area

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Type of Easement</th>
<th>Total Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0027-251-330 0027-271-060</td>
<td>Agricultural</td>
<td>69.97a</td>
</tr>
<tr>
<td>5</td>
<td>0027-251-340</td>
<td>Agricultural</td>
<td>0.15</td>
</tr>
<tr>
<td>6</td>
<td>0027-251-400</td>
<td>Agricultural</td>
<td>0.06</td>
</tr>
<tr>
<td>7</td>
<td>0027-251-420</td>
<td>Agricultural</td>
<td>0.23</td>
</tr>
<tr>
<td>8</td>
<td>0027-251-440</td>
<td>Agricultural</td>
<td>2.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>72.46</strong></td>
</tr>
</tbody>
</table>

Source: Solano Transportation Authority 2008

a Acres have been adjusted to account for land removed from this easement by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

**Environmental Consequences**

The method for determining affected agricultural parcels was identical to that used for determining parcel acquisitions (see Section 3.1.1). Additionally, affected acreage for each acquired agricultural parcel was determined by measuring the area of overlap between the project roadway linework and the edge of the parcel. Table 3.1.3-4 and Figures 3.1.3-2 and 3.1.3-3 show agricultural parcels affected by the proposed project alternatives. Parcels located in the footprint of more than one alternative are listed under each relevant alternative. Affected agricultural parcels in the western and central project segments are located within the Suisun Valley and the Western Hills agricultural regions.
### Table 3.1.3-4. Impacted Agricultural Parcels

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Project Segment</th>
<th>Total Acreage</th>
<th>Impacted Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0148-260-010&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>256.1</td>
<td>19.2</td>
</tr>
<tr>
<td>2</td>
<td>0148-260-050&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>44.0</td>
<td>11.5</td>
</tr>
<tr>
<td>3</td>
<td>0148-260-080&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>21.7</td>
<td>14.1</td>
</tr>
<tr>
<td>4</td>
<td>0148-270-010&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>12.8</td>
<td>2.2</td>
</tr>
<tr>
<td>5</td>
<td>0148-270-060</td>
<td>Western</td>
<td>6.0</td>
<td>3.0</td>
</tr>
<tr>
<td>6</td>
<td>0148-270-240&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Western</td>
<td>15.0</td>
<td>4.8</td>
</tr>
<tr>
<td>7</td>
<td>0148-270-340&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>42.2</td>
<td>4.4</td>
</tr>
<tr>
<td>8</td>
<td>0046-050-180&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>157.6</td>
<td>12.5</td>
</tr>
<tr>
<td>9</td>
<td>0027-251-330&lt;sup&gt;c, d&lt;/sup&gt;</td>
<td>Central</td>
<td>54.71</td>
<td>11.2</td>
</tr>
<tr>
<td>10</td>
<td>0027-271-060&lt;sup&gt;b, c, d&lt;/sup&gt;</td>
<td>Central</td>
<td>15.26</td>
<td>11.3</td>
</tr>
<tr>
<td>11</td>
<td>0148-260-060&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>2.72</td>
<td>2.6</td>
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<tr>
<td>12</td>
<td>0027-510-160</td>
<td>Central</td>
<td>4.9</td>
<td>0.3</td>
</tr>
<tr>
<td>13</td>
<td>0150-270-050&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Central</td>
<td>7.7</td>
<td>1.0</td>
</tr>
<tr>
<td>14</td>
<td>0150-270-060</td>
<td>Central</td>
<td>10.5</td>
<td>2.1</td>
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<tr>
<td>15</td>
<td>0032-010-390</td>
<td>Eastern</td>
<td>65</td>
<td>23.45</td>
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<tr>
<td>16</td>
<td>0032-020-040</td>
<td>Eastern</td>
<td>5</td>
<td>3.28</td>
</tr>
<tr>
<td>17</td>
<td>0032-020-140</td>
<td>Eastern</td>
<td>21.51</td>
<td>10.05</td>
</tr>
<tr>
<td>18</td>
<td>0032-020-160</td>
<td>Eastern</td>
<td>4.54</td>
<td>1.91</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>747.24</strong></td>
<td><strong>138.89</strong></td>
</tr>
</tbody>
</table>

#### Alternative B, Phase -1

<table>
<thead>
<tr>
<th>Phase</th>
<th>No Agricultural Parcels Impacted</th>
<th>0</th>
</tr>
</thead>
</table>

#### Alternative C

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Project Segment</th>
<th>Total Acreage</th>
<th>Impacted Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0148-260-010&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>256.1</td>
<td>19.3</td>
</tr>
<tr>
<td>2</td>
<td>0148-260-050&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>44.0</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>0148-260-080&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>21.7</td>
<td>13.7</td>
</tr>
<tr>
<td>4</td>
<td>0148-270-010&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>12.8</td>
<td>3.9</td>
</tr>
<tr>
<td>5</td>
<td>0148-270-060</td>
<td>Western</td>
<td>6.0</td>
<td>4.5</td>
</tr>
<tr>
<td>6</td>
<td>0148-270-240&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Western</td>
<td>15.0</td>
<td>6.8</td>
</tr>
<tr>
<td>7</td>
<td>0148-270-340&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Western</td>
<td>42.2</td>
<td>4.6</td>
</tr>
<tr>
<td>8</td>
<td>0046-050-180&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>157.6</td>
<td>11.8</td>
</tr>
<tr>
<td>9</td>
<td>0027-251-330&lt;sup&gt;c, d&lt;/sup&gt;</td>
<td>Central</td>
<td>54.71</td>
<td>11.2</td>
</tr>
<tr>
<td>10</td>
<td>0027-271-060&lt;sup&gt;b, c, d&lt;/sup&gt;</td>
<td>Central</td>
<td>15.26</td>
<td>11.3</td>
</tr>
<tr>
<td>11</td>
<td>0148-260-060&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Western</td>
<td>2.72</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>747.12</strong></td>
<td><strong>122.39</strong></td>
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</tbody>
</table>

#### Alternative C, Phase -1

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Project Segment</th>
<th>Total Acreage</th>
<th>Impacted Acreage</th>
</tr>
</thead>
</table>
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Farmlands

### Map # | APN | Project Segment | Total Acreage | Impacted Acreage |
--- | --- | --- | --- | --- |
6 | 0148-270-240<sup>a</sup> | Western | 15.0 | 6.8 |
7 | 0148-270-340<sup>b</sup> | Western | 42.2 | 4.6 |
8 | 0046-050-180<sup>c</sup> | Western | 157.6 | 11.8 |
19 | 0148-260-060<sup>d</sup> | Western | 2.72 | 2.6 |
**Total** | **680.51** | | **77.2** |

*Source: Solano County Assessor’s Office 2007.*

<sup>a</sup> Not Prime Farmland.
<sup>b</sup> Williamson Act Parcels.
<sup>c</sup> Valine Conservation Easement.
<sup>d</sup> Total Acreage adjusted to account for land removed by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

The federal AD-1006 Farmland Conversion Impact Rating form, which was completed in conjunction with the NRCS, allows the alternatives of the proposed project to be assessed for their impact on the viability of farmlands. This assessment helps to determine the impact each alternative might have on the farmlands in the project area. Correspondence with the NRCS and the completed AD-1006 Farmland Conversion Impact Rating form are contained in Appendix E.

For purposes of NEPA analysis, the assessment rates the impact of a proposed project on the basis of a scoring system. Specific criteria related to agricultural viability are examined by both the NRCS and the federal agency involved. Each criterion has a set number of points it may be awarded. A project’s point total is compared to the “significance score” created by the U.S Department of Agriculture. If the total site assessment is less than 160 points, a minimal level of consideration of protection would be given, but no further alternative analysis would be needed. The completed form may be found in Appendix E. The Farmland Conversion Impact Ratings for Alternatives B and C are 137.7 and 134.3 respectively which are below the “significance score” of 160 points. As such, the NEPA analysis concludes that the proposed project would not adversely affect agriculture.

### Direct Conversion of Farmland

Alternative B would affect 18 parcels, converting roughly 140 acres of agricultural land to roadway, while Alternative B, Phase 1 would not affect agricultural land. Alternative B would encroach upon 48.76 acres of land held in Williamson Act contracts. Additionally, Alternative B would affect 22.5 acres of land protected by the Valine Ranch Conservation Easement through construction of the westbound truck scales relocation.

Alternative C would affect 19 parcels, converting roughly 122 acres of agricultural land, while Alternative C, Phase 1 would affect nine parcels, converting roughly 77 acres of agricultural land.

Affected farmlands in the western segment are not categorized as Prime Farmland and are used for dryland grazing. Prime Farmland in the central segment between Dan Wilson Creek and Suisun Creek have already been approved for development of a mixed-use project (Fairfield Corporate Commons Project) and is therefore not included in calculation of affected farmland. Alternative C would affect 22.5 acres of land protected by the Valine Ranch Conservation Easement and 40 acres of land under a Williamson Act contract through construction of the
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Farmlands

westbound truck scales relocation. Alternative C, Phase 1 would affect 27.8 acres of land under Williamson Act contract.

Based on the results of the Farmland Conversion Impact Rating, neither Alternative B nor Alternative C would result in a substantial adverse effect on farmland and therefore Alternatives B, Phase 1 and Alternative C, Phase 1, because they represent a subset of improvements under Alternatives B and C, would also not result in a substantial adverse effect on farmlands.

The No-Build Alternative would make no physical changes and therefore would have no effect on existing agricultural uses.

Conversion of Agricultural Lands under Williamson Act Contracts

Alternative B, Alternative C, and Alternative C, Phase 1 would not be able to avoid the conversion of land held in Williamson Act contracts in the vicinity of the extension of Red Top Road to Business Center Drive and in the area of the westbound truck scales relocation. The affected portion of the Williamson Act parcels would be removed from the Williamson Act contract by cancellation, upon acquisition by the Department. The remainder of the parcels would be unaffected. Because Williamson Act contracts are related to the tax status of the parcel, and since the remainder of the Williamson Act contract would remain in place, this is not considered an adverse effect.

Alternative B, Phase 1 would not include construction in the vicinity of any Williamson Act parcels and therefore no conversion of lands under Williamson Act contracts would result. The No-Build Alternative would not result in any physical changes to the project area and therefore, would have no effect on lands under Williamson Act Contracts.

Conversion of Agricultural Lands under Conservation Easements

Lands under the Valine Conservation Easement would also be affected by the proposed project. Both Alternative B and C would result in the acquisition and conversion of all of this land between the North Connector and I-80 for the westbound truck scales, approximately 22.5 acres. Because a conservation easement has been placed over this land, it is considered to have higher agricultural value than other agricultural land in the project area.

The No-Build Alternative would not result in any physical or land use changes and therefore would have no effect on agricultural lands under conservation easements.

Avoidance, Minimization, and/or Mitigation Measures

The Department’s Environmental Handbook Volume 4, Community Impact Assessment, Section 4-5.3 offers many possible mitigation measures for significant impacts on agriculture. They include choosing alternative alignments that would avoid farmland altogether, or that would convert fewer acres of farmland or take other farmland that has a lower relative value. However, Alternatives B and C have very similar impacts on agricultural lands in terms of the number of parcels and total acreage affected. Of the fundable first phases, Alternative B, Phase 1 would affect the least amount of agricultural land. The manual lists a number of measures to mitigate
farmland impacts, of which the proposed project has implemented the use of concrete median barriers instead of wider medians.

**Compensate for Conversion of Important Farmland**

Under NEPA, based on the results of the Farmland Conversion Impact Rating, the project alternatives will not result in a substantial adverse effect to farmlands. Under CEQA, the Department will, however, mitigate for agricultural impacts, on a case by case basis, in a quantity or ratio according to professional judgement based on local plans, the type of farmland, and economic impacts. In this project, important farmland ("prime farmlands") will be mitigated at a 1:1 ratio (one acre protected for every one acre affected). Farmlands under an agricultural conservation easement will be mitigated at a slightly higher ratio, 1.25:1.
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Figure 3.1.3-1
Lands under Williamson Contract and Conservation Easements

Legend
- Williamson Act Contract
  (See Table 3.1.3-2)
- Conservation Easement
  (See Table 3.1.3-3)
- Potential Area of Disturbance
- Proposed New and Expanded/Improved Roads
- Bridge
- Creeks

Map showing the location of lands under Williamson Contract and Conservation Easements.
Figure 3.1.3-2
Alternative B: Impacted Agricultural Parcels
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Figure 3.1.3-3
Alternative C: Impacted Agricultural Parcels

Legend
- Impacted Agricultural Parcel
- Potential Area of Disturbance
- Proposed New and Expanded/Improved Roads
- Bridge
- Creeks

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3.1.4 Community Impacts

3.1.4.1 Community Character and Cohesion

**Regulatory Setting**

The National Environmental Policy Act of 1969 as amended (NEPA), 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 U.S.C. 4331[b][2]). The Federal Highway Administration in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions regarding 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 the California Environmental Quality Act, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project’s effects.

**Affected Environment**

For the purposes of this analysis, the study area was defined by available statistical data describing Solano County, the cities of Fairfield and Suisun City, and eleven 2000 Census Tract Block Group areas that encompass the project area and its environs. The information below is summarized from the CIA prepared for the proposed project.

Solano County’s land use pattern is one of city-centered growth focused around six urban areas separated by land designated for intensive and extensive agricultural uses. The six urban areas are Vallejo/Benicia, Cordelia, Fairfield/Suisun, Vacaville, Dixon, and Rio Vista. Approximately 45,000 acres in the county are designated for residential uses, of which 30,000 acres are in urban areas. In addition, 5,500 acres are designated for commercial development and 20,000 acres are designated for industrial uses. Of these designations, 11,400 acres are within urban areas. The majority of the county’s land area, 314,200 acres, is devoted to extensive and intensive agriculture. An additional 119,500 acres are designated as multi-use marsh and watershed.

The study area is in the southwestern part of Solano County and occupies unincorporated land (primarily in the central segment of the proposed project), as well as portions of the cities of Fairfield (both western and eastern segments of the proposed project) and Suisun City (eastern segment of the proposed project). Much of the project area is in Fairfield, including its Cordelia community.

The primary land use in Fairfield is residential, followed by commercial and industrial uses. Travis Air Force Base, the city’s largest employer, occupies most of the area adjacent to the eastern end of the city. Central Fairfield includes some of the oldest residential neighborhoods in Solano County. Various commercial corridors exist within the city, primarily centered along...
major streets within central Fairfield and along portions of the I-80 and SR 12 corridors. Industrial uses are generally clustered in areas adjacent to the existing I-80/I-680/SR 12 interchange, south of SR 12 immediately west of Suisun City, and immediately west and north of Travis Air Force Base.

Suisun City was historically a regional transportation and commercial hub due to the city’s location midway between the agricultural areas of the Central Valley, Sacramento, and San Francisco and its easy access to the San Francisco Bay System via the Suisun Channel. The city is separated from Fairfield by the UPRR alignment and SR 12E. The only currently operational passenger rail terminal in Solano County is in Suisun City. Land use in Suisun City is predominantly residential, with commercial and limited industrial uses centered around the downtown area and along major thoroughfares.

**Western Segment**

Land uses at the western end of this segment consist primarily of agricultural land used for grazing. A small highway-oriented commercial area (gas station, fast food) is located at the I-80/Red Top Road interchange. A dairy distribution facility and rural residential uses are located between I-80 and SR 12W and north of SR 12W. See Figures 3.1.4-1 and 3.1.4-2 for aerial views of the project area.

As I-80 and SR 12W converge, land uses change dramatically. To the north is a major retail shopping and commercial center, which includes a Costco, a Safeway, and other regional retailers. To the south, the predominant land use is industrial, with many warehouses and distribution businesses. Commercial uses such as gas stations, car dealerships, and smaller retail outlets are located in areas immediately visible from the I-80 and I-680 freeways.

Along I-680, land uses to the west are dominated by residential subdivisions, with commercial and retail uses at major intersections. Rodriguez High School fronts approximately half of the north side of Red Top Road between I-680 and Lopes Road. Land uses to the east include residential and retail uses in the community of Cordelia. In general, the area south of Cordelia Road and east of I-680 comprises agricultural and open space uses at the edge of the Suisun Marsh.

Land uses along I-80 between I-680 and Suisun Valley Road are characterized by a large commercial/office park to the north and smaller retail/highway-oriented commercial uses to the south, including motels, gas stations, and fast food outlets centered around the I-80/Suisun Valley Road interchange.

**Central Segment**

Along I-80, from Suisun Valley Road to SR 12E, land uses on the north side are characterized by vacant lands between Suisun Valley Road and Suisun Creek that are now under construction as a mixed-use development (Fairfield Corporate Commons Project) and the existing westbound truck scales facility. East of Suisun Creek, land uses are primarily agricultural with scattered residential and commercial uses (farm equipment sales). To the south, freeway commercial (hotel and RV sales), retail (fast food and gas stations), and a recreation center are located near the I-80/Suisun Valley Road interchange. Farther east, land uses are agricultural with scattered residential uses and the eastbound truck scales facility, which is planned to be relocated to the
east as part of a separate project. At the eastern end of the segment, land uses change to include a large industrial use (Budweiser brewery) that extends along SR 12E.

**Eastern Segment**

Land uses along the north side of SR 12E comprise commercial uses focused along Chadbourne Road, including several large auto dealerships. Farther east, land uses are dominated by residential neighborhoods with scattered commercial/retail uses along Beck and Pennsylvania Avenues. Along the south side of SR 12E, land uses primarily include industrial warehouses and distribution centers off Beck and Pennsylvania Avenues. Farther east of Pennsylvania Avenue to Suisun City, the predominant land use on the north side of SR 12E is residential, while the south side is predominantly undeveloped land. The portion of the project area within Suisun City consists primarily of older, small industrial and retail uses adjacent to the UPRR alignment.

**Environmental Consequences**

Impacts on communities arising from transportation projects are generally related to division of existing neighborhoods, or disruption of the perceived urban “fabric” of a neighborhood. This is a particularly sensitive issue in ethnic neighborhoods. However, transportation projects may also increase cohesion within neighborhoods by diverting vehicular traffic to other roadways and increasing the desirability of pedestrian activity through a neighborhood.

All the build alternatives would result in the expansion of existing freeways and highways in the project area. This expansion would result in impacts on individual parcels and displacement of a number of commercial, retail, and industrial businesses. However, these effects would not result in the separation or disruption of an existing neighborhood. Because the displaced businesses in these areas are predominantly highway and regional commercial or industrial enterprises, they are not inherently tied to the character of local neighborhoods, but rather are typically large corporate franchises such as fast food restaurants and gas stations. As such, their removal would not significantly affect the cohesiveness of the local community.

Alternative C may have a beneficial effect on the community of Cordelia, because this alternative would reconstruct the alignment of I-680 farther to the west to connect with I-80 and SR 12W, moving the I-680 freeway farther from established residential areas in Cordelia. Manufacturing, warehousing, and light industrial facilities in the western segment would primarily be displaced by the realignment of I-680 under Alternative C.

In the central segment, the predominant land use is agricultural. However, one residence would be displaced as a result of constructing the westbound truck scales relocation and one business would be displaced by the interchange improvements at Abernathy Road. The residence and the business are both surrounded by agricultural land, adjacent to I-80 and are not part of a larger neighborhood that would be affected by their removal. Because the land use pattern in the central segment consists of large agricultural parcels, the proposed project would not significantly affect the cohesiveness of the local community.
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In the eastern segment, Alternatives B and C would displace a number of businesses in downtown Suisun City. Because these businesses are located on the western perimeter of the downtown, their displacement would not be divisive. Additionally, most of the businesses are industrial/manufacturing concerns. As such, they are not destinations for shoppers or pedestrians and do not contribute to the character of the downtown neighborhood. Therefore, it is reasonable to conclude that their displacement would not significantly affect Suisun City’s downtown neighborhood.

Under the fundable first phases, the effects would be similar to those of the associated full build alternatives, but less extensive (see Tables 3.1.4-2 and 3.1.4-4).

The No-Build Alternative would not change the existing environment and therefore would not result in any effects on community character and cohesion.

**Avoidance, Minimization, and/or Mitigation Measures**

Because the proposed project would not significantly affect the character and/or cohesiveness of the local community, no avoidance, minimization, and/or mitigation measures would be required.

### 3.1.4.2 Relocations and Real Property Acquisition

**Regulatory Setting**

The Department’s 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 Code of Federal Regulations (CFR) Part 24. The purpose of 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. See Appendix D for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, et seq.). See Appendix C for a copy of the Department’s Title VI Policy Statement.

**Affected Environment**

Existing land uses in the project area and surrounding region are discussed in detail in Section 3.1.1, “Land Use.” Right-of-way will be acquired along the existing alignments of I-80/I-680/SR 12 under Alternative B. Alternative C would require acquisition of right-of-way along these same roadways plus additional right-of-way to the west of I-680. The general locations of right-of-way acquisitions are discussed under Section 3.1.4.1, “Community Character and Cohesion.” Tables 3.1.4.1 through 3.1.4.4 below identify the specific residences, and business that would be displaced by the proposed project.
Environmental Consequences

Displacement of Residences and Businesses

The methodology for determining affected land uses included overlaying the proposed right-of-way requirements for each alternative on a Solano County Assessor’s Parcel Number (APN) map and on an aerial photograph. Maps depicting the roadway geometry and right-of-way regents used in this analysis were developed by the project engineers and are on file at the Department. Tables 4.1-1 and 4.1-2 of the project CIA provide a complete list of the parcels that would be affected by the alternatives.

Where the proposed right-of-way overlapped a parcel, that parcel was considered affected by the proposed project. For parcels that did not fall completely within the right-of-way lines, those where less than 50% of the total parcel area was overlapped by the proposed right-of-way were considered partial acquisitions unless the affected portion of the parcel contained the primary structure (business or residence) on the property. Where more than 50% of the parcel would be overlapped, the parcel was considered to be fully acquired by the project alternative.

A parcel is considered affected if land from that parcel is needed for either temporary construction activities or permanent roadway or associated facilities. Effects can range from partial acquisition of a parcel, in which the existing use would not be displaced and could continue without significant change, to full acquisition of the parcel and displacement of the existing land use.

Alternative B would affect approximately 228 parcels in total. Approximately 27 of the parcels would be full acquisitions and 201 would be partial acquisitions. Appendix I contains a complete list of affected parcels under Alternative B. The majority of the parcels consist of retail and commercial land uses, primarily south of I-80 between I-680 and Suisun Valley Road, which would be affected by the widening of the existing I-680/I-80 interchange complex and I-80 main line; and agricultural/grazing lands north of I-80 from Red Top Road to SR 12W and Business Center Drive, which would be affected by the extension of Red Top Road to Business Center Drive and the new Red Top Road/ SR 12W interchange. Based on a 2008 reconnaissance survey of the project area, an estimated 56 businesses (including vacant spaces) would be displaced.

Alternative B, Phase 1 would affect approximately 72 parcels. Appendix I contains a complete list of affected parcels under Alternative B, Phase 1. Five parcels would be full acquisitions and 67 parcels would be partial acquisitions. Based on a 2008 reconnaissance survey of the project area, an estimated 21 businesses (including vacant spaces) would be displaced.

Alternative C would affect approximately 176 parcels in total; 32 would be full acquisitions and roughly 144 would be partial acquisitions. Appendix I contains a complete list of affected parcels under Alternative C. The predominant land use of the parcels affected by the realignment of I-680 and the new I-680/I-80/SR 12W interchange that would be constructed under this alternative is industrial and warehousing, mainly located south of I-80 and west of I-680. Due to the realignment of Lopes Road to avoid a small area of landscaping beyond the outfield fence of the Rodriguez High School’s softball field, no impacts would occur on this parcel. A portion of
the former Green Valley Middle School location owned by the Fairfield-Suisun Unified School District (FSUSD) would be acquired for the PG&E valve lot relocation; this site is currently vacant. Based on a 2008 reconnaissance survey of the project area, an estimated 49 businesses (including vacant spaces) would be displaced.

Alternative C, Phase 1 would affect approximately 63 parcels. Appendix I contains a complete list of affected parcels under Alternative C, Phase 1. Nine parcels would be full acquisitions and 54 parcels would be partial acquisitions. Due to the realignment of Lopes Road to avoid a small area of landscaping beyond the outfield fence of the Rodriguez High School’s softball field, no impacts would occur on this parcel. A portion of the former Green Valley Middle School location owned by the Fairfield-Suisun Unified School District (FSUSD) would be acquired for the PG&E valve lot relocation; this site is currently vacant. Based on a 2008 reconnaissance survey of the project area, an estimated 22 businesses (including vacant spaces) would be displaced. All of the businesses displaced by these two alternatives are located in Fairfield.

All of the alternatives would result in the displacement of businesses. The majority of the businesses that would be displaced by the alternatives are established businesses (e.g., auto repair, furniture, appliances sales). Newer businesses (e.g., Starbucks, fast food outlets) that would be displaced are located in the vicinity of the I-80/Suisun Valley interchange. Most of the businesses that are considered to be declining and that would be displaced are located in the eastern segment of the proposed project in Suisun City.

Table 3.1.4-1 lists the 56 businesses displaced under Alternative B; Figure 3.1.4-1 shows their locations. Most displacements associated with Alternative B would occur in the western segment of the alignment along the south side of I-80. As discussed above, these businesses are predominantly highway-oriented service commercial uses in the Cordelia area. They include relatively new facilities, as well as older facilities dating to the 1970s or earlier.
### Table 3.1.4-1. Alternative B Displaced Businesses

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Size of Parcel (acres)</th>
<th>Business</th>
<th>Reason for Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Segment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0045-300-070</td>
<td>0.44</td>
<td>Fairfield Suisun Unified School District (two buildings, vacant), Central Way</td>
<td>Widening of I-680/I-80 interchange</td>
</tr>
<tr>
<td>2</td>
<td>0045-300-080</td>
<td>1.70</td>
<td>California’s Teacher’s Association (one building), 4751 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>3</td>
<td>0045-300-350</td>
<td>0.01</td>
<td>Continental Auto Glass, 4737 Central Way Vacant Space, 4739 Central Way Cordelia Automotive, 4741 Central Way Warehouse Furniture, 4743 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>4</td>
<td>0045-300-370</td>
<td>0.20</td>
<td>Metro II, 4733 Central Way Anyone’s Off-Road &amp; Custom, 4733 Central Way Al’s Tile and Marble Fino, 4733 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>5</td>
<td>0045-300-360</td>
<td>0.19</td>
<td>Room Express Furniture (one building), 4731 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>6</td>
<td>0045-300-200</td>
<td>0.001</td>
<td>Ponder Environmental Services, 125 Grobric Court</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>7</td>
<td>0045-300-290</td>
<td>0.27</td>
<td>California Marine Sports, 101 Grobric Court</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>8</td>
<td>0045-310-010</td>
<td>1.75</td>
<td>Pearson’s Appliance &amp; TV, 4685 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>9</td>
<td>0045-310-860</td>
<td>1.62</td>
<td>Jack in the Box (one building), 4490 Central Way Chevron Gas Station (one building), 4490 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td>10</td>
<td>0045-310-850</td>
<td>0.50</td>
<td>Starbucks (one building), 4470 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td>11</td>
<td>0045-340-110</td>
<td>0.17</td>
<td>Scandia Family Center (part of mini golf course), 4300 Central Way</td>
<td>Widening of I-80</td>
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<td>12</td>
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<td>I-80/Red Top Road interchange</td>
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<td>13</td>
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<td>14</td>
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<td>Widening of SR 12</td>
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<td>Realignment of local roads</td>
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<td>16</td>
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<td>3.19</td>
<td>Davita Fairfield Dialysis, 4670 Central Way Boot Barn Western &amp; Work Wear, 4670 Central Way Bischoff’s Medical Supplies, 4670 Central Way Ultimate Water Sports, 4670 Central Way</td>
<td>Realignment of local roads</td>
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<td>17</td>
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<td>Realignment of local roads</td>
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<td>18</td>
<td>0180-120-150</td>
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<td>Ashley Furniture Homestore (one building), 4865 Auto Plaza Court</td>
<td>Widening of I-680/1-80 interchange</td>
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<td>19</td>
<td>0180-110-240</td>
<td>3.36</td>
<td>ARCO Gas (one building), 4800 Auto Plaza Court</td>
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<td>20</td>
<td>0045-300-030</td>
<td>0.19</td>
<td>Residential House Showroom (one building), 4912 Central Way</td>
<td>Widening of I-680/1-80 interchange</td>
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<td>21</td>
<td>0045-300-040</td>
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<td>SFR Land (one building, old shack), Central Way</td>
<td>Widening of I-680/1-80 interchange</td>
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<td>22</td>
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<td>1.91</td>
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<td></td>
<td>0045-310-880</td>
<td>1.05</td>
<td>Leased Commercial Land, 103 Commerce Court Furniture Expo, 103 Commerce Court Frellen’s Casual &amp; Outdoor Furniture, 103 Commerce Court Vacant Space, 103 Commerce Court</td>
<td>Realignment of local roads</td>
</tr>
</tbody>
</table>
### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Community Impacts

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Size of Parcel (acres)</th>
<th>Business</th>
<th>Reason for Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Segment</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>0027-271-060</td>
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<td>Garage/Sheds/Barns/Home (seven buildings, one residential), 4018 Russell Road</td>
<td>Interchange improvements at Abernathy Road</td>
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<tr>
<td>24</td>
<td>0150-270-080</td>
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<td>Suisun Family Fruit Growers (two buildings), 4163 Chadbourne Road</td>
<td>Interchange improvements at Abernathy Road</td>
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<td>25</td>
<td>0150-240-020</td>
<td>0.18</td>
<td>Suisun Family Fruit Growers (two buildings), 4162 Chadbourne Road</td>
<td>Widening of I-80 and truck scales relocation</td>
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<tr>
<td><strong>Eastern Segment</strong></td>
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<td></td>
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<tr>
<td>26</td>
<td>0032-081-310</td>
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<td>Road extension to downtown Suisun City</td>
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<tr>
<td>27</td>
<td>0032-081-060</td>
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<td>Suisun Roofing Supply (one building), 263 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
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<td>28</td>
<td>0032-081-030</td>
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<td>One Building, 241 Benton Court</td>
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<tr>
<td>29</td>
<td>0032-052-210</td>
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<td>The Hitman, 229 Benton Court Clear Image, 225 &amp; 227 Benton Court Marine Industrial Fire Safety, 223 Benton Court Castle Rock Construction, 221 Benton Court</td>
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<td>30</td>
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<td>Xtreme Cyclez, 213 &amp; 215 Benton Court Rich Campbell, 211 Benton Court Vacant Space, 209 Benton Court Iron Riders Inc., 207 Benton Court</td>
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<td>Tidy Tails, 305 Spring Street Osaka Massage, 311 Spring Street Good Life Health Spa, 313 Spring Street</td>
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<td>32</td>
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<td>Vacant Space (two buildings), 247 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
</tbody>
</table>


*Note: Appendix I contains a complete list of affected parcels under Alternative B.*
Table 3.1.4-2 lists the 21 businesses, all in Fairfield, which would be displaced as a result of Alternative B, Phase 1. Because this Alternative is a subset of Alternative B, the displacements under Alternative B, Phase 1 would be a subset of those under Alternative B, and the character of displacement would also be similar.

Table 3.1.4-2. Alternative B, Phase 1 Displaced Businesses

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Size of Parcel (Acres)</th>
<th>Business</th>
<th>Reason for Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Segment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0045-300-070</td>
<td>0.39</td>
<td>Fairfield Suisun Unified School District (two buildings, vacant), Central Way</td>
<td>Widening of I-680/I-80 interchange</td>
</tr>
<tr>
<td>2</td>
<td>0045-300-080</td>
<td>1.70</td>
<td>California’s Teacher’s Association (one building), 4751 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>3</td>
<td>0045-300-350</td>
<td>0.01</td>
<td>Continental Auto Glass, 4737 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vacant Space, 4739 Central Way</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Cordelia Automotive, 4741 Central Way</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Warehouse Furniture, 4743 Central Way</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0045-300-370</td>
<td>0.20</td>
<td>Metro II, 4733 Central Way</td>
<td>Realignment of local roads</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Anyone’s Off-Road &amp; Custom, 4733 Central Way</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Al’s Tile and Marble Fino, 4733 Central Way</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0045-300-360</td>
<td>0.19</td>
<td>Room Express Furniture (one building) 4731 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>6</td>
<td>0045-300-200</td>
<td>0.001</td>
<td>Ponder Environmental Services 125 Grobric Court</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>7</td>
<td>0045-300-290</td>
<td>0.54</td>
<td>California Marine Sports 101 Grobric Court</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>8</td>
<td>0045-310-010</td>
<td>1.75</td>
<td>Pearson’s Appliance &amp; TV 4685 Central Way</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td>9</td>
<td>0045-310-860</td>
<td>1.62</td>
<td>Jack in the Box (one building) 4490 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Chevron Gas Station (one building) 4490 Central Way</td>
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<td>10</td>
<td>0045-310-850</td>
<td>0.50</td>
<td>Starbucks (one building), 4470 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td>11</td>
<td>0045-340-110</td>
<td>0.17</td>
<td>Scandia Family Center (part of mini golf course), 4300 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td>33</td>
<td>0045-310-880</td>
<td>1.05</td>
<td>Leased Commercial Land, 103 Commerce Court</td>
<td>Realignment of local roads</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Furniture Expo, 103 Commerce Court</td>
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<td></td>
<td>Frellen’s Casual &amp; Outdoor Furniture, 103 Commerce Court</td>
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<td></td>
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<td>Vacant Space, 103 Commerce Court</td>
<td></td>
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</tbody>
</table>

Note: Appendix I contains a complete list of affected parcels under Alternative B, Phase 1.

Table 3.1.4-3 lists the 49 businesses displaced under Alternative C; Figure 3.1.4-2 shows their locations. Most displacements associated with Alternative C would occur in the western segment of the alignment, between the I-80 and I-680 corridors. In contrast to the highway-oriented businesses displaced under Alternative B, Alternative C would displace industrial and warehouse uses that lie west of the current SR 12 interchange.
### Table 3.1.4-3. Alternative C Displaced Businesses

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Size of Parcel (Acres)</th>
<th>Business</th>
<th>Reason for Displacement</th>
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<tbody>
<tr>
<td><strong>Western Segment</strong></td>
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<tr>
<td>1</td>
<td>0180-130-090</td>
<td>0.95</td>
<td>UMA Solar, 499A Edison Court Formaggi Di Ferrant, 499A2 Edison Court</td>
<td>Realignment of I-680</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>The Picture Company, 499B Edison Court California Imaging, 499C Edison</td>
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<td>Court Vacant Space, 499D Edison Court</td>
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<td>Vacant Space, 495A Edison Court</td>
<td>Realignment of I-680</td>
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<td>Vacant Space, 495D Edison Court</td>
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<td>SDH Enterprises, 495B&amp;C Edison Court</td>
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<tr>
<td>3</td>
<td>0180-130-070</td>
<td>1.21</td>
<td>Fire Department, 473 Edison Court</td>
<td>Realignment of I-680</td>
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<td>O’Hara Metal, 473 Edison Court</td>
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<td></td>
<td>Clothes Recycle Center, 5005 Fulton Drive</td>
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<td>4</td>
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<td>Valley Rubber &amp; Gasket, 5045 Fulton Drive</td>
<td>Realignment of I-680</td>
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<td></td>
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<td>Family Celebration Center, 5045 Fulton Drive</td>
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<td>5</td>
<td>0180-030-060</td>
<td>1.00</td>
<td>Marin Medical, 497A Edison Court</td>
<td>Realignment of I-680</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Don’s Transport/Liquid Trends Northbay, 497B Edison Court</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brewer Metal Products, 497C Edison Court</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Super Store Industries, 497D &amp; E Edison Court Euro-Machines, 497F &amp; G</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Edison Court</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0180-140-180</td>
<td>1.48</td>
<td>Woodline Cabinets (one building), 5165 Fulton Drive</td>
<td>Realignment of I-680</td>
</tr>
<tr>
<td>7</td>
<td>0180-140-030</td>
<td>Unknown</td>
<td>Pacific Coast Steel (one building), 5160 Fulton Drive</td>
<td>Realignment of I-680</td>
</tr>
<tr>
<td>8</td>
<td>0180-140-060</td>
<td>2.00</td>
<td>Unknown (1 building), 355 Watt Drive</td>
<td>Realignment of I-680</td>
</tr>
<tr>
<td>9</td>
<td>0180-010-050</td>
<td>0.71</td>
<td>Sunnyside Farms (one building), 199 Red Top Road</td>
<td>I-80/Red Top Road realignment</td>
</tr>
<tr>
<td>10</td>
<td>0180-140-040</td>
<td>2.14</td>
<td>Beutter Corp., 5170 Fulton Drive</td>
<td>Realignment of I-680</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ciesco, 5170 Fulton Drive</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>0045-310-860</td>
<td>0.34</td>
<td>Jack in the Box (one building), 4490 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chevron Gas Station (one building), 4490 Central Way</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0045-340-110</td>
<td>0.51</td>
<td>Scandia Family Center (part of mini golf course), 4300 Central Way</td>
<td>Widening of I-80</td>
</tr>
<tr>
<td><strong>Central Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0027-271-060</td>
<td>11.05</td>
<td>Garage/Sheds/Barns/Home (seven buildings, one residential), 4018 Russell Road</td>
<td>Widening of I-80 and truck scales relocation</td>
</tr>
<tr>
<td>14</td>
<td>0150-270-080</td>
<td>0.99</td>
<td>Suisun Family Fruit Growers (two buildings), 4163 Chadbourne Road</td>
<td>Interchange improvements at Abernathy Road</td>
</tr>
<tr>
<td>15</td>
<td>0150-240-020</td>
<td>0.18</td>
<td>Suisun Family Fruit Growers (two buildings), 4162 Chadbourne Road</td>
<td>Interchange improvements at Abernathy Road</td>
</tr>
<tr>
<td><strong>Eastern Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>0032-020-210</td>
<td>1.51</td>
<td>Fairfield Suisun Sewer Distribution, Unknown</td>
<td>Realignment of Jackson Street on ramp.</td>
</tr>
<tr>
<td>17</td>
<td>0032-052-100</td>
<td>0.10</td>
<td>Xtreme Cyclez, 213 &amp; 215 Benton Court Rich Campbell, 211 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vacant Space, 209 Benton Court Iron Riders Inc., 207 Benton Court</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>0032-052-090</td>
<td>0.04</td>
<td>Kyron’s Body Shop, 205 Benton Court Tweed Hut, 201 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td>19</td>
<td>0032-052-120</td>
<td>0.04</td>
<td>Tidy Tails, 305 Spring Street Osaka Massage, 311 Spring Street</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Good Life Health Spa, 313 Spring Street</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.1.4-1 lists the 22 businesses, all in Fairfield, which would be displaced as a result of Alternative C, Phase 1. Because this Alternative is a subset of Alternative C, the displacements under Alternative C, Phase 1 would be a subset of those under Alternative C, and the character of displacement would also be similar.

### Table 3.1.4-4. Alternative C, Phase 1 Displaced Businesses

<table>
<thead>
<tr>
<th>Map #</th>
<th>APN</th>
<th>Size of Parcel (Acres)</th>
<th>Business</th>
<th>Reason for Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0032-052-210</td>
<td>0.33</td>
<td>The Hitman, 229 Benton Court Clear Image, 225 &amp; 227 Benton Court Marine Industrial Fire Safety, 223 Benton Court Castle Rock Construction, 221 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td>21</td>
<td>0032-081-030</td>
<td>0.21</td>
<td>Unknown (one building), 241 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td>22</td>
<td>0032-081-040</td>
<td>0.20</td>
<td>Vacant Space (two buildings), 247 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td>23</td>
<td>0032-081-060</td>
<td>0.20</td>
<td>Suisun Roofing &amp; Supply (one building), 263 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
<tr>
<td>24</td>
<td>0032-081-310</td>
<td>0.02</td>
<td>Suisun Roofing &amp; Supply (one building), 260 Benton Court</td>
<td>Road extension to downtown Suisun City</td>
</tr>
</tbody>
</table>

Note: Appendix I contains a complete list of affected parcels under Alternative C.
As of October 2008, Fairfield had an estimated 260 acres of vacant commercial land and approximately 738 acres of vacant industrial land available within its borders. This includes approximately 177 acres of vacant commercially zoned land at the Cordelia/Green Valley intersection and 308 acres of vacant industrial land in the Cordelia Growth Center. The availability of vacant land in the area indicates there are substantial relocation resources available in the community. Tables 4.2-2a and 4.2-2b of the proposed project’s CIA show the amount of vacant acres for commercial and industrial lands, respectively.

In 2001, Suisun City conducted a retail leakage analysis and economic base analysis, *Revenue Generation vs. Traditional Land Use Zoning*, to identify vacant sites that could be best used for commercial purposes. This report identified 15 vacant sites that would provide an estimated 35-year supply of vacant land that Suisun City could use to increase their retail and commercial sectors. Of these 15 sites, three would be suitable to use as land for the relocation of businesses that would be displaced under the alternatives. These three sites combined total approximately 16.34 acres and could be used for service commercial or light industrial purposes, which indicates substantial relocation resources are available within the local community. Figure 7.1a of the proposed project’s CIA shows the locations of all 15 vacant sites. Based on this report it would appear that there are sufficient relocation resources located in close proximity to those business that would be displaced by the alternatives in Suisun City. Therefore the business displacement impacts of the proposed alternatives (including the fundable first phases) would not result in an adverse impact.

One residential displacement would occur under Alternatives B and C as a result of the westbound truck scales relocation. No residential displacements would occur under the fundable first phase of either of the alternatives. The California Department of Finance’s 2009 housing vacancy estimate for Solano County indicates that there are substantial residential vacancies in the unincorporated county (6.48% vacancy rate) and in the city of Fairfield (6.54% vacancy rate) (State of California 2009). This indicates that there are sufficient opportunities for the occupants of this residence to find replacement housing in the vicinity. Therefore the residential displacement impact of the proposed alternatives (Alternatives B and C) would not result in an adverse impact.

The No-Build Alternative would not change the existing environment and so would not result in any displacements.

**Avoidance, Minimization, and/or Mitigation Measures**

All rights and services provided under Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, would be strictly adhered to. The rights of non-tenured occupants of displaced properties would be preserved. Department policy provides that persons displaced as a result of Department-sponsored transportation programs shall receive fair and humane treatment and shall not suffer unnecessarily as a result of projects designed for the benefit of the public. No residents would be required to relocate until comparable replacement housing has been made available to them.

To the extent feasible, Fairfield businesses displaced by the project will be relocated within the city of Fairfield. Because the proposed project would provide for the equitable relocation of occupants and businesses, and there are sufficient commercial opportunities and available land in
the area for the relocation of businesses and industry, no avoidance, minimization, and/or mitigation measures would be required.

3.1.4.3 Environmental Justice

Regulatory Setting
All projects involving a federal action (funding, permit, or land) must comply with Executive Order (E.O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2011, this was $22,350 for a family of four.

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

Affected Environment
This section uses the NEPA framework to assess whether the proposed project meets the goals and requirements of E.O. 12898, first by determining whether the proposed project meets the community participation goals and then by analyzing impacts on minority and low-income communities.

Disproportionately high and adverse impacts on minority and low-income populations are defined as an adverse effect that meets either of two criteria.

- It is predominantly borne by a minority population and/or a low-income population.
- It would be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population.

Environmental Justice Communities are communities that meet at least one of the following criteria.

- The low-income population is greater than 25% of the total population of the community, or the minority population is greater than 50% of the total population of the community.
- The low-income or minority population is more than 10 percentage points higher than the city or county average.

To determine the presence of Environmental Justice communities within the project area, an assessment was undertaken of the existing population in the project area utilizing data collected for the 2000 U.S. Census. The project area is contained within 11 Census Tract Block Groups in Solano County:
• Census Tract 2522.01 Block Group 1.
• Census Tract 2522.01 Block Group 4.
• Census Tract 2522.02 Block Group 1.
• Census Tract 2522.02 Block Group 2.
• Census Tract 2523.05 Block Group 1.
• Census Tract 2523.05 Block Group 2.
• Census Tract 2524.02 Block Group 1.
• Census Tract 2524.02 Block Group 2.
• Census Tract 2524.02 Block Group 3.
• Census Tract 2527.02 Block Group 1.
• Census Tract 2527.02 Block Group 2.

Considered collectively, the population (as of 2000) in the 11 Census Tract Block Groups in which the project area is situated contained a lower percentage of minority groups than the county, Fairfield, and Suisun City. Of the total combined population, 60% is white, 18% is Hispanic or Latino, 10% is black, 12% is Asian, 1% is Hawaiian Native/Pacific Islander, and less than 1% is Native American. The Hispanic/Latino percentage is consistent with the ratio of Solano County and Fairfield–Suisun City and slightly lower than Fairfield.

When reviewed individually, three of the 11 Census Tract Block Groups were noted to have a minority (non-white) population greater than 50% of the total population of the community (Census Tract 2524.02 with Block Groups 2 and 3 and Census Tract 2527.02 with Block Group 2). Two of these same block groups also contain low income populations that comprise more than 25% of the total population of the community (Census Tract 2524.02 with Block Group 3 and Census Tract 2527.02 with Block Group 2). These Block Groups are generally located east of Chadbourne Road. The housing characteristics, racial characteristics, and income/poverty characteristics of the 11 Census Tract Block Groups are presented in Tables 3.1.4-5 through 3.1.4-7, respectively. Figure 3.1.4-3 illustrates the locations of these Census Tract Block Groups in relation to the proposed project.

Considering the individual minority groups within each census tract/block group, it was noted that the Hispanic/Latino ratio was more than ten percentage points higher in Census Tract 2524.02 Block Group 3 and Census Tract 2527.02 Block Group 2 than in the cities or county. The latter census tract/block group was also found to have a larger population of Asians than the cities or county.
### Table 3.1.4-5. Project Area Housing Characteristics in 2000

<table>
<thead>
<tr>
<th></th>
<th>CT 2522.01</th>
<th>CT 2522.02</th>
<th>CT 2523.05</th>
<th>CT 2524.02</th>
<th>CT 2527.02</th>
<th>City of Fairfield-Suisun City</th>
<th>Solano County</th>
<th>Total of All CT/ BG’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
<td>BG</td>
</tr>
<tr>
<td>BG 1</td>
<td>366</td>
<td>937</td>
<td>1,335</td>
<td>678</td>
<td>174</td>
<td>293</td>
<td>354</td>
<td>686</td>
</tr>
<tr>
<td>BG 2</td>
<td>354</td>
<td>686</td>
<td>572</td>
<td>435</td>
<td>84</td>
<td>40,469</td>
<td>130,403</td>
<td>5,914</td>
</tr>
<tr>
<td>BG 3</td>
<td>435</td>
<td>84</td>
<td>40,469</td>
<td>5,914</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Housing Units</td>
<td>366</td>
<td>937</td>
<td>1,335</td>
<td>678</td>
<td>174</td>
<td>293</td>
<td>354</td>
<td>686</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>2.83</td>
<td>3.03</td>
<td>3.30</td>
<td>3.31</td>
<td>2.52</td>
<td>2.75</td>
<td>3.25</td>
<td>3.29</td>
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<tr>
<td>Renter-occupied Units</td>
<td>63</td>
<td>89</td>
<td>105</td>
<td>39</td>
<td>65</td>
<td>116</td>
<td>155</td>
<td>449</td>
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<tr>
<td>2-Person Household</td>
<td>124</td>
<td>327</td>
<td>261</td>
<td>136</td>
<td>72</td>
<td>87</td>
<td>82</td>
<td>154</td>
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<tr>
<td>3-Person Household</td>
<td>65</td>
<td>177</td>
<td>259</td>
<td>154</td>
<td>17</td>
<td>42</td>
<td>52</td>
<td>128</td>
</tr>
<tr>
<td>4-Person Household</td>
<td>56</td>
<td>203</td>
<td>352</td>
<td>154</td>
<td>22</td>
<td>41</td>
<td>68</td>
<td>143</td>
</tr>
<tr>
<td>5-Person Household</td>
<td>25</td>
<td>74</td>
<td>162</td>
<td>86</td>
<td>10</td>
<td>28</td>
<td>51</td>
<td>82</td>
</tr>
<tr>
<td>6-Person Household</td>
<td>14</td>
<td>32</td>
<td>60</td>
<td>32</td>
<td>7</td>
<td>12</td>
<td>16</td>
<td>37</td>
</tr>
<tr>
<td>Vacant Units</td>
<td>12</td>
<td>20</td>
<td>22</td>
<td>5</td>
<td>7</td>
<td>13</td>
<td>13</td>
<td>32</td>
</tr>
</tbody>
</table>

**Source:** U.S. Census Bureau 2000.

**Note:** Shading indicates blocks that meet Environmental Justice criteria.

- **CT** = Census Tract.
- **BG** = Block Group.
- **Represents average household size.**
### Table 3.1.4-6. Project Area Racial Characteristics in 2000

<table>
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<tr>
<th></th>
<th>CT² 2522.01</th>
<th>CT 2522.02</th>
<th>CT 2523.05</th>
<th>CT 2524.02</th>
<th>CT 2527.02</th>
<th>City of Fairfield/Suisun City</th>
<th>Solano County</th>
<th>Total of All CT/BG’s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BG²</strong></td>
<td>BG 1</td>
<td>BG 2</td>
<td>BG 1</td>
<td>BG 2</td>
<td>BG 1</td>
<td>BG 2</td>
<td>BG 1</td>
<td>BG 2</td>
</tr>
<tr>
<td><strong>Total Population</strong></td>
<td>1,035</td>
<td>2,838</td>
<td>4,471</td>
<td>2,254</td>
<td>469</td>
<td>805</td>
<td>1,152</td>
<td>2,260</td>
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<tr>
<td><strong>White</strong></td>
<td>833</td>
<td>1,936</td>
<td>2,522</td>
<td>1,611</td>
<td>334</td>
<td>534</td>
<td>571</td>
<td>1,027</td>
</tr>
<tr>
<td><strong>Black/African American</strong></td>
<td>45</td>
<td>279</td>
<td>546</td>
<td>155</td>
<td>6</td>
<td>103</td>
<td>134</td>
<td>313</td>
</tr>
<tr>
<td><strong>American Indian and Alaska Native</strong></td>
<td>7</td>
<td>12</td>
<td>28</td>
<td>24</td>
<td>2</td>
<td>7</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td>60</td>
<td>354</td>
<td>738</td>
<td>180</td>
<td>41</td>
<td>54</td>
<td>117</td>
<td>356</td>
</tr>
<tr>
<td><strong>Native Hawaiian and Other Pacific Islander</strong></td>
<td>3</td>
<td>2</td>
<td>30</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td><strong>Some Other Race</strong></td>
<td>52</td>
<td>73</td>
<td>265</td>
<td>138</td>
<td>36</td>
<td>67</td>
<td>188</td>
<td>337</td>
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<tr>
<td><strong>Two or More Races</strong></td>
<td>35</td>
<td>182</td>
<td>342</td>
<td>142</td>
<td>48</td>
<td>39</td>
<td>99</td>
<td>187</td>
</tr>
<tr>
<td><strong>Hispanic/Latino</strong></td>
<td>148</td>
<td>245</td>
<td>720</td>
<td>324</td>
<td>102</td>
<td>137</td>
<td>285</td>
<td>562</td>
</tr>
<tr>
<td><strong>Non Hispanic/ Latino</strong></td>
<td>887</td>
<td>2,593</td>
<td>3,751</td>
<td>1,930</td>
<td>367</td>
<td>668</td>
<td>867</td>
<td>1,698</td>
</tr>
</tbody>
</table>


*Note:* Shading indicates blocks that meet Environmental Justice criteria.

² CT=Census Tract.

³ BG=Block Group.

+ Represents average household size.
### Table 3.1.4-7. Project Area Income and Poverty in 2000

<table>
<thead>
<tr>
<th></th>
<th>CT² 2522.01</th>
<th>CT 2522.02</th>
<th>CT 2523.05</th>
<th>CT 2524.02</th>
<th>CT 2527.02</th>
<th>City of Fairfield- Suisun City</th>
<th>Solano County</th>
<th>Total of All CT/BG’s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BG²</strong></td>
<td>BG 1</td>
<td>BG 4</td>
<td>BG 1</td>
<td>BG 2</td>
<td>BG 1</td>
<td>BG 2</td>
<td>BG 3</td>
<td>BG 1</td>
</tr>
<tr>
<td><strong>Per Capita Income</strong></td>
<td>$33,019</td>
<td>$34,762</td>
<td>$23,180</td>
<td>$20,380</td>
<td>$23,274</td>
<td>$24,754</td>
<td>$17,240</td>
<td>$19,176</td>
</tr>
<tr>
<td><strong>Median Household Income</strong></td>
<td>$67,452</td>
<td>$89,093</td>
<td>$75,375</td>
<td>$70,982</td>
<td>$56,111</td>
<td>$65,208</td>
<td>$46,938</td>
<td>$57,384</td>
</tr>
<tr>
<td><strong>Population in Poverty</strong></td>
<td>32</td>
<td>259</td>
<td>61</td>
<td>69</td>
<td>46</td>
<td>17</td>
<td>96</td>
<td>138</td>
</tr>
<tr>
<td><strong>Percentage in Poverty</strong></td>
<td>3%</td>
<td>9%</td>
<td>1%</td>
<td>3%</td>
<td>9%</td>
<td>2%</td>
<td>8%</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Source:** U.S. Census Bureau 2000.

**Note:** Shading indicates blocks that meet Environmental Justice criteria.

- **CT**=Census Tract.
- **BG**=Block Group.
- Represents average household size.
- Below poverty level.
- Average.
Environmental Consequences

Although Environmental Justice communities exist in the project area, they would not be subject to an adverse impact greater than experienced by the non-Environmental Justice communities. The build alternatives would result in the expansion of existing freeways and highways in the project. Project impacts, such as increases in noise levels and temporary construction-period impacts (e.g., dust and noise impacts) would be borne by the both Environmental Justice communities and non-Environmental Justice communities along the alignment. However, as the project’s purpose is to relieve congestion and improve traffic flow on these freeways and highways, this would directly benefit the same communities. Environmental effects of the project that would be borne by Environmental Justice communities within the project area would not be more severe or greater in magnitude than the effects borne by non-Environmental Justice communities.

Further, most of the displacements of businesses and expansion of road facilities would take place in the non–Environmental Justice communities in the Cordelia area (Census Tract 2522.01 Block Groups 1 and 4 and Census Tract 2522.02 Block Groups 1 and 2). The effects of the proposed project as a whole are spread over both Environmental Justice and non–Environmental Justice communities, with most of the displacements in non–Environmental Justice block groups.

The greatest number of displacements would occur as a result of Alternative B. Of the 34 total displacements (one residential, 33 businesses) under Alternative B, nine would be in the Environmental Justice block groups. The residence is not within any Environmental Justice block group. Under Alternative B, Phase 1 fewer displacements would result (12 businesses, no residences). Displacements in the Environmental Justice Block Groups are among industrial and commercial businesses, as is the case in the non–Environmental Justice Block Groups.

Of the 26 total displacements (one residential, 25 businesses) under Alternative C, ten would be in the Environmental Justice Block Groups (the residence is not in any of those Block Groups). Alternative C, Phase 1 would result in fewer displacements in Environmental Justice Block Groups (nine businesses; no residences). Displacements in the Environmental Justice Block Groups are among industrial and commercial businesses; as is the case in the non–Environmental Justice Block Groups.

The project alternatives would not result in the displacement of any residences within any Block Groups meeting the Environmental Justice criteria. Furthermore, the displacement of businesses would be spread across a large area including both Environmental Justice and non–Environmental Justice Block Groups, and would include primarily industrial and commercial uses. Therefore, the proposed project would not impose a disproportionate impact on a low-income or minority community.

The No-Build Alternative would not change the existing environment and so would have no effect on Environmental Justice communities.
Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, Alternative B; Alternative C; Alternative B, Phase 1; and Alternative C, Phase 1 would not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding Environmental Justice. Therefore, no avoidance, minimization, and/or mitigation measures would be required.
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Alternative C Building Displacements

Legend

I-80/I-680/SR12 Interchange

Displaced Building
(see Table 3.1.4-3)

See Table 3.1.4-4 for the parcels displaced under Alternative C-1.

Proposed Project Right-of-Way

Potential Area of Disturbance

Proposed New and
Expanded/Improved Roads

Bridge

Creeks

1 inch = 1,000 feet

Figure 3.1.4-2

Alternative C Building Displacements
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Legend
- Proposed Study Area
- Census Block Group
- Meets Environmental Justice Community Criteria
- Proposed New and Expanded/Improved Roads
- Bridge
- Creeks

Census Tract Block Groups

Figure 3.1.4-3

3.1.5 Utilities and Emergency Services

Affected Environment
This section describes the existing utilities and emergency services within the proposed project right-of-way and that cross the project area. The information below is summarized from the CIA prepared for the proposed project.

Water Service
Water service within the project area is provided by the Solano County Water Agency (SCWA) and the Suisun Solano Water Agency (SSWA). The county has four main sources of water: the Solano Project, the North Bay Aqueduct (NBA), groundwater reservoirs, and Sacramento River entitlements. The SCWA stores and distributes water to 29 urban and agricultural water suppliers in northern California, the San Francisco Bay Area, the San Joaquin Valley, the central coast, and southern California.

The project area is also located within the service area of the Solano Irrigation District (SID). The SID owns and operates facilities within the project area that delivers agricultural water to customers north and south of the project area. The SID also provides water to Fairfield for street landscaping and commercial property landscape irrigation.

Within the city of Fairfield, water is treated at two water treatment plants and distributed by a municipal water distribution system to more than 20,000 service connections via more than 270 miles of water mains.

The SSWA, composed of the SID and Suisun City, operates a treatment plant located outside the project area that delivers potable water to the Suisun City.

The most significant utility infrastructure in the project area is the State Department of Water Resources (DWR) water pipeline, the NBA. The NBA runs underground from Barker Slough in the Sacramento–San Joaquin River Delta to Cordelia Forebay, just outside of the city of Vallejo. The pipeline varies in diameter, ranging from 72 inches at Barker Slough to 54 inches at Cordelia Forebay. A portion of the NBA runs just north of and parallel to I-80 between Abernathy Road and Suisun Creek.

Wastewater Service
A portion of the project area is located within the Fairfield-Suisun Sewer District (FSSD) service area. The FSSD performs wastewater collection, treatment, and water recycling services for all areas within the boundaries of the cities of Fairfield and Suisun City. FSSD facilities include a wastewater treatment plant, 12 wastewater pump stations, force mains, trunk main collection facilities, and 70 miles of sewer networked throughout Fairfield and Suisun City.

The FSSD wastewater treatment plant occupies a 150-acre parcel off Chadbourne Road, southwest of the I-80/SR 12 interchange in Fairfield. The wastewater treatment plant currently has a capacity of 17.5 million gallons per day (mgd) of average dry weather wastewater flow and a capacity of 34.8 mgd during wet weather. On average, the wastewater plant treats 16 mgd.
Plans are currently under development to expand the wastewater treatment plant, which would result in an ultimate capacity of 25 mgd under dry weather conditions.

The majority of treated effluent produced by the wastewater treatment plant is discharged to the Boynton Slough. Approximately 10% of the treated effluent is recycled and used for agricultural irrigation or distributed in the city of Fairfield for street landscaping and commercial property landscape irrigation.

The portions of the project area located in unincorporated Solano County and outside the boundaries of the FSSD service area generally contain no wastewater infrastructure. Wastewater needs in these locations are met by septic systems installed by individual land owners.

**Electricity and Natural Gas**
Solano County is provided with electric and natural gas service by PG&E. PG&E’s service area covers most of central and northern California, and the company maintains 123,054 circuit miles of electrical distribution lines, 18,610 circuit miles of interconnected transmission lines, 40,123 miles of natural gas distribution pipelines, and 6,136 miles of natural gas transportation pipelines. PG&E currently maintains natural gas pipelines and electrical transmission lines throughout Solano County, adjacent to the I-80 corridor.

PG&E facilities in the area include a valve lot (gas transmission facility) and a number of natural gas and power lines. Four 115 kV power lines cross the project area, the Vaca-Dixon-Ignacio Line 1 and Line 2, the Suisun Tap 115–kV line and the Vaca-Suisun-Jameson tower line. PG&E natural gas lines are located within the project area, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges.

**Telecommunications Systems**
Telephone communication service for Solano County is provided by AT&T, one of the country’s largest telecommunications providers. AT&T offers local phone service, long-distance phone service, and high-speed internet service. Major telephone transmission lines traverse Solano County, primarily following road rights-of-way and rail lines. Both overhead and underground lines and conduit carrying telecommunications lines are located within the project area.

**Schools**
There is one elementary school and one high school located near the project area. Nelda Mundy Elementary School is located at 570 Vintage Valley Drive, north of I-80 and the project area. Rodriguez High School is located at 5000 Red Top Road, just west of I-680 within the project area.

The former Green Valley Middle School is located at 3630 Ritchie Road in Fairfield, south of the I-80 and the project area. The school was relocated in 2004 to an area north of I-80 and the former school site is currently vacant. A portion of this vacant parcel is proposed as the new site for the PG&E valve lot relocation that would occur as part of this project.
Solano Community College is located just north of the project area at 4000 Suisun Valley Road. In addition to Solano Community College, other institutions of higher learning in the project area are the University of Phoenix at 5253 Business Center Drive and Chapman University at 4820 Business Center Drive.

**Police and Fire**
The California Highway Patrol (CHP) has jurisdiction over I-80, I-680, and SR 12 for matters involving both traffic and emergency services. The Solano County CHP office is located at 3050 Travis Boulevard in Fairfield.

Those portions of the project area located in unincorporated Solano County are under the jurisdiction of the Solano County Sheriff. The Solano County Sheriff’s Department office is located at 530 Union Avenue in Fairfield.

Those portions of the project area within Fairfield city limits are under the jurisdiction of the Fairfield Police Department. The Fairfield Police Department is located at 1000 Webster Street in Fairfield City Hall. The Suisun City Police Department provides service to those areas located within Suisun City. The police department is located at 701 Civic Center Boulevard in downtown Suisun City.

The portion of the project area located in unincorporated Solano County is served by the Suisun Fire Protection District (SFPD). SFPD headquarters are located at 445 Jackson Street in Fairfield and serves 1,136 properties within a 136-square-mile area. The SFPD currently employs one fire chief, two fire captains, and 45 volunteer firefighters.

Those portions of the project area located within the city of Fairfield fall under the jurisdiction of the Fairfield Fire Department. The Fairfield Fire Department serves approximately 105,000 citizens with six fire stations and 68 firefighters.

In the western portion of the project area, the Cordelia Fire Protection District (CFPD) provides fire and emergency medical services to areas of unincorporated Solano County, including the communities of Green Valley, Rockville, Cordelia, and the Lower Suisun Valley. The CFPD provides service to approximately 5,000 residents within a service area of 56 square miles and currently employs four full-time employees, 12 extra-help firefighters, 13 volunteer firefighters, and between 21 and 26 resident firefighters.

Within Suisun City, fire and emergency services are provided by the Suisun City Fire Department, located at 621 Pintail Drive. The department employs a full-time fire chief and two full-time fire captains. The remainder of the department’s staff is volunteer and includes a deputy fire chief, two battalion chiefs, six fire captains, three lieutenants, and approximately 22 volunteer firefighters.
Environmental Consequences

Potential Effect to Utilities

As part of both alternatives, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the cities of Fairfield, Vallejo, and Benicia; the California Department of Water Resources; and the Suisun-Solano Water Authority. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

Locations of PG&E–owned electrical and gas lines within the project area for each alternative are addressed specifically in the project description in Chapter 2. The precise field location of high risk utilities will be identified during final design in accordance with the Department’s procedures. The PG&E valve lot would be relocated to a vacant parcel owned by the Fairfield-Suisun Unified School District (FSUSD) at the former Green Valley Middle School location at 3630 Ritchie Road in Fairfield.

The relocation, extension, or realignment of utilities under all build alternatives would result in temporary construction impacts and may result in minor interruption of service. To minimize this potential, the Department will enter into agreements with the utility providers, including PG&E, AT&T, and the cities of Fairfield, Benicia, and Vallejo.

Under the No-Build Alternative, no construction would take place and no utilities would be relocated. Therefore, there would be no potential to affect utilities.

Potential Effects on Police, Fire, and Emergency Service Providers during Construction

Potential short-term impacts on police, fire, and emergency service providers may result from construction-related activities under all build alternatives. Potential impacts include increased emergency response times within the project area caused by congestion during project construction and temporary lane closures. Lane closures are expected to be of short duration and to occur in off-peak hours. The effect is expected to be minimal. In addition, as part of its standard procedure, the Department will prepare a Transportation Management Plan, discussed below.

Alternative C and Alternative C, Phase 1 would displace the Fairfield Fire Department station located at 473 Edison Court in the west end of the project area. This fire station is located in an industrial building and serves the Cordelia area. The fire station at Edison Court was opened as a temporary fire station in a warehouse building. The Fairfield Fire Department Strategic Plan (2007) calls for the construction of two permanent fire stations in the Cordelia area to replace the temporary station located on Edison Court (City of Fairfield 2007). As discussed in Section 3.1.4, page 3.1.4-11, there is sufficient commercial and industrial land available to accommodate the displaced uses including the fire station and the avoidance, minimization and mitigation measures described therein would also apply to the Fairfield Fire Department fire station.
Under the No-Build Alternative, no construction would occur and therefore no effect to emergency services would occur as a result of construction.

**Avoidance, Minimization, and/or Mitigation Measures**

**Minimize Disruption of Utilities Services**

The Department will enter into agreements with providers of utilities located within the project area that would be relocated, realigned, or extended as part of project construction or operation. The construction efforts will be coordinated to minimize interruption of service and to continue operation after the proposed project is complete.

**Prepare Transportation Management Plan (TMP)**

Before initiating construction, a TMP will be prepared and provided to all emergency service providers in the area. The TMP will be developed with input (regarding detours, truck routes, notifications, etc.) from emergency services providers, the FSUSD, and others. The TMP will serve to notify all emergency service providers in the project area of the project construction schedule and the time and location of lane closures. The TMP will identify anticipated dates and hours of construction, as well as anticipated limits on access. Notice will be provided at least one week before construction begins. To the extent possible, emergency vehicles will be allowed through roadway segments temporarily closed for construction purposes.
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3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting
The Department, as assigned by the Federal Highway Administration (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 U.S.C. 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

Affected Environment
The information presented here has been summarized from technical reports prepared for the proposed project. These reports, listed below, are available for review at the Department District 4 office and are hereby incorporated by reference.

- **I-80/I-680/SR 12 Interchange PR/ED: Design Year 2035 Demand Forecasts at Project Gateways Technical Memorandum** (July 14, 2006).
The traffic study area includes components of the regional freeway system and ramp terminal intersections, as well as key parallel and connecting arterials within the I-80/I-680/SR 12 project area, as shown in Figure 2-1. Specifically, the analysis of potential project impacts focused on freeway auxiliary lanes, and connecting ramps and collector distributor roadways on Interstate 80 (I-80) between Red Top Road and Abernathy Road, Interstate 680 (I-680) between Gold Hill Road and I-80, State Route 12 West (SR 12) from Red Top Road and I-80, and State Route 12 East from I-80 and Pennsylvania Avenue.

The project study corridor exhibits a directional commute pattern from Solano County, Yolo County, and Sacramento County to the Bay Area employment centers of Contra Costa County, Alameda County, Santa Clara County, the City and County of San Francisco, and San Mateo County. This corridor also serves as a major gateway for goods movement, which accounts for a high percentage of truck traffic. In addition, truck scales are located in both the eastbound (EB) and westbound (WB) directions of I-80 between I-680 and SR 12E. Lastly, this corridor is a major recreational route for activities in the Sacramento Valley, Sierra Nevada, and Nevada.

The Solano Comprehensive Transportation Plan (Solano Transportation Authority 2005) calls for maintenance of level of service (LOS) E on roadways of regional significance, including freeways. LOS E represents at-capacity operation for freeway analysis. When traffic volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F.

For freeway mainline segments, weave segments, and ramp merge and diverge areas, the LOS is related to the vehicle density in vehicle miles per lane and is calculated for the a.m. and p.m. commute peak hours. For intersection operations, the LOS is related to the average control delay per vehicle during the a.m. and p.m. commute peak hours. Tables 3.1.6-1 and 3.1.6-2 provide the LOS thresholds for freeway and intersection analysis, respectively.

Other measures of effectiveness (MOEs) used in the traffic analysis include vehicle hours of travel (VHT), defined as the total number of vehicle hours traveled per hour within the study area; vehicle hours of delay (VHD), defined as the number of vehicle hours of delay per hour resulting from congestion within the study area; vehicle miles traveled (VMT), defined as the total number of vehicle miles traveled during the peak hours in the study area; and the average travel times for trips within the study area.

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Maximum Density (passenger cars per mile per lane)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic Freeway Sections</td>
</tr>
<tr>
<td>A</td>
<td>11</td>
</tr>
<tr>
<td>B</td>
<td>18</td>
</tr>
<tr>
<td>C</td>
<td>26</td>
</tr>
<tr>
<td>D</td>
<td>35</td>
</tr>
<tr>
<td>E</td>
<td>45</td>
</tr>
<tr>
<td>F</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 3.1.6-1. Freeway Mainline, Weaving, and Ramp Junction LOS Criteria


*a Freeway mainline LOS based on a 65 mph free-flow speed.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Traffic and Transportation/Pedestrian and Bicycle Facilities

Table 3.1.6-2. Intersection LOS Definitions for Highway Capacity Manual Methodology

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Description of Traffic Conditions</th>
<th>Average Control Delay per Vehicle (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signalized (Signal-Controlled) Intersections</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Insignificant delays: No approach phase is fully used, and no vehicle waits longer than one red indication</td>
<td>≤10</td>
</tr>
<tr>
<td>B</td>
<td>Minimal delays: An occasional approach phase is fully used, and drivers begin to feel restricted</td>
<td>&gt;10 – 20</td>
</tr>
<tr>
<td>C</td>
<td>Acceptable delays: Major approach phase may become fully used, and most drivers feel somewhat restricted</td>
<td>&gt;20 – 35</td>
</tr>
<tr>
<td>D</td>
<td>Tolerable delays: Drivers may wait through more than one red indication; queues may develop but dissipate rapidly, without excessive delays</td>
<td>&gt;35 – 55</td>
</tr>
<tr>
<td>E</td>
<td>Significant delays: Volumes are approaching capacity, vehicles may wait through several signal cycles, and long vehicle queues form upstream</td>
<td>&gt;55 – 80</td>
</tr>
<tr>
<td>F</td>
<td>Excessive delays: Conditions are at capacity, with extremely long delays; queues may block upstream intersections</td>
<td>&gt;80</td>
</tr>
<tr>
<td><strong>Unsignalized Intersections</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>No delay for stop-controlled approaches</td>
<td>≤10</td>
</tr>
<tr>
<td>B</td>
<td>Operations with minor delay</td>
<td>&gt;10 – 15</td>
</tr>
<tr>
<td>C</td>
<td>Operations with moderate delays</td>
<td>&gt;15 – 25</td>
</tr>
<tr>
<td>D</td>
<td>Operations with some delays</td>
<td>&gt;25 – 35</td>
</tr>
<tr>
<td>E</td>
<td>Operations with high delays and long queues</td>
<td>&gt;35 – 50</td>
</tr>
<tr>
<td>F</td>
<td>Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>


**Pedestrians and Bicyclists**
The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). 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 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 U.S.C. 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act, 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.

The Department is committed to carrying out the ADA by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

**Economic and Societal Trends**
The I-80/I-680/SR 12 interchange is a point at which two major interstate freeways and one state highway converge. When it was constructed in the 1960s, the interchange location was in a
relatively rural setting immediately surrounded by agricultural lands with mountains to the north and the vast Suisun Marsh to the south.

Since the 1960s the Bay Area and Northern California region experienced rapid population growth. The Bay Area’s population has grown by more than 86% during this time and Solano County’s population has more than tripled. This tremendous amount of growth has resulted in substantial increases in regional traffic passing through the interchange area as well as substantial changes in the land uses immediately surrounding the interchange.

Regional truck scales facilities are also located within the I-80/I-680/SR 12 interchange. The location of the truck scales is ideal for monitoring and enforcing truck weight and safety requirements because it provides one location that can monitor truck traffic on I-80, I-680, and SR 12. However, the volume of trucks that need to be weighed and inspected has increased dramatically since the 1960s. Trucks must exit, then re-enter the freeway within the I-80/I-680/SR 12 interchange area after inspection at the truck scales facility. The exiting and entering of a large volume of trucks creates a severe weaving problem, which is made worse by the size, limited maneuverability, and lower speeds of large trucks. Improvement of the EB truck scales have been addressed in a separate project.

The I-80/I-680/SR 12 interchange is vital to the mobility of both the local area and the entire northern California region because it serves a multitude of destinations. It is a critical corridor for local and regional commute travel. Over the past ten years, commute travel through the area has increased substantially in response to the growing Bay Area economy and expansion of employment centers, which has pushed commuters further east as they search for affordable housing. By 2030, commute traffic is projected to constitute between 40% and 75% of the total number of vehicles traveling through the project area.


The extent of facilities studied in the traffic operations analyses are listed below:

- I-80 between Red Top Road and Air Base Parkway.
- I-680 between Gold Hill Road and I-80.
- SR 12W (Jameson Canyon Road) between Red Top Road and I-80.
- SR 12E between I-80 and Civic Center Drive.
- Arterial and local roadways including Abernathy Road, Beck Avenue, Business Center Drive, Central Way, Cordelia Road, Green Valley Road, Lopes Road, Mangels Boulevard, Pennsylvania Avenue, Pittman Road, Red Top Road, Ramsey Road, Rockville Road, Suisun Valley Road, West Texas Street, and other connecting roadways.

The existing conditions analysis presents the physical and operational characteristics of the roadway system in the vicinity of the proposed project in fall 2004. This information provides context for the purpose and need to construct improvements. It should be noted that when the existing conditions traffic counts were taken a fifth auxiliary lane had opened to traffic on WB I-80 between the SR 12E connector and the I-680 southbound connector. However, the fifth EB lane had not yet opened and therefore is not included in the existing conditions analysis. Also not
included is the WB Jameson Canyon Road (SR 12W) truck climbing lane that had not yet been completed. Both improvements have improved traffic operations, and while they are not included in the 2004 existing conditions analysis, they are included in 2015 and 2035 No-Build analyses.

Note that while this report refers to existing conditions in the original 2004 baseline, updated 2007/2008 a.m. and p.m. peak hour volumes were collected from the Department PEMS system and were used to re-validate the existing conditions VISSIM traffic operations model to account for changes in traffic volumes and freeway design (i.e., the EB I-80 auxiliary lane and the opening of the new Benicia-Martinez Bridge south on I-680). A description of the re-validation effort is included in the FTOR.

**System-Wide Measures of Effectiveness**

With a large, complex freeway improvement project such as this, system-wide MOEs—such as VMT, VHD, and average travel speed—are particularly useful for comparison of existing conditions with future no-build and project alternatives. The system-wide MOEs under existing conditions are summarized in Table 3.1.6-3 for the a.m. and p.m. peak hours and illustrated in Figures 3.1.6-1 through 3.1.6-3.

The p.m. peak hour represents the heaviest congestion period within the project study area. For example, the p.m. peak hour has 10% higher VMT, 20% higher VHT, and 72% more VHD. These ratios are even higher when comparing the 3-hour peak periods with the p.m. MOEs exceeding the a.m. MOEs by 17%, 27%, and 73%, respectively. The average travel speed is 46 mph during the a.m. peak hour on WB I-80 (from Waterman/Air Base Parkway to Red Top Road), and 33 mph during the p.m. peak hour on EB I-80 (from Red Top Road to Waterman/Air Base Parkway).

<table>
<thead>
<tr>
<th>MOE</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Miles of Travel (Vehicle Miles/Hour)</td>
<td>316,220</td>
<td>334,755</td>
</tr>
<tr>
<td>Vehicle Hours of Delay (Hours of Delay/Hour)</td>
<td>1,140</td>
<td>1,885</td>
</tr>
<tr>
<td>Estimated Duration of Congestion (Hours) b</td>
<td>1–2 hours</td>
<td>1.5–2.5 hours</td>
</tr>
<tr>
<td>Average Freeway Travel Speed</td>
<td>46 mph (WB Peak Direction)</td>
<td>33 mph (EB Peak Direction)</td>
</tr>
</tbody>
</table>


*The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.*

*Duration of congestion is estimated based on field conditions.*

**System Operations, Travel Speeds, and Bottlenecks**

The existing operating conditions within the project study area were analyzed using 13 model runs of the calibrated peak period VISSIM models and existing a.m. and p.m. peak hour traffic volumes. The volumes are shown in Appendix A of the FTOR. The peak hours in the project study area are generally from 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m.

The FTOR includes the existing (2004) travel speeds on the freeway system for the a.m. and p.m. peak hours, respectively. Travel times for key gateway-to-gateway pairs are also shown on the figures. Table 3-2 in the FTOR shows the service levels, based on vehicle density, for all freeway segments (mainline, weave, on-ramp merge, and off-ramp diverge areas).
A.M. Peak Hour Operations (2004)
The overall I-80 freeway section operates at LOS B at this location; however, the queue results in LOS F operations in the shoulder lane. The bottleneck that used to exist at the WB I-80 to southbound (SB) I-680 connector ramp was eliminated with the completion of the two-lane connector (2004). On WB I-80 during the a.m. peak hour, the grade on SR 12W exiting I-80 and heading toward Napa causes a slowdown on WB I-80. Heavy trucks are not able to keep up speeds on SR 12W, causing queuing onto I-80. The slowdown is generally in lanes 4 and 5 (the outside lanes closest to the shoulder), but the effect of this, plus the combined effect of trucks entering from the truck scales and weaving vehicles headed to the Suisun Valley Road off-ramp or southbound I-680 connector, results in slow-moving queues in lanes 4 and 5, while traffic operations are generally better in lanes 1, 2, and 3. The slow-moving queue in lanes 4 and 5 typically extends from the SR 12W WB off-ramp to SR 12E.

P.M. Peak Hour Operations (2004)
During the p.m. peak hour, a bottleneck develops on EB I-80 at the truck scales on-ramp where slow-moving trucks attempt to accelerate to freeway travel speeds. Vehicle speeds generally begin to increase beyond the truck scales toward the I-80/SR 12E interchange. The bottleneck constrains the amount of traffic that can be delivered downstream, thereby resulting in improved LOS operations immediately downstream of the bottleneck. Vehicle queues resulting from the EB bottleneck at the truck scales on-ramp typically extends as far west as SR 12W and 800 feet south of the Central Way off-ramp on northbound (NB) I-680.

Another bottleneck that develops during the p.m. peak hour is EB I-80 between the Travis Boulevard on-ramp and the Air Base Parkway off-ramp. This bottleneck results in vehicle queues that extend back to the West Texas interchange, resulting in LOS F operations between the Beck Avenue EB on-ramp and the Travis Boulevard EB on-ramp.

The signalized intersections on SR 12E at Beck Avenue and Pennsylvania Avenue also cause some queuing on EB SR 12E, but the queues do not generally extend back onto EB I-80.

A.M. Peak Hour Operations (2007)
As described above, the existing conditions baseline for this study is 2004, but the existing conditions traffic operations model was re-validated to 2007 conditions to supplement the 2004 information and provide assurance that the model still validated more recent conditions. This process is described in Appendix D of the FTOR. The re-validation process for the a.m. peak hour showed that gateway and internal traffic volumes had not changed significantly between 2004 and 2007; therefore, a complete revised simulation was not prepared. Accordingly, the 2004 a.m. peak hour conditions described above are similar to the a.m. conditions in 2007.

P.M. Peak Hour Operations (2007)
Because volumes had changed significantly in the p.m. peak hour between 2004 and 2007, a new simulation was prepared as part of the re-validation effort for the p.m. peak hour. (Refer to Appendix D of the FTOR for more information). p.m. peak hour conditions in 2007 did not change significantly in the non-peak direction (westbound/southbound), and improved somewhat in the peak direction (northbound/eastbound) due to the provision of the fifth lane on EB I-80

1 Lane numbering starts with the leftmost lane as lane 1.
between I-680 and SR 12E (which was not included in the 2004 analysis). Even with the opening of the new Benicia-Martinez Bridge to the south on I-680, which added about 500 vehicles at the southern gateway to the project limits on northbound I-680, conditions were better on the I-680/I-80 connector and downstream on I-80, due to the two-lane connector and the fifth lane between I-680 and SR 12E.

**Intersection Operations—A.M. Peak Hour**
The intersection lane configuration, control type, and peak hour volumes for existing conditions are described in Appendix B of the FTOR. The operations of all study intersections are summarized in Table 3-3 of the FTOR. For all intersections, the average control delay and LOS for the entire intersection are reported. As shown in the table, 22 of the 24 ramp terminal study intersections operate at LOS E conditions or better during the a.m. peak hour. Only the Red Top Road/EB I-80 ramps (all-way stop-controlled) and Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) intersections operate at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the a.m. peak hour.

**Intersection Operations—P.M. Peak Hour**
During the p.m. peak hour, only the Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) ramp terminal intersection operates at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the p.m. peak hour, except the Ramsey Road/Bridgeport Avenue intersection, which operates at unacceptable LOS E. Due to the heavy congestion on the NB I-680 to EB I-80 ramp, it is estimated that approximately 75% of the Gold Hill Road off-ramp traffic volume is associated with vehicles diverting from I-680 and I-80 to Lopes Road/Ramsey Road/Cordelia Road to bypass the heavy congestion on the freeway mainline.

The intersection of Central Way/I-680 NB off-ramp operates at acceptable LOS C conditions, but the stop-controlled off-ramp operates at marginal LOS D/E. It is estimated that approximately 90% of the off-ramp traffic volume, like that on the Gold Hill Road off-ramp, is associated with vehicles diverting from NB I-680 to Central Way/Pittman Road. However, because the volumes on Central Way are fairly low, this intersection would not meet the Departments’ peak hour volume signal warrant.

At the all-way stop-controlled intersection of Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp, the heavy traffic volume on NB Lopes Road (more than 600 vehicles) and a total intersection volume exceeding 1,780 vehicles results in long delays and poor operating conditions for NB Lopes Road. As a result of the heavy traffic volumes on all three approaches, this intersection meets the Department’s peak hour signal warrant criteria during both a.m. and p.m. peak hour conditions. Subsequent to completion of the existing conditions analysis, a signal was installed at this location.
**Traffic Safety**

The Department maintains statistics for all State highway facilities for three types of accident rates: the total accident rate, accidents involving fatalities and accidents involving fatalities or injuries. Within the project limits most freeway segments of I-80 experience a higher total accident rate and higher fatal or injury accident rate compared to the average statewide rate for similar types of facilities (Table 3.1.6.4). Half of the segments experience a higher than average fatal accident rate than the average statewide rate. Within the project limits of SR 12 East half of the sections experience higher than average total and fatal accident rates compared to the average statewide rate for similar types of facilities and most sections experience a higher than average accident rate for fatal plus injury accidents compared to the average statewide rate for similar facilities.

In reviewing the accident summary records 65% of the accidents occurred on I-80 during commute periods, with over 50% of the accidents being rear-end collisions. On SR 12 East over 50% of the accidents occurred during the commute periods, with over 60% of the accidents being rear-end collisions. On SR 12 West 70% of the accidents occurred during the commute periods, with 48% of the accidents being rear-end collisions. This combination of high accident rates during commute periods and a high percentage of rear-end type collisions is likely related to the congestion observed in these sections.

The effect of slow moving trucks decelerating into, or accelerating out of, the westbound truck scales combined with already congested lanes is described in the 2009 FTOR. Increased vehicle traffic, and in particular increased truck volumes, will exacerbate the accident rate based on the general correlation between increased volumes and congestion and increased accident rates.
### Table 3.1.6-4. Accident History, January 1, 2006 to December 31, 2008

<table>
<thead>
<tr>
<th>Location</th>
<th>Post Mile</th>
<th>Number of Accidents</th>
<th>Actual Accident Rate (Accidents per Million Vehicle Miles)</th>
<th>Average Accident Rate (Accidents per Million Vehicle Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Fatal</td>
<td>F+I</td>
</tr>
<tr>
<td><strong>Western Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—westerly project limit to Red Top Road undercrossing</td>
<td>10.89 to 11.39</td>
<td>88</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>I-80—Red Top Road undercrossing to SR 12W/I-80 connector structure</td>
<td>11.39 to 11.98</td>
<td>69</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>I-80—SR 12W/I-80 undercrossing to Green Valley Road overcrossing</td>
<td>11.98 to 12.74</td>
<td>155</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>I-80—Green Valley Road overcrossing to I-680/I-80 connector structure</td>
<td>12.74 to 13.09</td>
<td>121</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>I-680—0.5 mile south of Gold Hill Road overcrossing to I-80/I-680 connector</td>
<td>9.5 to 13.1</td>
<td>94</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>SR 12W—0.5 mile west of Red Top Road to SR 12W/I-80 connector</td>
<td>1.75 to 2.76</td>
<td>42</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>I-80—I-680/I-80 connector structure to Suisun Valley Road overcrossing</td>
<td>13.09 to 13.49</td>
<td>141</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td><strong>Central Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—Suisun Valley Road overcrossing to SR 12E/I-80 connector structure</td>
<td>13.49 to 15.81</td>
<td>472</td>
<td>0</td>
<td>137</td>
</tr>
<tr>
<td>I-80—SR 12E/I-80 connector structure to Abernathy Road overcrossing</td>
<td>15.81 to 16.17</td>
<td>62</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td><strong>Eastern Segment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80—Abernathy Road overcrossing to West Texas Street undercrossing</td>
<td>16.17 to 17.20</td>
<td>173</td>
<td>2</td>
<td>39</td>
</tr>
<tr>
<td>SR 12E—SR 12E/I-80 connector to Chadbourne Road undercrossing</td>
<td>1.85 to 2.22</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SR 12E—Chadbourne Road undercrossing to Beck Avenue</td>
<td>2.22 to 3.20</td>
<td>63</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>SR 12E—Beck Avenue to Pennsylvania Avenue</td>
<td>3.20 to 4.07</td>
<td>64</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>SR 12E—Pennsylvania Avenue to Civic Center Boulevard</td>
<td>4.07 to 4.74</td>
<td>70</td>
<td>0</td>
<td>33</td>
</tr>
</tbody>
</table>


*Notes:* Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.


*Notes:* Shading denotes locations that exceed the statewide average accident rate.

F+I = fatal plus injury.
**Bicycle Circulation System**
Existing and planned bicycle facilities are provided throughout the study area. Below is a description of the three types of bicycle facilities, based on the Fairfield General Plan.

- **Class I Bikeway (Bicycle Path)**—Separate off-street bike paths or trails for bicycles only. Multi-use trails are off-street paths that are shared by pedestrians.

- **Class II Bikeway (Bicycle Lane)**—Provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow is permitted.

- **Class III (Bicycle Route)**—Provides for a right-of-way designated by signs and/or pavement markings for shared use with motor vehicles.

The Fairfield General Plan (2004) contains a map of existing and planned bikeways throughout the City. In the interchange vicinity, the North Connector Corridor Transportation for Livable Communities Concept Plan (August 2007) provides a more recent and updated plan for bicycle and pedestrian connections within the North Connector Corridor, between Jameson Canyon Road at Red Top Road and Abernathy Road. Figure 3.1.6-4 illustrates the components of the Concept Plan.

Existing bicycle facilities within the project limits include:

- The Fairfield Linear Park Pathway (multi-use, no horses) adjacent to and immediately north of I-80 between immediately east of the WB I-80 truck scales and Travis Boulevard; also between West Texas Street and Travis Boulevard on the south side of I-80 (northeast/southwest orientation).

- **Class II Bicycle Lanes on SR 12 West** between Red Top Road and points west.

- **Bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection.**

- **Class II Bicycle Lanes on Lopes Road between Gold Hill Road and Red Top Road.**

- **Class I Multi-Use Path (no horses) along creek between Lopes Road and Watt Drive (north of Fermi Drive and south of Fulton Drive), and between Red Top and Gold Hill Road just west of the residential neighborhoods.**

- **Red Top Road**—Planned Class II Bicycle Lanes.

**Pedestrian Circulation System**
The pedestrian network in the study area consists primarily of sidewalks along streets as well as crosswalks at the major intersections. ADA–compliant sidewalks are generally not provided at the grade-separated crossings of the study freeways and highways (I-80, SR 12, and I-680) in the project study area. Pedestrian overpasses are also not provided in the project study area. At-grade intersections are provided along SR 12; these are discussed below.
**SR 12W**
No crosswalk is provided at the unsignalized, side-street stop-controlled Red Top Road/SR 12W intersection. An existing multi-use trail terminates immediately east of this intersection north of SR 12W.

**SR 12E**
Crosswalks are provided across SR 12E at the Beck Avenue and Pennsylvania Avenue signalized intersections. The SR 12E/Beck Avenue intersection does not provide a marked crosswalk or pedestrian signal across Beck Avenue, resulting in no marked crossing or pedestrian signal at the northwest or southwest corner. The SR 12E/Pennsylvania Avenue intersection does not provide a marked crosswalk or pedestrian signal from the northeast corner across either Pennsylvania Avenue or SR 12E.

**Transit System**
A variety of transit services are provided in the project study area, including bus and pedestrian rail service.

Bus service to the project study area is provided by Fairfield and Suisun Transit, operated by the Cities of Fairfield and Suisun City; NorthBay Transit Group (unincorporated Solano County Paratransit service provider); the Rio Vista Delta Breeze operated by the City of Rio Vista; and BayLink, operated by the City of Vallejo. Figure 3.1.6-5 depicts the passenger bus services in the area.

**Fairfield and Suisun Transit**
Fairfield and Suisun Transit (FAST) is run by the Cities of Fairfield and Suisun City, which operate intra-city and inter-city fixed-route bus services Monday through Saturday. FAST provides service to Sacramento, Davis, Dixon, Vacaville, Benicia, Vallejo, and Bay Area Rapid Transit (BART). The fare system is based on the number of zones that are crossed, with a local fare of $1.50 and a maximum fare of $6.75 ($0.75 to $3.25 for seniors and the disabled). The existing FAST fixed transit route in the study area is summarized in Table 3.1.6-5, and illustrated in Figure 3.1.6-5. Besides fixed-route transit services, FAST also offers Flex buses, Paratransit, and a reduced-fare taxi program for seniors.

**NorthBay Transit Group (Solano Paratransit)**
The Solano Transportation Authority conducted a transit consolidation study, which resulted in the dissolution of the Solano Paratransit effective July 1, 2009. The agency had previously operated paratransit services within the unincorporated areas of Solano County. Paratransit services are now operated by the NorthBay Transit Group.

**Rio Vista Delta Breeze**
The Rio Vista Delta Breeze is run by the City of Rio Vista. The Delta Breeze operates inter-city service between Fairfield, Suisun City, the Suisun-Fairfield Amtrak Station, and Rio Vista on Route 50. Route 50 will deviate anywhere within the city limits of Fairfield and Suisun City. Inter-city fare is $5.00, including seniors. Route deviations cost an extra $0.50. Route 50 is summarized in Table 3.1.6-5.
BayLink
BayLink buses are operated by Vallejo Transit. Vallejo Transit operates inter-city service between Fairfield and Vallejo on Route 85. Inter-city fare is $5.00 ($2.50 for seniors and the disabled). Route 85 is summarized in Table 3.1.6-5. BayLink also provides ferry service between Vallejo and San Francisco.

Passenger Rail Service
Amtrak provides passenger rail service and the Capitol Corridor provides commuter rail service in the study area. The rail line runs southeast-northwest in the study area.

Amtrak currently provides daily service along the California Zephyr route between Emeryville and Chicago, and daily service along the Coast Starlight route between Los Angeles and Seattle. The Capitol Corridor operates between San Jose, Oakland, Martinez, Fairfield/Suisun City, Davis, Sacramento, and Auburn. The Capitol Corridor serves the Suisun-Fairfield Station with 20 trains per weekday and 15 trains per day on weekends and holidays in each direction. The
Suisun-Fairfield Amtrak Station is located in Suisun City on Main Street under the SR 12E overcrossing. Transit access to and from the station is provided by FAST and the Rio Vista Delta Breeze.

**Environmental Consequences**

This section describes the impacts of the project on traffic operations, pedestrian and bicycle facilities, and transit service in the construction year (2015) and the design year (2035). The scenarios considered in this analysis are listed below.

- Alternative B (2035).
- Alternative C (2035).
- No-Build Alternative (2015, 2035).

The alternatives are described in the Chapter 2, “Project Alternatives;” the analyzed scenarios are described in Chapter 4 of the FTOR.

**Methods—Future Conditions Analysis**

**Traffic Forecasts**

The 2035 travel demand forecasts were developed using the STA’s Solano-Napa Travel Demand Model. The travel demand forecasts were documented in a Technical Memorandum dated July 14, 2006, which was reviewed and approved by the Department District 4 Office of Advanced Planning. The Technical Memorandum is included in Appendix C of the FTOR. The construction-year (2015) forecasts were developed by estimating the gateway demand at each of the five entrances to the system, using a straight-line interpolation between the existing (2004) volumes and future (2035) demand volumes; checking to ensure that the resulting gateway volumes were not constrained by gateway capacity; and interpolating the 2015 volumes for each origin zone within the VISUM model and determining the appropriate routes for the trips using the VISUM model with some manual adjustments.

**Traffic Operations Analysis**

The constrained traffic forecasts and freeway system traffic operations analysis were performed with the VISUM/VISSIM forecasting and traffic operations tools. The VISUM/VISSIM tools and the validation of the original models are described in the Final Technical Memorandum, *I-80/I-680/SR 12 Interchange Project PR/ED: Vissim Model Calibration and Validation for the Project Expansion Area, February 14, 2005*. The intersection operations analysis utilizes the 2000 HCM operations methodology, and was performed with VISSIM for the ramp terminal intersections, and with Synchro for the non–ramp-terminal intersections.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Traffic and Transportation/Pedestrian and Bicycle Facilities

**Evaluation Criteria for Environmental Consequences**
The criteria presented below were used in the determination of environmental consequences.

**Traffic Operations**
Environmental consequences are identified related to the proposed project’s effect on bottlenecks within the project study area; the proposed project’s effect on system-wide delay, average travel speed, VMT, and duration of congestion; and the proposed project’s effect on intersection LOS at the ramp terminal intersections and non-ramp terminal intersections in the study area.

**Pedestrian and Bicycle Circulation**
An environmental consequence is identified if the proposed project’s implementation would disrupt or interfere with existing or planned bicycle or pedestrian facilities.

**Transit Service**
An environmental consequence is identified if implementation of the proposed project would disrupt or interfere with existing or planned transit operations or facilities of Solano Regional Transit.

**Summary of Environmental Consequences**
Six summary tables, Tables 3.1.6-6 through 3.1.6-11, and two summary bar charts, Figures 3.1.6-6 and 3.1.6-7, are provided to support the traffic impact discussions below. Additional supporting tables and figures provided in the FTOR are referenced as needed below. They include detailed freeway LOS tables, intersection LOS tables, travel speed and travel time graphics, and bar chart travel time comparisons between conditions in 2015 and 2035.
### Table 3.1.6-6. Construction-Year 2015—A.M. Peak Hour Conditions

**System Wide Measures of Effectiveness**

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle-Miles of Travel (Vehicle-Miles/Hour)</td>
<td>System-wide</td>
<td>449,870</td>
<td>451,325 (&lt;1%)</td>
<td>448,800 (&lt;1%)</td>
</tr>
<tr>
<td>Vehicle-Hours of Delay (Hours of Delay/Hour)</td>
<td>System-wide</td>
<td>1,075</td>
<td>840 (-22%)</td>
<td>1,105 (+3%)</td>
</tr>
<tr>
<td>Average Network Speed</td>
<td>System-wide</td>
<td>51.2 mph</td>
<td>52.6 mph (+3%)</td>
<td>51.0 mph (&lt;1%)</td>
</tr>
<tr>
<td>% of Demand Served (Total Peak Hour Demand)</td>
<td>System-wide</td>
<td>97% (16,815)</td>
<td>98% (16,815)</td>
<td>97% (16,815)</td>
</tr>
</tbody>
</table>

#### Bottlenecks and queues

<table>
<thead>
<tr>
<th></th>
<th>I-80 WB</th>
<th>None</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I-80 EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 West WB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 West EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 East WB</td>
<td>At Beck; queue extends east of Civic Center</td>
<td>At Pennsylvania; queue extends to Jackson Street</td>
<td>Same as No Project</td>
</tr>
<tr>
<td></td>
<td>SR 12 East EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 NB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 SB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

#### Duration of Congestion

<table>
<thead>
<tr>
<th></th>
<th>System-wide</th>
<th>Congestion would remain at near existing conditions, lasting approximately 1.5 hours.</th>
<th>Congestion would remain at near existing conditions, lasting approximately 1 hour.</th>
<th>Congestion would remain at near existing conditions, lasting approximately 1.5 hours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Individual Delay</td>
<td>WB I-80 to SB I-680</td>
<td>25 seconds</td>
<td>None</td>
<td>40 seconds</td>
</tr>
<tr>
<td></td>
<td>WB I-80</td>
<td>30 seconds</td>
<td>25 seconds</td>
<td>25 seconds</td>
</tr>
<tr>
<td></td>
<td>SR-12 East to WB I-80</td>
<td>7 minutes</td>
<td>1 minute</td>
<td>6 minutes</td>
</tr>
<tr>
<td>Speed</td>
<td>WB I-80 to SB I-680</td>
<td>62 mph</td>
<td>64 mph</td>
<td>63 mph</td>
</tr>
<tr>
<td></td>
<td>WB I-80</td>
<td>63 mph</td>
<td>64 mph</td>
<td>64 mph</td>
</tr>
<tr>
<td></td>
<td>SR-12 East to WB I-80</td>
<td>33 mph</td>
<td>61 mph</td>
<td>34 mph</td>
</tr>
<tr>
<td>Flows (volume)</td>
<td>SB I-680</td>
<td>3,305</td>
<td>3,272</td>
<td>3,378</td>
</tr>
<tr>
<td></td>
<td>WB I-80</td>
<td>5,466</td>
<td>5,511</td>
<td>5,227</td>
</tr>
<tr>
<td></td>
<td>WB SR-12 East</td>
<td>2,202</td>
<td>2,393</td>
<td>2,532</td>
</tr>
</tbody>
</table>

*Source: Fehr & Peers, August 2010.*

a. The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway / Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

b. Maximum Individual Delay (when compared to a free flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-80; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12 East to west of Red Top Road on I-80.

c. Travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12 East to west of Red Top Road on I-80.

d. Flow is on SB I-680 between I-80 and Gold Hill Road; on WB I-80 between SR 12 West and Red Top Road; and on SR 12 East between Chadbourne Road and I-80.
### Table 3.1.6-7. Construction-Year 2015—P.M. Peak Hour Conditions System Wide Measures of Effectiveness

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle-Miles of Travel</td>
<td>System-wide</td>
<td>480,410</td>
<td>531,935 (+11%)</td>
<td>516,055 (+7%)</td>
</tr>
<tr>
<td>(Vehicle-Miles/Hour)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle-Hours of Delay</td>
<td>System-wide</td>
<td>5,100</td>
<td>2,150 (-58%)</td>
<td>3,100 (-39%)</td>
</tr>
<tr>
<td>(Hours of Delay/Hour)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Network Speed</td>
<td>System-wide</td>
<td>36.2 mph</td>
<td>47.6 mph (+32%)</td>
<td>43.3 mph (+20%)</td>
</tr>
<tr>
<td>% of Demand Served</td>
<td>System-wide</td>
<td>85% (20,255)</td>
<td>95% (20,255)</td>
<td>90% (20,255)</td>
</tr>
<tr>
<td>(Total Peak Hour Demand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlenecks and queues</td>
<td>I-80 WB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-80 EB</td>
<td>At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to Green Valley Road</td>
<td>None</td>
<td>At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to I-680 Connector</td>
</tr>
<tr>
<td></td>
<td>SR 12 West WB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 West EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 East WB</td>
<td>At Pennsylvania; queue extends to Jackson Street</td>
<td>None</td>
<td>Same as No Project</td>
</tr>
<tr>
<td></td>
<td>SR 12 East EB</td>
<td>At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB</td>
<td>At Pennsylvania; queue extends to I-80 Connector</td>
<td>At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB</td>
</tr>
<tr>
<td></td>
<td>I-680 NB</td>
<td>At I-80 connector (due to queue from 12 East EB bottleneck); queue extends beyond Gold Hill Road</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 SB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Duration of Congestion</td>
<td>System-wide</td>
<td>Congestion would significantly increase compared to existing conditions, lasting beyond 3 hours</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 2 hours.</td>
</tr>
<tr>
<td>Maximum Individual Delay</td>
<td>NB I-680 to EB I-80wb</td>
<td>26 minutes</td>
<td>1 minute</td>
<td>5 minutes</td>
</tr>
<tr>
<td></td>
<td>EB I-80b</td>
<td>4 minutes</td>
<td>None</td>
<td>3 minutes</td>
</tr>
<tr>
<td></td>
<td>SR-12 West to EB I-80b</td>
<td>4 minutes</td>
<td>None</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Speed</td>
<td>NB I-680 to EB I-80b</td>
<td>17 mph</td>
<td>63 mph</td>
<td>49 mph</td>
</tr>
<tr>
<td></td>
<td>EB I-80b</td>
<td>45 mph</td>
<td>65 mph</td>
<td>50 mph</td>
</tr>
<tr>
<td></td>
<td>SR-12 West to EB I-80b</td>
<td>43 mph</td>
<td>62 mph</td>
<td>48 mph</td>
</tr>
<tr>
<td>Flows (volume)</td>
<td>NB I-680w</td>
<td>2,168</td>
<td>4,037</td>
<td>4,327</td>
</tr>
<tr>
<td></td>
<td>EB I-80b</td>
<td>7,272</td>
<td>8,679</td>
<td>7,937</td>
</tr>
<tr>
<td></td>
<td>SR 12 Westw</td>
<td>1,548</td>
<td>1,385</td>
<td>1,334</td>
</tr>
</tbody>
</table>


a The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway / Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

b Maximum Individual Delay (when compared to a free flow speed of 65 mph) from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.

c Travel speed from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.

d Flow is on NB I-680 between Gold Hill Road and I-80; on EB I-80 between Travis Boulevard and Air Base Parkway; and on EB SR 12 West between Red Top Road and I-80.
Table 3.1.6-8. Design-Year 2035—AM Peak Hour Conditions System Wide Measures of Effectiveness*  

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
<th>Full-Build Alternative B</th>
<th>Full-Build Alternative C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle-Miles of Travel (Vehicle-Miles/Hour)</td>
<td>System-wide</td>
<td>539,445</td>
<td>564,605 (+5%)</td>
<td>546,825 (+1%)</td>
<td>575,300 (+7%)</td>
<td>577,480 (+7%)</td>
</tr>
<tr>
<td>Vehicle Hours of Delay (Hours of Delay/Hour)</td>
<td>System-wide</td>
<td>3,695</td>
<td>1,845 (-54%)</td>
<td>3,020 (-18%)</td>
<td>1,335 (-64%)</td>
<td>1,260 (-66%)</td>
</tr>
<tr>
<td>Average Network Speed (Vehicle Travel Speed in Miles/Hour)</td>
<td>System-wide</td>
<td>41.8 mph</td>
<td>48.9 mph (+17%)</td>
<td>44.2 mph (+6%)</td>
<td>52.4 mph (+29%)</td>
<td>52.7 mph (+29%)</td>
</tr>
<tr>
<td>% of Demand Served (Total Peak Hour Demand)</td>
<td>System-wide</td>
<td>90% (21,570)</td>
<td>95% (21,570)</td>
<td>94% (21,570)</td>
<td>98% (21,570)</td>
<td>98% (21,570)</td>
</tr>
<tr>
<td>Bottlenecks and queues</td>
<td>I-80 WB</td>
<td>Between Suisun Valley Road and Truck Scales; queue extends to SR 12 East connector</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-80 EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 West WB</td>
<td>At Red Top Road; queue extends to I-80 connector</td>
<td>Same as No Project</td>
<td>Same as No Project</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 West EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 East WB</td>
<td>At Beck; queue extends beyond Civic Center Drive</td>
<td>Same as No Project</td>
<td>Same as No Project</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 East EB</td>
<td>At Pennsylvania; queue extends to Chadbourne</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-64 NB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 SB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 SH</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System-wide</td>
<td>Congestion would significantly increase compared to existing conditions, lasting approximately 3 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System-wide</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
<td>Congestion would decrease to near existing conditions, lasting approximately 1.5 hours.</td>
</tr>
<tr>
<td>Maximum Individual Delay (Minutes)</td>
<td>WB I-80 to SB I-680*</td>
<td>2 minutes</td>
<td>1 minute</td>
<td>2 minutes</td>
<td>5 seconds</td>
<td>20 seconds</td>
</tr>
<tr>
<td></td>
<td>WB I-80*</td>
<td>2 minutes</td>
<td>1 minute</td>
<td>1 minute</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR-12 East to WB I-80*</td>
<td>12 minutes</td>
<td>9 minutes</td>
<td>9 minutes</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Speed (Miles/Hour)</td>
<td>WB I-80 to SB I-680*</td>
<td>53 mph</td>
<td>58 mph</td>
<td>58 mph</td>
<td>59 mph</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SR I-80*</td>
<td>58 mph</td>
<td>60 mph</td>
<td>60 mph</td>
<td>61 mph</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SR-12 East to WB I-80*</td>
<td>51 mph</td>
<td>58 mph</td>
<td>61 mph</td>
<td>62 mph</td>
<td></td>
</tr>
<tr>
<td>Flows (Vehicle)</td>
<td>SR I-680*</td>
<td>3,699</td>
<td>3,816</td>
<td>3,929</td>
<td>4,618</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SR I-80*</td>
<td>3,121</td>
<td>3,558</td>
<td>6,074</td>
<td>6,462</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SR SH-12 East*</td>
<td>3,439</td>
<td>3,264</td>
<td>2,446</td>
<td>3,115</td>
<td></td>
</tr>
</tbody>
</table>

* The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway / Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.  
* Alternative C-1 operations would be more comparable to that of Alternative B-1 once subsequent phases of improvements, namely the extension of a sixth eastbound mixed-flow lane on I-80 from the Suisun Valley Road off-ramp to the Eastbound Truck Scales off-ramp, and the elimination of the SR 12/Pennsylvania Avenue intersection, are implemented.  
* Maximum Individual Delay (when compared to a free flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12 East to west of Red Top Road on I-80.  
* Travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12 East to west of Red Top Road on I-80.  
* Flow is on SB I-80 between I-80 and Gold Hill Road; on WB I-80 between SR 12 West and Red Top Road; and on SR 12 East between Chadbourne Road and I-80.  

* Total Environmental Impact Monitoring/Environmental Impact Assessment Interstate 80/Interstate 680/State Route 12 Interchange Project  
* Final Environmental Impact Report/Environmental Impact Statement  
* October 2010  
* 3.1.6-17
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Table 3.1-6. Design-Year 2035—P.M. Peak Hour Conditions  
System Wide Measures of Effectiveness*

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
<th>Full-Build Alternative B</th>
<th>Full-Build Alternative C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle Miles of Travel</td>
<td>System-wide</td>
<td>413,160</td>
<td>575,815 (+39%)</td>
<td>650,000 (+60%)</td>
<td>660,555 (+60%)</td>
</tr>
<tr>
<td></td>
<td>(Vehicle Miles/Hour)</td>
<td>System-wide</td>
<td>19,065</td>
<td>16,155 (-47%)</td>
<td>16,095 (-16%)</td>
<td>5,420 (-72%)</td>
</tr>
<tr>
<td></td>
<td>Average Network Speed</td>
<td>System-wide</td>
<td>85 mph</td>
<td>26.9 mph (+82%)</td>
<td>23.8 mph (+25%)</td>
<td>40.1 mph (+152%)</td>
</tr>
<tr>
<td></td>
<td>% of Demand Served</td>
<td>System-wide</td>
<td>54% (26,910)</td>
<td>75% (26,910)</td>
<td>64% (26,910)</td>
<td>89% (26,910)</td>
</tr>
<tr>
<td></td>
<td>(Total Peak Hour Demand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlenecks and queues</td>
<td>I-80 WB (due to queue from 12 East EB bottleneck) ; queue extends beyond Red Top Road</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I-80 EB (due to queue from 12 East EB bottleneck) ; queue extends beyond Red Top Road</td>
<td>Same as No Project</td>
<td>Same as No Project</td>
<td>At Air Base Parkway (outside project limits) ; queue extends to just east of SR 12 West connector</td>
<td>At Air Base Parkway (outside project limits) ; queue extends to Red Top Road</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SR 12 West EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SR 12 East EB</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>I-680 NB (due to queue from 12 East EB bottleneck) ; queue extends beyond Gold Hill Road</td>
<td>Same as No Project</td>
<td>At Gold Hill On-ramp, queue extends to Gold Hill Off-ramp</td>
<td>None</td>
<td>At 12 connector (due from 12 East EB bottleneck) ; queue extends beyond Gold Hill Road</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I-680 WB (due to queue from 12 East EB bottleneck) ; queue extends beyond Gold Hill Road</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Duration of Congestion

<table>
<thead>
<tr>
<th>System-wide</th>
<th>Congestion would significantly increase compared to existing conditions, lasting beyond 6 hours</th>
<th>Congestion would significantly increase compared to existing conditions, lasting approximately 4.5 hours</th>
<th>Congestion would significantly increase compared to existing conditions, lasting beyond 5 hours</th>
<th>Congestion would significantly decrease, lasting approximately 3 hours</th>
<th>Congestion would significantly decrease, lasting approximately 3 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Individual Delay</td>
<td>72 minutes</td>
<td>55 minutes</td>
<td>10 minutes</td>
<td>12 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21 minutes</td>
<td>19 minutes</td>
<td>10 minutes</td>
<td>9 minutes</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>12 minutes</td>
<td>30 minutes</td>
<td>12 minutes</td>
<td>12 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 mph</td>
<td>28 mph</td>
<td>25 mph</td>
<td>25 mph</td>
<td></td>
</tr>
</tbody>
</table>
| Fehr & Peers, August 2010.
* The study area extends from I-80 from west of Red Top Road to east of Air Base Parkway / Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.
* Alternative C-1 operations would be more comparable to that of Alternative B-1 once subsequent phases of improvements, namely the extension of a sixth mixed flow eastbound lane on I-80 from the Susanville Road off-ramp to the Eastbound Truck Scales off-ramp, and the elimination of the SR 12 Pennsylvania Avenue intersection, are implemented.
* No Project and Phase 1 Alternatives: Maximum Individual Delay (when compared to a free flow speed of 65 mph) or from back of queue (upstream), which is outside the study area limit, to study area limit (downstream). Full Build Alternatives: Maximum Individual Delay (when compared to a free flow speed of 65 mph) or from back of queue (upstream), which is outside the study area limit, to study area limit (downstream). Full Build Alternatives: Maximum Individual Delay (when compared to a free flow speed of 65 mph) or from back of queue (upstream), which is outside the study area limit, to study area limit (downstream).
* Traffic speed from south of Gold Hill Road on I-80 east of Air Base Parkway on I-80; from west of Red Top Road on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.
* Traffic speed from south of Gold Hill Road on I-80 east of Air Base Parkway on I-80; from west of Red Top Road on I-80; and from west of Red Top Road on I-80; and from east of Main Street on SR 12 West to west of Air Base Parkway on I-80.
* Traffic speed from south of Gold Hill Road on I-80 east of Air Base Parkway on I-80; from west of Red Top Road on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.
* Traffic speed from south of Gold Hill Road on I-80 east of Air Base Parkway on I-80; from west of Red Top Road on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.
* Traffic speed from south of Gold Hill Road on I-80 east of Air Base Parkway on I-80; from west of Red Top Road on I-80; and from west of Red Top Road on SR 12 West to east of Air Base Parkway on I-80.
Table 3.1.6-10. Design-Year 2035—Peak Hour Travel Times*

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
<th>Full-Build Alternative B</th>
<th>Full-Build Alternative C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WB I-80</td>
<td>10:00</td>
<td>9:50</td>
<td>8:45</td>
<td>7:35</td>
<td>8:10</td>
</tr>
<tr>
<td></td>
<td>WB SR-12 East to WB I-80</td>
<td>19:50</td>
<td>9:50</td>
<td>17:05</td>
<td>6:30</td>
<td>7:40</td>
</tr>
<tr>
<td>Off-Peak</td>
<td>WB I-80</td>
<td>9:25</td>
<td>9:20</td>
<td>9:35</td>
<td>8:35</td>
<td>7:35</td>
</tr>
<tr>
<td>Direction</td>
<td>WB SR-12 West to EB I-80</td>
<td>8:20</td>
<td>8:15</td>
<td>8:20</td>
<td>7:55</td>
<td>7:15</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EB I-80</td>
<td>20:10</td>
<td>9:55</td>
<td>16:05</td>
<td>6:30</td>
<td>8:10</td>
</tr>
<tr>
<td></td>
<td>EB SR-12 West to EB I-80</td>
<td>17:00</td>
<td>11:50</td>
<td>17:00</td>
<td>6:15</td>
<td>7:35</td>
</tr>
</tbody>
</table>

* The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area. Travel times are measured between the study area limits on each route, except as noted in footnote b.
* For No Project and Phase 1 Alternatives in the PM peak hour, peak direction, travel times are measured from back of queue (upstream), which is outside the study area limit, to the study area limit (downstream). This is because, for these cases only, queues extend upstream of the study area limits.
* Alternative C-1 operations would be more comparable to that of Alternative B-1 once subsequent phases of improvements are constructed. See report text, pages xxii – xxiii, for further discussion.

Table 3.1.6-11. Construction-Year 2015—Peak Hour Travel Times*

<table>
<thead>
<tr>
<th>MOE</th>
<th>Route</th>
<th>No Project</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Times</td>
<td>WB I-80 to SB I-680</td>
<td>9:40</td>
<td>9:10</td>
<td>9:55</td>
</tr>
<tr>
<td></td>
<td>WB I-80</td>
<td>9:40</td>
<td>8:25</td>
<td>9:25</td>
</tr>
<tr>
<td></td>
<td>WB SR-12 East to WB I-80</td>
<td>15:35</td>
<td>9:45</td>
<td>14:25</td>
</tr>
<tr>
<td>Off-Peak</td>
<td>WB I-80</td>
<td>8:50</td>
<td>8:00</td>
<td>8:15</td>
</tr>
<tr>
<td>Direction</td>
<td>EB I-80</td>
<td>8:05</td>
<td>8:05</td>
<td>8:25</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Times</td>
<td>WB I-80 to SB I-680</td>
<td>34:50</td>
<td>9:10</td>
<td>13:05</td>
</tr>
<tr>
<td></td>
<td>EB I-80</td>
<td>11:45</td>
<td>8:10</td>
<td>10:40</td>
</tr>
<tr>
<td></td>
<td>EB SR-12 West to EB I-80</td>
<td>11:55</td>
<td>8:15</td>
<td>11:00</td>
</tr>
<tr>
<td>Off-Peak</td>
<td>WB I-80 to SB I-680</td>
<td>9:40</td>
<td>8:50</td>
<td>9:35</td>
</tr>
<tr>
<td>Direction</td>
<td>WB I-80</td>
<td>8:30</td>
<td>8:10</td>
<td>8:10</td>
</tr>
<tr>
<td></td>
<td>WB SR-12 East to WB I-80</td>
<td>10:55</td>
<td>9:05</td>
<td>9:55</td>
</tr>
</tbody>
</table>

* The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area. Travel times are measured between the study area limits on each route.
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Effects on System-Wide MOEs

**Alternative B (2035)**
Alternative B would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph with Alternative B (Figure 3.1.6-6).

Alternative B would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140% from 16 mph to approximately 40 mph (Figure 3.1.6-7).

Alternative B would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the morning peak hour and substantially reducing queues in the evening peak hour. Alternative B would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of 30%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear all mainline sections of deficiencies experienced in the No-Build condition in the a.m. peak, although some deficiencies would remain in the p.m. peak hour. These deficiencies, however, are mainly due to the downstream bottleneck at Air Base Parkway, which is outside the project area.

**Alternative B, Phase 1 (2015)**
In the a.m. peak hour, Alternative B, Phase 1 would have very little effect on mobility, with an increase in VMT of less than 2,000 vehicle-miles (less than 0.5%), compared to No-Build conditions. However, Alternative B, Phase 1 would improve system-wide operations, resulting in a decrease in VHD of nearly 22% and an increase in average network travel speed of about 3% (from 51 mph under No-Build conditions to approximately 53 mph with Alternative B, Phase 1). (Figure 3.1.6-6).

In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility, increasing VMT by 11% while decreasing VHD by approximately 58%. Average network travel speed would increase by 32% (from 36 mph under No-Build conditions to approximately 48 mph with Alternative B, Phase 1) (Figure 3.1.6-7).

Alternative B, Phase 1 would provide an improvement over the No-Build condition, reducing the extent of queue from the bottleneck on SR 12E during the morning and evening peak hours. Alternative B would provide an approximately 20% reduction in VHD during the a.m. peak hour and a 60% reduction in VHD during the p.m. peak hour. This alternative would provide travel time savings of 10%, on average, for the major travel routes through the project area during the a.m. peak hour, and 35% savings during the p.m. peak hour. Only the WB SR 12E on-ramp from Jackson Street would continue to operate unacceptably during the a.m. peak hour, but this is due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, only EB SR 12E between the truck scales and Beck Avenue would continue to operate
unacceptably. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

**Alternative B, Phase 1 (2035)**
In the a.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 5%, while decreasing VHD by about 50%. Average network travel speeds would increase 17% (from 42 mph under No-Build conditions to approximately 49 mph) (Figure 3.1.6-6).

In the p.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82% (from 16 mph to 29 mph) (Figure 3.1.6-7).

Alternative B, Phase 1 would improve corridor-wide mobility in the a.m. peak hour by increasing VMT approximately 5%, while decreasing VHD by nearly 100%, relative to the 2035 No-Build condition. Average network travel speeds would increase 17%. In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82%. This would be a beneficial effect.

**Alternative C (2035)**
Alternative C would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph under Alternative C (Figure 3.1.6-6).

Alternative C would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140%, from 16 mph to approximately 40 mph (Figure 3.1.6-7).

Alternative C would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the a.m. peak hour and substantially reducing queues in the p.m. peak hour. Alternative C would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of almost 25%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear the mainline sections of all deficiencies experienced under the No-Build condition during the a.m. peak hour, although some deficiencies would remain in the p.m. peak hour due to the downstream bottleneck at Air Base Parkway, which is outside the project area. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

**Alternative C, Phase 1 (2015)**
In the a.m. peak hour, Alternative C, Phase 1 would have little effect on mobility relative to the 2015 No-Build condition. VMT would decrease slightly (approximately 1,000 vehicle miles or less than 0.5%) compared to No-Build conditions. Alternative C, Phase 1 would result in a
minimal improvement to system-wide operations over No-Build conditions, resulting in an increase in VHD of only 3% and no change in average network travel speed (Figure 3.1.6-6). In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility relative to the 2015 No-Build condition, increasing VMT by 7% while decreasing VHD by approximately 39%. Average network travel speed would increase by 20% (from 36 mph to approximately 43 mph) (Figure 3.1.6-7).

Alternative C, Phase 1 would provide an improvement over the 2015 No-Build conditions, reducing the extent of queue from the bottleneck on SR 12E during the a.m. and p.m. peak hours. Alternative C, Phase 1 would provide no reduction to VHD during the a.m. peak hour, but would provide a 40% reduction during the p.m. peak hour. This alternative would provide negligible travel time savings during the a.m. peak hour, but would provide a 5% savings during the p.m. peak hour. Only WB SR 12E from east of Main Street to Pennsylvania Avenue would continue to operate unacceptably during the a.m. peak hour, due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During p.m. peak hour EB, queue spillback from the Beck Avenue and Pennsylvania Avenue intersections on SR 12E would still extend back to I-680, but the extent of queue would be less than under No-Build conditions. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

**Alternative C, Phase 1 (2035)**

Alternative C, Phase 1 would improve corridor-wide mobility in the a.m. peak hour by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph) (Figure 3.1.6-6, Tables 3.1.6-8 and 3.1.6-9).

Alternative C, Phase 1 would improve corridor-wide mobility in the p.m. peak hour by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph) (Figure 3.1.6-7, Tables 3.1.6-8 and 3.1.6-9). In the a.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph). In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph).

This would be a beneficial effect.

**No-Build (2015)**

In the a.m. peak hour, the level of congestion and delays that occurs under existing conditions would continue to occur under No-Build conditions in 2015. The projected increase in vehicular traffic is offset by the programmed and funded projects for the study area, except on WB SR 12E where severe congestion at the Beck Avenue and Pennsylvania Avenue intersections would continue to meter the amount of traffic that can access WB I-80. Despite increase in traffic during the a.m. peak hour, VHD would decrease slightly, and the average network travel speed would increase by 11% relative to existing conditions (Figure 3.1.6-6).
In the p.m. peak hour, congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a bottleneck that would constrain the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 5,000 VHD (Figure 3.1.6-7).

In the a.m. peak hour, conditions would not worsen substantially relative to the existing (2004) condition. However, in the p.m. peak hour, VHD would increase by more than 100%; the duration of congestion would increase from 1.5–2 hours to more than 3 hours; many EB travel times would more than double, and the bottlenecks on SR 12E at Pennsylvania Avenue and at the SR 12E/EB I-80 connector would result in queues backing up onto I-80 as far as Green Valley Road.

**No-Build (2035)**

In the a.m. peak hour, significant congestion and delays would occur within the project study area, affecting accessibility and mobility throughout Solano County. Because the I-80/I-680/SR 12 interchange serves as a major freeway connector from the San Francisco Bay Area and Sacramento, the No-Build conditions would significantly affect the entire region. Severe congestion on WB SR 12E at the Beck Avenue and Pennsylvania Avenue intersections would meter the amount of traffic that can access WB I-80. Nevertheless, severe congestion at the I-80/I-680 interchange would result in nearly 3,700 VHD and average travel speeds of 40 mph. Relative to existing conditions, VHD would increase by 224% (Figure 3.1.6-6).

In the p.m. peak hour, severe congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a major bottleneck constraining the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 19,000 VHD. The average travel speed would drop to 16 mph (Table 3.1.6-6).

Traffic congestion and delays would increase significantly by 2035 without the proposed project, increasing VHD more than 200% during the a.m. peak hour and 900% during the p.m. peak hour. The I-80/I-680/SR 12 interchange would not provide sufficient capacity to serve the projected 2035 traffic volumes, resulting in severe congestion and oversaturated stop-and-go operations during both the a.m. and p.m. peak hours. Queues would extend through much or all of the project area, and the average travel speed would drop to 42 (mph) during the a.m. peak hour and 16 mph during the p.m. peak hour. Without the improvements, the peak period would last 3–4 hours during the a.m. and 6–7 hours during the p.m.

**Effect on Travel Times**

**Alternative B (2035)**

The benefits of Alternative B during the a.m. peak hour include WB travel time savings of 20%–40%. EB travel time savings would be in the 5%–20% range.

The benefits of Alternative B during the p.m. peak hour include EB travel time savings of 35%–85%. It should be noted that one travel route would actually experience an increase in travel time of about 10% (EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway). The reason
for this increase is the increased number of vehicles served by the proposed project coupled with the removal of the bottleneck on SR 12E. With more vehicles arriving at the downstream bottleneck at Air Base Parkway outside the project area, the travel routes east of SR 12E would experience an increase in travel time due to the additional delay. In the WB direction, Alternative B would result in travel time savings of 60%–70%.

Alternative B, Phase 1 (2015)
The benefits of Alternative B, Phase 1 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of more than 35%. WB I-80 to SB I-680 travel time would improve slightly, with a travel time savings of 5%. All other travel time routes would remain consistent with No-Build conditions, increasing or decreasing by less than 30 seconds.

The benefits of Alternative B, Phase 1 (2015) during the p.m. peak hour include EB travel time savings of 30%–75%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include EB I-80 from Red Top Road to Air Base Parkway and all routes beginning on NB I-680, EB SR 12W, and WB SR 12E. Alternative B, Phase 1 would result in WB travel time savings of 4%–20%. The improved travel times on WB SR 12E are due to the replacement of the Beck Avenue at-grade intersection on SR 12E with a grade-separated interchange, and improvements to the Pennsylvania Avenue intersection.

Alternative B, Phase 1 (2035)
The benefits of Alternative B, Phase 1 in 2035 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of 45%–50%. WB I-80 travel time would improve by approximately 10% compared to No-Build conditions. All other travel routes would remain consistent with No-Build conditions.

The benefits of Alternative B, Phase 1 during the p.m. peak hour would include EB travel time savings of up to 70%. All WB travel time routes would improve by more than 50%.

Alternative C (2035)
The benefits of Alternative C during the a.m. peak hour include WB travel time savings of 20–60%. EB travel time savings would be 10%–15%.

The benefits of Alternative C during the p.m. peak hour include EB travel time savings of 40–80%. One travel route—EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway—would experience an increase in travel time of approximately 2%, for similar reasons as the increase under Alternative B. WB travel time savings would be 50%–60%.

Alternative C, Phase 1 (2015)
During the a.m. peak hour, Alternative C, Phase 1 (2015) would result in minimal improvement to WB travel, with increases or decreases of less than 30 seconds compared to No-Build conditions. It should be noted that one travel time route (WB I-80 to WB SR 12W) would increase by more than 10%. This is due to the relocation of Red Top Road 1,500 feet west of the current intersection location, creating a slightly longer travel path. Travel times from WB SR 12E to WB I-80 and SB I-680 would decrease slightly by 7% and 5%, respectively, because of
the improvements to freeway flows in the right two lanes on WB I-80 west of the SR 12E connector.

The benefits of Alternative C, Phase 1 during the p.m. peak hour include EB travel time savings of 10%–60%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include those starting on NB I-680. Alternative C, Phase 1 would result in reductions for most WB travel times; however, travel times for the two routes that end on WB SR 12 would increase slightly. The increased travel time would be due to the relocation of interchanges (the current at-grade intersection at Red Top Road on SR 12W would be replaced with a grade-separated interchange located approximately 1,500 feet west of the existing intersection location), resulting in longer travel distances.

**Alternative C, Phase 1 (2035)**

During the a.m. peak hour, Alternative C, Phase 1 would result in WB travel time savings of 5% to 20% compared to 2035 No-Build conditions. EB travel times would be similar to No-Build conditions, increasing by 30 seconds or less. The increase in travel time on EB SR 12E is due to an increase in demand served, and therefore more vehicles arriving at the bottleneck, while the increase in travel times on EB I-80 is due to the lengthening of some travel time paths due to the location of new interchanges.

During the p.m. peak hour, Alternative C Phase I would result in travel time savings in the peak eastbound direction of 3 percent (from 28:10 to 27:30) on eastbound I-80, 28 percent (from 99:20 to 71:40) for eastbound SR 12 West to eastbound I-80, and 22 percent (from 81:45 to 63:55) for northbound I-680 to eastbound I-80. In the westbound (non-peak) direction, travel time savings would approach 70 percent compared to No Project conditions, for all traffic. The 70 percent savings is the weighted average of the travel time savings for over the vehicles travelling on the major routes in the non-peak direction, weighted by the number of vehicles taking each of the three primary routes. Individual route travel time savings are 50 percent (from 20:10 to 10:05) for westbound I-80, 46 percent (from 21:05 to 11:35) for westbound I-80 to southbound I-680, and 90 percent (from 178:00 to 17:00) for westbound SR 12 East to westbound I-80.

**Additional findings regarding the operation of Alternative C-1 in 2035:** Alternative C Phase 1 will operate at levels more comparable to Alternative B Phase 1 with the addition of subsequent phases of improvements. The subsequent phase defined below, as well as others, comprise the additional improvements planned as a part of the Full Build Alternative C. It is estimated that the significant travel time savings achieved by Alternative C Phase I in 2015 will begin to erode between 2025 and 2030. Subsequent-phase improvements would need to be implemented in that time frame in order to sustain the operational benefits of this alternative.

An assessment was performed to determine the subsequent phases of improvements required to achieve comparable operations to Alternative B Phase 1. The assessment indicates that an additional I-80 eastbound mainline lane between the Suisun Valley Road off-ramp and the Eastbound Truck Scales off-ramp, combined with the elimination of the at-grade intersection of Pennsylvania Avenue at SR 12 East, would significantly improve 2035 PM peak hour eastbound travel times through the project corridor. Table 3.1.6-12 shows the 2025 estimated travel times,
and the 2035 travel times for Alternative C Phase I alone, and Alternative C Phase I with these subsequent improvements.

**Table 3.1.6-12. Alternative C Phase 1 Travel Times PM Peak Hour, 2025 and 2035**

<table>
<thead>
<tr>
<th>Segments</th>
<th>2025 Travel Times</th>
<th>2035 Travel Times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>With Subsequent Improvements</td>
</tr>
<tr>
<td>NB I-680 to EB I-80</td>
<td>29:20</td>
<td>16:05</td>
</tr>
<tr>
<td>EB I-80</td>
<td>27:30</td>
<td>17:50</td>
</tr>
<tr>
<td>EB SR 12 West to EB I-80</td>
<td>27:31</td>
<td>43:25</td>
</tr>
</tbody>
</table>


a Travel times are measured from back of queue (upstream), which is outside the study area limit, to study area limit (downstream). The downstream study area limit is on I-80 east of Air Base Parkway / Waterman.

**No-Build (2015)**

Under the No-Build alternative, congestion and delays on SR 12E and SR 12W would result in long travel times and low travel speeds on those facilities in the a.m. peak hour. Moderate amounts of congestion and delay on the other facilities would result in somewhat slower than free-flow travel times and speeds on those facilities.

In the p.m. peak hour, EB congestion under No-Build conditions would result in oversaturated stop-and-go conditions. This would cause several major eastbound travel routes to exceed 30 minutes, including one route exceeding 60 minutes.

**No-Build (2035)**

Under 2035 No-Build conditions, significant congestion and delays would result in long travel times and low travel speeds on all major facilities through the project study area in the a.m. and p.m. peak hours. Severe EB congestion in the p.m. peak hour would result in seven major travel routes exceeding 45 minutes (including five exceeding 60 minutes) as a result of oversaturated stop-and-go conditions.

**Effects on Freeway Operations**

**A.M. Peak Hour**

**Alternative B (2035)**

During the a.m. peak hour, all freeway segments within the project study area would operate at LOS E or better under Alternative B. Only seven locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
• SB I-680 on-ramp from Gold Hill Road.
• WB SR 12E off-ramp to Main Street.
• WB SR 12E on-ramp from Jackson Street.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speed. The HOV lane on WB I-80 would approach capacity near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the slight congestion in the adjacent mixed-flow lanes.

**Alternative B, Phase 1 (2015)**

In the a.m. peak hour, with construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved due to the replacement of the at-grade intersection at Beck Avenue with grade-separated interchange and improvements at the Pennsylvania Avenue intersection. The additional vehicles on WB SR 12E would reduce speeds and increase congestion, but SR 12E would still operate acceptably. The signalized intersection on SR 12E at Pennsylvania Avenue would continue to meter the amount of WB traffic on SR 12E, but to a lesser extent than under No-Build conditions. Without the bottleneck on SR 12E at Beck Avenue, WB SR 12E and WB I-80 would serve higher demand in 2015.

Alternative B, Phase 1 would improve WB I-80 by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. All freeway segments within the project study area would operate at LOS D conditions or better during the a.m. peak hour, except EB SR 12E approaching the Pennsylvania Avenue intersection. Only one location, the WB SR 12E on-ramp from Jackson Street, would operate over capacity (LOS F) as a result of the Pennsylvania Avenue intersection bottleneck on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between SR 12E and SR 12W would approach capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

**Alternative B, Phase 1 (2035)**

With construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved by the replacement of the at-grade intersection at Beck Avenue with a grade-separated interchange and improvements at the Pennsylvania Avenue intersection. Alternative B, Phase 1 improvements would also improve WB I-80 operations by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. The Red Top Road/North Connector/SR 12W intersection would continue to back up onto WB I-80 and cause slowing on the connector and slowing in the right two lanes of I-80 approaching the connector; average speeds on this section of I-80 would remain in the 50–59 mph range. All freeway segments within the project study area would operate at LOS E
conditions or better during the a.m. peak hour, except on WB SR 12E approaching the Pennsylvania Avenue intersection.

With construction of Alternative B, Phase 1, 10 freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations:

- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
- WB I-80 connector from SR 12E.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12E off-ramp to Main Street.
- WB SR 12E weave between Beck Avenue and Abernathy Road.

During the a.m. peak hour, the HOV lanes on EB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 would operate at free-flow speeds, except between SR 12E and the I-680/SR 12W interchange, which would operate near capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

**Alternative C (2035)**

During the a.m. peak hour, all freeway mainline and weaving sections within the project study area would operate at LOS E conditions or better under Alternative C. Only eight locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. These locations are:

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12 E off-ramp to Main Street.
During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

**Alternative C, Phase 1 (2015)**

Alternative C, Phase 1 would improve a.m. peak hour operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks on WB SR 12E in 2015. The combination of added capacity on WB I-80 and continuation of the bottleneck on WB SR 12E would result in a reduction in congestion on WB I-80.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study area, except for those on WB SR 12E, would operate at LOS D conditions or better during the a.m. peak hour. Locations east of Beck Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

**Alternative C, Phase 1 (2035)**

Alternative C, Phase 1 would improve operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks on WB SR 12E. The improvements, however, would reduce congestion and queuing on WB I-80 on several segments, including between the SR 12E connector and the I-680 and SR 12W connectors.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road/North Connector with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study area, except for those on WB SR 12E, would operate at LOS E conditions or better during the a.m. peak hour. Locations east of Pennsylvania Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

With construction of Alternative C, Phase 1, eight freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
• WB I-80 weave between truck scales and Suisun Valley Road.
• NB I-680 off-ramp to Gold Hill Road.
• NB I-680 on-ramp from Gold Hill Road.
• NB I-680 off-ramp to Red Top Road.
• NB I-680 mainline between Gold Hill Road and Red Top Road
• SB I-680 on-ramp from Gold Hill Road.

During the AM peak hour, the HOV lanes on EB and WB I-80 and on the direction connectors between I-80 and I-680 would operate at free-flow speeds.

No-Build (2015)
During the a.m. peak hour, under No-Build 2015 conditions, WB I-80 would experience heavy traffic flows, but would not reach capacity until the weave between the truck scales on-ramp and the Suisun Valley Road off-ramp. The congestion is mostly due to motorists positioning themselves for the upcoming SB I-680 and WB SR 12W connectors conflicting with trucks merging onto the freeway from the truck scales. However, the average speed over all lanes in this location would be in the 60+ mph range. In addition, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of SB traffic entering I-80. Without the additional bottlenecks on SR 12E, WB I-80 would experience more congestion in 2015.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

No-Build (2035)
During the a.m. peak hour, under 2035 No-Build conditions, slow-moving traffic in the rightmost lanes would occur on WB I-80 at the SR 12W connector due to the Red Top Road/SR 12W intersection backing up onto WB I-80 and due to WB SR 12W operating at saturated conditions. The resulting queue would extend back to east of the I-680 NB connector. A bottleneck would also develop between the truck scales and Suisun Valley Road, resulting in speeds of less than 30 mph across all lanes at this location. This bottleneck is due to traffic from SR 12E and the truck scales weaving with traffic headed to Suisun Valley Road, I-680, and SR 12W. The resulting queue would extend to the SR 12E connector on WB I-80. In addition to the queuing on I-80, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of WB traffic entering I-80. Without the additional bottlenecks on SR 12E, the congestion on WB I-80 would be more severe.

Under the No-Build Alternative, twelve freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:
• WB I-80 on-ramp from Waterman Boulevard/Air Base Parkway.
• WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Traffic and Transportation/Pedestrian and Bicycle Facilities

- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between Suisun Valley Road and Green Valley Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- NB I-680 mainline between Gold Hill Road and Central Way.
- NB I-680 off-ramp to Central Way.
- NB I-680 connector to I-80 Westbound.
- SB I-680 on-ramp from Gold Hill Road.
- SB I-680 mainline south of Gold Hill Road.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

P.M. Peak Hour

Alternative B (2035)
During the p.m. peak hour, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds under Alternative B. The bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which is at capacity for a four-lane freeway. The extent of the queuing would be considerably less than under the No-Build scenario, only extending back to the SR 12W merge onto I-80, and not extending onto NB I-680. Another bottleneck would occur northbound on I-680 at the Gold Hill Road on-ramp, where the demand at this location would exceed the capacity.

Only two freeway segments within the project study area would operate at capacity (LOS E), with neither of these locations causing queue spillback into adjacent locations. Those locations are:
- NB I-680 off-ramp to Gold Hill Road.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV Lane on WB I-80 would operate near free-flow speed. The HOV lane would approach capacity on WB I-80 near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the high traffic volumes in the adjacent mixed-flow lanes. The HOV lane on EB I-80 would operate just below free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E and would operate near capacity east of SR 12E due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.
Alternative B, Phase 1 (2015)
During the p.m. peak hour, with construction of Alternative B, Phase 1, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds in 2015. The bottleneck on EB SR 12E would be partially relieved with the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and improvements to the Pennsylvania Avenue intersection. The extent of queuing due to the bottleneck on EB SR 12E would be substantially reduced, but not entirely eliminated. The EB queue from Pennsylvania Avenue would extend to the EB I-80 connector, but would not spill back onto EB I-80. All other queues on EB I-80 would be eliminated and vehicles would travel at free-flow speeds.

With construction of Alternative B, Phase 1, one freeway segment within the project study area, NB I-680 off-ramp to Gold Hill Road, would operate at capacity (LOS E) but would not cause queue spillback into adjacent locations.

During the p.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

Alternative B, Phase 1 (2035)
With construction of Alternative B, Phase 1, the length of the queue on WB I-80 between the truck scales and Suisun Valley Road would be significantly reduced (from beyond the project study area east of Air Base Parkway to Travis Boulevard), resulting in an increase in volume served from 48% under No-Build conditions to 79% (a 65% increase). The queue spillback from I-80 to WB SR 12E would also be reduced significantly.

The bottleneck on EB SR 12E would be slightly reduced by the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and with improvements to the Pennsylvania Avenue intersection. However, the at-grade intersection at Pennsylvania Avenue would still result in long queues on SR 12E.

The queue from Pennsylvania Avenue on EB SR 12E would also continue to spill back to EB I-80 and still extend beyond the project study area on EB I-80 west of Red Top Road. However, the severity of the congestion on EB I-80 would be significantly reduced so that twice as many vehicles would be served as under No-Build conditions. The demand served on I-80 between Suisun Valley Road and the truck scales would double from 35% to 70% served compared to the No-Build condition. The queue would also continue to spill back onto WB SR 12W beyond the project study area. However, with the Alternative B, Phase 1 improvements, the queue would no longer spill back onto NB I-680 because that connector would merge from the left side instead of the more heavily queued right side of EB I-80.

Because of the increased traffic flow on EB I-80, freeway segments downstream of the SR 12E connector would operate near or over capacity. EB I-80 would develop a new bottleneck at the weave between Abernathy Road and West Texas Street, where the demand at this location exceeds the capacity. The queue from this bottleneck would spill back to the SR 12E connector on EB I-80 and contribute to the queuing from SR 12E.

NB I-680 would develop a new bottleneck at the Gold Hill Road on-ramp that would spill back to the Gold Hill Road off-ramp because of over-capacity operations.
With construction of Alternative B, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- EB I-80 on-ramp from Air Base Parkway/Waterman Boulevard.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The WB HOV lane would be affected by the queues in the adjacent mixed-flow lanes, prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 would operate at a speed 40% higher than the average speed on the adjacent mixed-flow lanes. The EB HOV lane would operate near capacity near the SR 12E off-ramp due to HOVs bypassing the congestion in the adjacent mixed-flow lanes.

**Alternative C (2035)**

During the p.m. peak hour, the queueing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. However, as with Alternative B, the bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which would be at capacity for a four-lane freeway. The extent of the queueing, however, would be considerably less than under No-Build conditions, extending to just west of Red Top Road on I-80, just west of Red Top Road on SR 12W, and south of Gold Hill Road on I-680. (By comparison, the No-Build extent of queue would be far outside the study area).

Even though several freeway sections under both Alternatives B and C would continue to operate at LOS F within the project study area, this condition would not be attributable to deficiencies of the proposed project. This condition would be attributable to the bottleneck at Air Base Parkway that backs up into the project study area. With the proposed project, the demand served is much greater than under the No-Build condition (i.e., 80%–100% of the demand is served). Overall, relieving the major bottlenecks during the evening peak hour would provide major system-wide benefits, as well as improve freeway mainline operations.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and Abernathy Road and near capacity east of Abernathy Road due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.

**Alternative C, Phase 1 (2015)**

With construction of Alternative C, Phase 1, the queueing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. The bottleneck on EB SR 12E, however, would continue to result in congestion spilling back onto EB I-80. The addition of the third lane on EB SR 12E would increase the queueing capacity and throughput on SR 12E, but would only slightly improve the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. The queue from SR 12E would continue to spill back to the connector ramp from NB I-680, a spillback comparable to the extent of the queue under No-Build conditions. This queue would
also cause congestion along Abernathy Road and other local streets because vehicles would not be able to enter I-80 and SR 12E heading east.

The bottleneck on SR 12E would constrain the amount of traffic exiting the project area on EB I-80 and thus the freeway downstream of SR 12E would operate at LOS D or better, similar to No-Build conditions. The number of vehicles served would improve slightly under Alternative C, Phase 1 (55%–70% of the demand), compared to No-Build conditions.

Under Alternative C, Phase 1, WB SR 12E would continue to experience congestion and queuing as far back as Jackson Street, similar to No-Build conditions, due to the at-grade intersections.

With construction of Alternative C, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate just under free-flow speeds due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane.

**Alternative C, Phase 1 (2035)**

With construction of Alternative C, Phase 1, the length of the queue on WB I-80 that starts at the weave between the truck scales and Suisun Valley Road would significantly reduce from beyond the project study area east of Air Base Parkway to Abernathy Road. The severity of the congestion on WB I-80 would also reduce significantly, and the volume served would increase from 48% to 82% (a 70% increase) over the No-Build condition. The queue spillback from I-80 to WB SR 12E queue would also be reduced significantly.

The bottleneck on EB SR 12E would continue to result in severe congestion spilling back to EB I-80. The addition of the third lane on EB SR 12E would increase the queuing capacity of SR 12E and would slightly increase the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. The queue from SR 12E would spill back to beyond the project study area on EB I-80, NB I-680 and EB SR 12W. However, the length of the upstream queues would be shortened relative to the No Build alternative. The queuing would also cause congestion to spill back to adjacent ramp terminal intersections, as vehicles would not be able to enter I-80 and SR 12E. Most local streets would also become congested due to queue spillback from the freeway and motorists diverting to alternative routes.

The bottlenecks on EB SR 12E would continue to constrain the amount of traffic exiting the project area on EB I-80; consequently, the freeway downstream of SR 12E would operate at LOS D or better, as it would under No-Build conditions.

During the p.m. peak hour, the direct HOV connector from WB I-80 to SB I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between Abernathy Road and Suisun Valley
Road would operate just below free-flow speed due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 west of SR 12E and the direct HOV connector from NB I-680 to EB I-80 would experience intermittent congestion due to the queue in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lanes. Despite these slowdowns, the speed of the EB I-80 HOV lane would be more than double the speed of the adjacent mixed-flow lanes.

Additionally, in 2035, Alternative C Phase 1 will operate at levels more comparable to Alternative B Phase 1 with the addition of subsequent phases of improvements. The subsequent phase, defined below, as well as others, comprise the additional improvements planned as a part of the Full Build Alternative C. It is estimated that the significant travel time savings achieved by Alternative C, Phase 1 in 2015 will begin to erode between 2025 and 2030. Subsequent-phase improvements would need to be implemented in that time frame in order to sustain the operational benefits of this alternative.

An assessment was performed to determine the subsequent phases of improvements required to achieve comparable operations to Alternative B, Phase 1. The assessment indicates that an additional I-80 eastbound mainline lane between the Suisun Valley Road off-ramp and the Eastbound Truck Scales off-ramp, combined with the elimination of the at-grade intersection of Pennsylvania Avenue at SR 12E, would significantly improve 2035 PM peak hour eastbound travel times through the project corridor. Table 3.1.6-13 (Table E-7 from the FTOR) shows the 2025 estimated travel times, and the 2035 travel times for Alternative C, Phase 1 alone, and Alternative C, Phase 1 with these subsequent improvements.

<table>
<thead>
<tr>
<th>Segments</th>
<th>2025 Travel Times</th>
<th>2035 Travel Times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>With Subsequent Improvements</td>
</tr>
<tr>
<td>NB I-680 to EB I-80</td>
<td>29:20</td>
<td>16:05</td>
</tr>
<tr>
<td>EB I-80</td>
<td>27:30</td>
<td>17.50</td>
</tr>
<tr>
<td>EB SR 12 West to EB I-80</td>
<td>27:31</td>
<td>43:25</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, August 2010

* Travel times are measured from back of queue (upstream), which is outside the study area limit, to study area limit (downstream). The downstream study area limit is on I-80 east of Air Base Parkway / Waterman.

This assessment will be considered by the STA in determining the timing of individual construction packages that make up the project’s phases.

**No-Build (2015)**

During the p.m. peak hour, under No-Build conditions, a bottleneck would occur on EB SR 12E at the Beck Avenue and Pennsylvania Avenue at-grade intersections. The demand exceeding the capacity of these two intersections would constrain the amount of traffic that can exit the project study area (EB SR 12E east of Main Street and I-80 east of Air Base Parkway), resulting in congestion queuing back onto EB I-80 as far as the Green Valley Road on-ramp, on NB I-680 beyond Gold Hill Road, and on WB SR 12E to Jackson Street. This queue would also cause congestion along Abernathy Road and other local streets because vehicles are unable to enter EB SR 12E. This bottleneck would constrain the amount of traffic exiting the project area on EB I-
80; consequently, the freeway downstream of SR 12E would operate at LOS D or better. However, the number of vehicles served would be considerably less than the demand (only 55%–65% of the demand would be served).

On WB I-80 a bottleneck would develop between the truck scales and Suisun Valley Road under the No Build alternative. This would cause some local slowing across all lanes, but would not result in queue spillback.

During the p.m. peak hour, the HOV lane on WB I-80 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at a speed nearly 40% higher than the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E due to HOVs bypassing the severe congestion in the adjacent mixed-flow lanes.

**No-Build (2035)**
During the p.m. peak hour, under 2035 No-Build conditions, a bottleneck would occur on WB I-80 between the truck scales and Suisun Valley Road. As a result, a queue would extend east of Waterman Boulevard/Air Base Parkway on I-80 and east of Main Street on SR 12E.

More importantly, a bottleneck would develop on EB SR 12E at the Beck Avenue and Pennsylvania intersections, extending from these intersections back onto I-80 and outside the study area on I-80, I-680, and SR 12W. The bottleneck would constrain the amount of traffic that can exit SR 12E east of Main Street, and the queue behind it would constrain the amount of traffic that can exit I-80 east of Air Base Parkway. Because the bottleneck on EB SR 12E would constrain the amount of traffic that can travel beyond the SR 12E connector, the number of vehicles served on EB I-80, east of the connector, would be considerably less than the demand (only 40%–60% of the demand). The result of this bottleneck is that freeway operations downstream of this location on I-80 would be LOS D or better. This queue would also cause congestion along Chadbourne Road/Abernathy Road because vehicles would not be able to enter EB SR 12E.

During the p.m. peak hour, the HOV lane on WB I-80 would operate just under free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The WB HOV lane would not approach capacity, but would be affected by the queues in the mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The speeds on the EB I-80 HOV lane would be nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity near the SR 12E off-ramp due to HOVs bypassing the severe congestion in the mixed-flow lanes.

**Effects on Intersection Operations**

**Alternative B (2035)**
With construction of Alternative B, all ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions, except the Lopes Road/Gold Hill Road intersection, which would operate at unacceptable LOS E conditions. In the p.m. peak hour, only four non-ramp terminal intersections would continue to operate unacceptably, compared to 14 ramp terminal intersections and eight non-ramp terminal intersections operating unacceptably in the
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2035 No-Build p.m. peak hour. Implementation of avoidance and minimization measures to design and construct intersection improvement would result in improved conditions.

Alternative B, Phase 1 (2015)
Construction of Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange and would include improvements to the Pennsylvania Avenue intersection, but LOS F conditions would continue at the Pennsylvania Avenue intersection in the a.m. peak hour. Despite the worsening in LOS at Pennsylvania Avenue, the WB SR 12E volume leaving the Pennsylvania Avenue intersection would increase from 84% of demand served under No-Build conditions to 94% of demand served under Alternative B, Phase 1 in 2015.

Two non-ramp terminal intersections would continue to operate unacceptably under the Alternative B, Phase 1 a.m. peak hour conditions, as under the 2015 No-Build condition.

In the p.m. peak hour, all ramp terminal intersections would operate at LOS E or better, except the Beck Avenue/I-80 EB on-ramp/West Texas Street intersection. Operations at the Central Way/Cordelia Road intersection would improve to LOS A (relative to the unacceptable 2015 No-Build LOS), but three other non-ramp terminal intersections would continue to operate unacceptably, as under the 2015 No-Build p.m. peak hour condition.

Improvements to the SR 12E/Beck Avenue interchange would shift congestion to SR 12E/Pennsylvania Avenue, which would operate at LOS F in the a.m. peak hour. In the p.m. peak hour, five intersections would improve from LOS F under the 2015 No-Build conditions to LOS E or better under Alternative B, Phase 1. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

Alternative B, Phase 1 (2035)
Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange, resulting in LOS D conditions in the a.m. peak hour at the Pennsylvania Avenue/SR 12E intersection. The Red Top Road/Jameson Canyon Road (SR 12W) would improve to LOS E conditions in the a.m. peak hour, relative to the 2035 No-Build scenario. LOS F conditions would continue at the Red Top Road/I-80 EB ramps intersection. The Central Way/Cordelia Road intersection would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of the traffic patterns in the area. Unacceptable conditions would continue at the three other non-ramp terminal intersections.

With the construction of Alternative B, Phase 1, eight of the 14 deficient ramp terminal intersections under No-Build conditions would improve to acceptable LOS E or better conditions or, in the case of the Central Way/I-680 NB off-ramp, the intersection would be removed. Operations at the Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp ramp terminal intersections would degrade to unacceptable LOS F conditions due to changes in traffic patterns.

In the a.m. peak hour, four intersections (three ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E
or better with Alternative B, Phase 1. In the p.m. peak hour, seven intersections (all ramp terminal intersections) would improve from LOS F under the 2035 No-Build scenario to LOS E or better with Alternative B, Phase 1. Two intersections—Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp—are projected to worsen from LOS E to LOS F as the result of trip pattern changes. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

**Alternative C (2035)**
With construction of Alternative C, all ramp terminal and non-ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions. In the p.m. peak hour, only three non-ramp terminal intersections would continue to operate unacceptably. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

**Alternative C, Phase 1 (2015)**
During the a.m. peak hour, the SR 12E/Beck Avenue intersection would continue to operate at LOS F, as it would under 2015 No-Build conditions. The two non-ramp terminal intersections that operate unacceptably under the 2015 No-Build scenario would operate acceptably, at LOS D, under Alternative C, Phase 1.

During the p.m. peak hour, two of the five ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C or better; the other three would continue to operate at unacceptable LOS F conditions. In addition, two of the four non-ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C, and the other two would remain at unacceptable LOS F.

In the a.m. peak hour, two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS D under Alternative C, Phase 1; in the p.m. peak hour, two ramp terminal intersections and two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS C or better under Alternative C, Phase 1. This would be a beneficial effect.

**Alternative C, Phase 1 (2035)**
Alternative C, Phase 1 would improve operations at the Red Top Road/I-80 EB ramps to acceptable LOS C conditions. Also, this alternative would replace the Red Top Road/Jameson Canyon Road (SR 12W) intersection with a grade-separated interchange that would operate acceptably. LOS F conditions would continue at two other ramp terminal intersections, as under the 2035 No-Build scenario. Operations at the Lopes Road/Gold Hill Road and the Central Way/Cordelia Road intersections would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of traffic patterns in the area. Unacceptable conditions would continue at two other non-ramp terminal intersections, as under the 2035 No-Build scenario.

In the a.m. peak hour, three intersections (two ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F to LOS E or better under Alternative C, Phase 1. In the p.m. peak hour, five intersections (four ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E
or better under Alternative C, Phase 1. One intersection (Oliver Road/I-80 WB on-ramp/Rockville Road) would worsen to LOS F under Alternative C, Phase 1, and one new intersection (Red Top Road/SR 12W EB ramps) is projected to operate at LOS F. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

**No-Build (2015)**

Table 6-8 in the FTOR shows that during the a.m. peak hour, the WB I-80 congestion would result in one ramp terminal intersection and two non-ramp terminal intersections operating at unacceptable LOS F conditions under No-Build conditions.

Table 6-9 in the FTOR shows that with the bottleneck locations discussed in the previous section, five of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions in the p.m. peak hour under 2015 No-Build conditions. Additionally, four other study intersections would operate unacceptably in the p.m. peak hour.

Under the No-Build Alternative, in the a.m. peak hour, three intersections are projected to operate at LOS F. In the p.m. peak hour, nine intersections are projected to operate at LOS F.

**No-Build (2035)**

During the a.m. peak hour condition, the WB I-80 congestion would result in four ramp terminal intersections operating at unacceptable LOS F conditions. Additionally, four non-ramp terminal intersections would operate unacceptably under No-Build conditions.

During the p.m. peak hour, 14 of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions. Additionally, eight non-ramp terminal intersections would operate unacceptably under No-Build conditions.

A total of eight study intersections (four ramp terminal intersections and four non-ramp terminal intersections) would operate unacceptably in the a.m. peak hour, and 22 study intersections (14 ramp terminal intersections and eight non-ramp terminal intersections) would operate unacceptably in the p.m. peak hour. This compares to only two of the study intersections operating unacceptably under existing conditions.

**Effects on Safety**

Both project alternatives will improve safety by reducing congestion and by braiding on- and off-ramps and reducing weaving. Additionally, the relocation of the I-80/I-680 interchange under Alternative C and Alternative C, Phase 1 would further improve safety by increasing the distance between interchanges allowing more room for traffic to weave. Both alternatives will further improve safety because the westbound truck scales would be relocated and braided ramps would reduce the effects of slow moving trucks and truck weaving on congestion and safety.

Under the No-Build Alternative congestion would continue to increase and no changes would be made to on- and off-ramps to reduce weaving.
Effects on Pedestrian and Bicycle Facilities

Both project alternatives may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-4) can be provided as envisioned. Compliance with Department policy and implementation of avoidance and minimization measures to accommodate existing and planned bicycle and pedestrian facilities will ensure that there is no adverse effect.

Further, as a result of reducing peak hour trips with the implementation of Alternative C and Alternative C, Phase 1, traffic operations adjacent to Rodriguez High School are expected to remain the same or improve with the project. Generally with increased traffic, there is a corresponding increase in congestion-related (rear-end type) accidents. A decrease in congestion, and expected with the project, would generally result in fewer congestion-related accidents which would improve safety.

The No-Build Alternative includes certain improvement projects that are expected to be constructed prior to the proposed project. These projects are described in Chapter 4 of the FTOR. Certain of these projects may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-4) can be provided as envisioned.

Effects on Transit Routes and Service

The improved traffic operations under both project alternatives, relative to No-Build conditions in the same year, would reduce delays for buses and paratransit vehicles. Implementation of avoidance and minimization measures to adjust transit routes and stops as needed, will ensure that there is no adverse effect.

Further, as a result of reducing peak hour trips with the implementation of Alternative C and Alternative C, Phase 1, traffic operations adjacent to Rodriguez High School are expected to remain the same or improve with the project. Generally with increased traffic, there is a corresponding increase in congestion-related (rear-end type) accidents. A decrease in congestion, and expected with the project, would generally result in fewer congestion-related accidents. Red Top Road, the frontage to Rodrigues High School, is expected to be a safer facility for pedestrians and bicyclists with the construction of Alternative C and Alternative C, Phase 1 than compared to the No-Build Alternative.

The substantially worsened traffic congestion in the p.m. peak hour under 2015 and 2035 No-Build conditions will incur delays to buses and paratransit vehicles, potentially resulting in additional operating costs to transit agencies to provide more service vehicles, drivers, and support functions.

Construction Period Disruption of Vehicle, Pedestrian, and Bicycle Circulation

Construction of either project alternatives would entail additional truck and construction worker traffic, temporary lane closures and detours, and various construction-related activities that would increase congestion to varying degrees throughout the construction period. Implementation of avoidance and minimization measures to develop and implement the TMP will ensure that there is no adverse effect.
Alternative B, Alternative C, and Alternative C, Phase 1 may require closing the existing bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection during construction.

Under the No-Build Alternative, no construction would take place and therefore there would be no disruption of vehicle, pedestrian or bicycle circulation due to construction.

**Avoidance, Minimization, and/or Mitigation Measures**

**Design and Construct Intersection Improvements**

To minimize the impact of traffic pattern changes associated with the proposed project’s on-ramp terminal and non-ramp terminal intersections, the Department, in cooperation with the City of Fairfield, Suisun City, and Solano County, will design and construct intersection improvements (including signalization, lane configuration changes, approach widening, and operational improvements) as part of each project phase. The specific intersections projected to operate at LOS F for each project alternative are listed in the FTOR and referenced in the section titled “Intersection Operations,” above. The improvements should be designed to provide LOS E or better under either project alternative. Intersection improvements would be designed in accordance with Highway Design Manual (HDM) sections 405.2 and 405.3, and would include adequate turn lane storage, including multiple turn lanes where needed.

**Maintain Existing or Accommodate Planned Bicycle and Pedestrian Facilities**

The Department, in cooperation with STA, will ensure that the design of each project phase accommodates existing and planned bicycle and pedestrian facilities within the project area, including providing for alternative connecting routes if and where needed. In particular, the planned improvements in the Fairfield General Plan Bicycle Network and the North Connector Corridor Transportation for Livable Communities Concept Plan will be incorporated into the project design at each project phase.

To minimize potential impacts to bicycle and pedestrian users of the bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection, the project shall implement a bike and pedestrian bridge (i.e. van service) during construction to transport bicyclists and pedestrians traveling between Green Valley Road at I-80 and Red Top Road at McGary Road. After construction is complete, bicyclists and pedestrians would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR12W, the UPRR tracks and connect with Red Top and McGary Road.

**Adjust Transit Routes and Stops as Needed**

The Department, in cooperation with STA, local transit agencies, the City of Fairfield, Suisun City, and Solano County, will ensure that transit routes and stops are adjusted as needed, concurrent with each project phase, preserving service levels to be consistent with current and planned levels.
Develop and Implement a Transportation Management Plan and Construction Scheduling to Minimize Adverse Effects

The Department, in cooperation with STA and the affected local jurisdictions, will require the following measures to be implemented as part of project construction.

- The contractor will be required to prepare and implement a TMP that identifies the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.

- The Project Special Provisions of the highway contract will require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate notice of any street closures during the construction phases of the proposed project.

- Construction activities will be coordinated to avoid blocking or limiting access to homes and businesses to the extent possible. Residents will be notified in advance about potential access or parking effects before construction activities begin.

- Any interchange, ramp, or road closures required during construction will, to the extent possible, be limited to nighttime hours to reduce effects on businesses in or adjacent to the project limits.

- Construction activities will be coordinated to avoid blocking or limiting access to businesses in or adjacent to the project area during business hours. Businesses will be notified in advance concerning construction activities before construction begins near businesses.

- The TMP will be prepared to address short-term disruptions in existing circulation patterns during construction. For example, the TMP will identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.
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Figure 3.1.6-1
Existing Year 2004 AM Peak Hour Travel Speeds

Legend:
- Speed
- Lanes
  - < 30 MPH
  - 30 - 39 MPH
  - 40 - 49 MPH
  - 50 - 59 MPH
  - ≥ 60 MPH

- M - Mixed-Flow Lane
- A - Auxiliary Lane
- H - HOV Lane (2+)
- H_b - Beginning of HOV Lane
- H_e - End of HOV Lane

Note: This figure is based on VISSIM model results validated to field observations and travel time runs in fall 2004.
This figure is intended to convey freeway system travel speeds and travel times only.

Note: This figure is based on VISSIM model results validated to field observations and travel time runs in fall 2004.

Figure 3.1.6-2
Existing Year 2004 PM Peak Hour Travel Speeds

<table>
<thead>
<tr>
<th>Point-to-Point Travel Time &amp; Speed Summary</th>
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<tbody>
<tr>
<td>Travel Route</td>
<td>Time</td>
</tr>
<tr>
<td>A to D</td>
<td>EB 80: All Lanes</td>
</tr>
<tr>
<td>A to E</td>
<td>EB 80 to EB 12 East</td>
</tr>
<tr>
<td>B to D</td>
<td>NB 680 to EB 80</td>
</tr>
<tr>
<td>B to E</td>
<td>NB 680 to EB 12 East</td>
</tr>
<tr>
<td>C to D</td>
<td>EB 12 West to EB 80</td>
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<tr>
<td>C to E</td>
<td>EB 12 West to EB 12 East</td>
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<tr>
<td>D to A</td>
<td>WB 80: All Lanes</td>
</tr>
<tr>
<td>D to B</td>
<td>WB 80 to SB 680</td>
</tr>
<tr>
<td>D to C</td>
<td>WB 80 to WB 12 West</td>
</tr>
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<td>E to A</td>
<td>WB 12 East to WB 80</td>
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<tr>
<td>E to B</td>
<td>WB 12 East to SB 680</td>
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<tr>
<td>E to C</td>
<td>WB 12 East to WB 12 West</td>
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LEGEND

<table>
<thead>
<tr>
<th>Speed</th>
<th>Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 30 MPH</td>
<td>M - Mixed-Flow Lane</td>
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<tr>
<td>30 - 39 MPH</td>
<td>A - Auxiliary Lane</td>
</tr>
<tr>
<td>40 - 49 MPH</td>
<td>H - HOV Lane (2+)</td>
</tr>
<tr>
<td>50 - 59 MPH</td>
<td>H2 - Beginning of HOV Lane</td>
</tr>
<tr>
<td>≥ 60 MPH</td>
<td>H4 - End of HOV Lane</td>
</tr>
</tbody>
</table>

A* - Auxiliary Lane between Suisun Valley Rd and Truck Scales.
Figure 3.1.6-3

Existing Year 2007 PM Peak Hour Travel Speeds

This figure is intended to convey freeway system travel speeds and travel times only.

Note: Results of VISSIM traffic operations model calibrated and validated to fall 2007 conditions, including tachometer runs provided by Caltrans Highway Operations.
Figure 3.1.6-4

Existing and Planned Bicycle/Trails System
Figure 3.1.6-5
Existing Transit System

Figure 3.1.6-6
System-Wide AM Measures of Effectiveness

AM Peak Hour Vehicle Miles of Travel

AM Peak Hour Vehicle Hours of Delay

AM Peak Hour Average Network Travel Speed
PM Peak Hour Vehicle Miles of Travel

PM Peak Hour Vehicle Hours of Delay

PM Peak Hour Average Network Travel Speed

Figure 3.1.6-7
System-Wide PM Measures of Effectiveness
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3.1.7 Visual and Aesthetic Resources

Regulatory Setting
The National Environmental Policy Act (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 U.S.C. 4331[b][2]). To further emphasize this point, the Federal Highway Administration in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions regarding 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.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state “with…enjoyment of aesthetic, natural, scenic and historic environmental qualities.” (CA Public Resources Code Section 21001[b])

Local Regulations
Local publication and planning documents can be indicators of viewer sensitivity to visual change. The applicable locally and regionally designated scenic roadways are listed below to provide insight into viewer sensitivity.

Solano County General Plan Resources Element
The Solano County General Plan’s Resources Element identifies the County’s scenic roadways and adopts policies for their preservation. The following roadways within or near the project area are identified on Figure RS-5 of the General Plan as being scenic roadways in the Solano County General Plan Resources Element (Solano Transportation Authority 2008).

- I-80 from Carquinez Strait at Vallejo to Solano-Yolo County line at Davis.
- I-680 from Carquinez Strait at Benicia to I-80 at Cordelia.
- SR 12 from the Solano-Napa County line to I-80 and from Union Pacific Railroad at Fairfield to Solano-Sacramento County line at Rio Vista.
- Green Valley Road from I-80 at Cordelia to Rockville Road.
- Oliver Road from I-80 at Fairfield to Mankas Corner Road and Waterman Boulevard.

City of Fairfield Scenic Vistas and Roadways Plan
The project includes changes to I-680 within the Fairfield Urban Limit Line. This area of I-680 is considered a scenic roadway by the City of Fairfield Scenic Vistas and Roadways Plan (Solano Transportation Authority 2008).

Methods
Landscape Units are described using the Federal Highway Administration (FHWA) Method of Visual Resource Analysis as described below.
Visual Character
Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad in themselves. Visual character is described in terms of its pattern elements such as form, line, color, and texture, and in terms of pattern character such as dominance, scale, diversity, and continuity.

A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape, and resistance to a project that would contrast that character, then changes in the visual character can be evaluated.

Visual Quality
Visual quality is evaluated by identifying the vividness, intactness, and unity present in the viewshed. The FHWA states that this method should correlate with public judgments of visual quality well enough to predict those judgments. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore. This approach to evaluating visual quality can also help identify specific methods for mitigating each adverse impact that may occur as a result of a project. The three criteria for evaluating visual quality are defined here.

Vividness is the visual power or memorability of landscape components as they combine in distinctive visual patterns.

Intactness is the visual integrity of the natural and man-made landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.

Unity is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual man made components in the landscape.

Vividness, intactness, and unity of a landscape unit were each rated on a scale from 1 to 7 using the scale provided in Table 3.1.7-1. These scores were averaged and rounded to the nearest whole number to determine an overall visual quality score for the landscape unit.

<table>
<thead>
<tr>
<th>Score</th>
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</thead>
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</tr>
<tr>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>6</td>
<td>High</td>
</tr>
<tr>
<td>7</td>
<td>Very High</td>
</tr>
</tbody>
</table>
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Visual and Aesthetic Resources

Affected Environment
This discussion is taken primarily from the I-80/I-680/SR 12 Interchange Project Visual Impact Assessment (VIA), prepared in 2012.

Regional Landscape
Solano County has retained much of its agricultural character; however, the cities of Fairfield and Suisun City have experienced rapid growth of new residential and commercial development over the past several decades, resulting in a regional landscape characterized by a patchwork of rural, suburban, and urban landforms and aesthetics. This regional landscape is visually striking at times when abrupt changes between aesthetics occur, such as broad expanses of agricultural land being interrupted by dense residential subdivisions or large industrial parks. With the regional backdrop of the coastal mountains (locally, the Twin Sisters peak) and with Suisun Marsh providing a distinctive and vivid natural backdrop, this patchwork of rural, suburban, and urban aesthetics is even more vivid.

This patchwork of aesthetics is quite evident in the immediate project area and viewshed. For example, the western portion of the project area is surrounded by rolling hills used for grazing cattle; but at the junction with SR 12W, the land uses change abruptly to a large industrial park to the south and a large commercial center to the north. Similarly, dense residential subdivisions line the west side of I-680 while the east side is mostly undeveloped open space associated with the Suisun Marsh. Through the central portion of the study area, this patchwork continues with commercial retail uses lining both sides of the I-80 corridor through Cordelia, and then abruptly changing to an agricultural aesthetic east of Suisun Creek. Along the SR 12E corridor, striking differences can also be seen. The south side of the roadway is lined by a large industrial park, which abruptly turns to undeveloped lands east of Ledgewood Creek, while the north side is lined by the dense residential neighborhoods of downtown Fairfield.

Landform
The majority of the landform is flat, consisting of the valley. A large portion of the project area is located in Green and Suisun Valleys. Suisun Valley is a highly scenic agricultural area, extending north and south from Twin Sisters peak to south of I-80.

A portion of the project area along Jameson Canyon Road and I-80 at the west end consists of rolling hills. Rolling hills are generally visible to the west and north. Twin Sisters peak, a double-peaked 2,200-foot mountain, is north of the existing I-80/I-680/SR 12 interchange.

Land Cover
Land cover in the project area consists of man-made components (e.g., roadways, buildings, signs, and utility lines), vegetation, and water. Land cover elements include the existing roads, single-family homes, commercial development, farmland, trees, shrubs, marshland, grazing land, industrial development, a school, utility lines, creeks, and railroad tracks.

Because the region is largely agricultural, vegetation (crops and grazing land) make up a large part of the region’s visual character. Regional vegetative land cover also includes scattered trees and shrubs in farmland, grazing land, land adjacent to the roadways, the median of I-80 and I-680, and residential developments. Crops and grassland along the existing highways are coarse, dense, low to the ground and, in some areas, adjacent to the existing roadway. Suisun Marsh,
grazing land, trees, and farmland provide a brown/green element to the regional landscape that changes color depending on the time of year.

Suisun Marsh is a vegetated water feature that contributes to the regional character. Marshland adjacent to I-680, I-80, and SR 12E appears covered by coarse, low-lying marsh plants. Water is not immediately visible most of the year. In addition to the marshland, creeks are a visible water feature in the project area. Six creeks (American Canyon, Jameson, Green Valley, Dan Wilson, Suisun Creek, and Ledgewood Creeks) run through the project area.

Man made land cover in the region is diverse in age and scale. To the west of I-680, in Fairfield, manmade development includes new single-family residential neighborhoods, several dominant large white warehouses, and commercial buildings of various sizes and colors. Residential neighborhoods are visually separated from the highways by walls. These dense neighborhoods mostly consist of new two-story single-family homes. Man made development in Old Town Cordelia, a distinct community in Solano County, is comprised of less-dense neighborhoods of older one- or two-story single-family homes.

Man made land cover also includes train tracks that run perpendicular to SR 12E on the western border of Suisun City. Train cars and containers are visible on or adjacent to the tracks south of SR 12E. Industrial and commercial buildings, several of which appear older, are one or two stories high, of various browns and grays, and are located in Suisun City, east of the railroad tracks and south of SR 12E. Apartment buildings and single-family homes lie to the north. Tall walls in earth-toned colors block views of the majority of homes from SR 12E. Apartment buildings visible from the roadway include a light-pink three-story apartment building and a gray two-story building near the intersection with Pennsylvania Avenue. A black iron fence is located between the apartment buildings and SR 12E.

Utility poles line many of the local roadways and are visible from the freeway. In addition, several large electrical transmission lines and towers are visible in the area, including one large transmission line that crosses I-80 in the vicinity of the I-80/SR 12E interchange. Rural agricultural areas located at the far west end of the project area, along the east side of I-680, and in the central section between Suisun Creek and SR 12E include farm buildings, occasional residences, fencing, farm equipment, cattle, and other agricultural uses and facilities.

Project Viewshed
A viewshed is comprised of broad-range views from a specific viewing location. Viewsheds are generally quite large. The limits of a viewshed are defined as the visual limits of the views from the proposed project. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by project features.

For the purpose of this analysis, the viewshed is determined by the height of the landforms and the presence or absence of buildings along the roadway. These factors vary over the length of the project area and, as shown in Figure 3.1.7-1, create a viewshed that varies in width.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Visual and Aesthetic Resources

**Landscape Units**
To provide a framework for understanding the visual effects of a proposed highway project, the regional landscape can be divided into distinct landscape units. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit often corresponds to a place or district that is commonly known among local viewers. The landscape units for the proposed project are shown in Figure 3.1.7-2.

**Landscape Unit 1**
Landscape Unit 1 is the westernmost portion of the project area. It runs from west of Red Top Road along Jameson Canyon Road/SR 12W until it joins with I-80 to the east. This landscape unit also includes the hills south of SR 12W in the project area and I-80 west of the I-80/SR 12 interchange. This landscape unit is dominated by agricultural uses—primarily grazing land, much of it on rolling hills. Jameson Creek is south of SR 12W in this landscape unit. Wire cattle fencing supported on metal stakes and wooden poles, follows SR 12W. The vegetation in this landscape unit is mostly grassland with trees along Jameson Creek, shrubs, and an olive orchard. A rural building is adjacent to the olive orchard. Overhead utility lines cross the landscape unit. A gas station and a fast food restaurant building are located along I-80 in Landscape Unit 1.

**Existing Visual Character**
Landscape Unit 1 exhibits a rural character defined by the dominant rolling hills covered in grassland. Although Jameson Canyon Road cuts through this landscape unit, its path is curved and follows the rolling hills, maintaining the continuity of the landscape. The rural character of this landscape unit gets its texture from the grass, shrubs, and trees; the dominant brown/green color varies with the season.

**Existing Visual Quality**
The rural character, rolling hills, and vegetation create a moderately high level of vividness. A gas station and small fast food restaurant along I-80, SR 12 with its steady flow of traffic, and a power line traversing the hills interrupt the visual experience. As a result, the intactness and unity of the landscape unit are considered moderate (Table 3.1.7-2).

<table>
<thead>
<tr>
<th>Visual Quality Criteria</th>
<th>Vividness</th>
<th>Intactness</th>
<th>Unity</th>
<th>Visual Quality (Average Scores for Vividness, Intactness, and Unity)</th>
</tr>
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<td>Moderate</td>
<td>4</td>
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</table>

**Landscape Unit 2**
This landscape unit is the developed valley floor where Green Valley and Suisun Valley come together along I-80. The landscape unit stretches along I-80 from the I-80/SR 12W interchange in the west to Dan Wilson Creek in the east. Commercial buildings are located north of I-80 and warehouses are located south of I-80/west of I-680. Old Town Cordelia and commercial buildings are located south of I-80/east of I-680.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Visual and Aesthetic Resources

Existing Visual Character
This landscape unit is characterized by suburban development. In Landscape Unit 2, north of I-80, the visual character is defined by relatively new commercial buildings of various sizes and colors along the flat valley floor. A similar character informs the area west of I-680 and south of I-80. There are a variety of forms and colors in these areas, created by the different sizes and colors of the commercial buildings and warehouses.

In Landscape Unit 2, Old Town Cordelia has a distinct visual character. Old Town Cordelia consists of one- or two-story single-family homes that are generally older and less densely spaced than other homes in the project area. Grass and scattered trees are visible between these homes, adding height and texture to the landscape. Commercial development of various ages, mostly earth-toned in color, is located near the intersection of I-680 and I-80. Flat open space (pavement or grass) lies between the commercial buildings in this area. Old Town Cordelia contains a diverse array of pattern elements, although a distinct boundary between the single-family homes and commercial development detracts from the diversity of this area. The visually distinct area of Old Town Cordelia is visually separated by I-80 and I-680 from the other portions of this landscape unit.

Existing Visual Quality
Old Town Cordelia and views of the hills contribute to a moderate level of vividness in this landscape unit. The random pattern of commercial and residential development along the highway in this landscape unit creates a low level of intactness and unity (Table 3.1.7-3).

Table 3.1.7-3. Visual Quality in Landscape Unit 2

<table>
<thead>
<tr>
<th>Visual Quality Criteria</th>
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<td>Description</td>
<td>Score</td>
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Landscape Unit 3
Landscape Unit 3 is a flat area of the valley floor that is bisected by I-680. This landscape unit is characterized by commercial uses and single-family development to the west and marshland to the east of I-680. The marshland to the east is Suisun Marsh.

Existing Visual Character
This landscape unit exhibits a natural visual character east of I-680 characterized by flat brown marshland, and man-made suburban visual character to the west that includes a variety of building types and sizes.

The area to the west of I-680 includes man made elements such as two-story single-family developments, Rodriguez High School and its playing fields, large rectangular white warehouses, and other commercial development of varying sizes. The warehouses are dominant elements in the landscape due to their scale and their white color. Development in this landscape unit is varied in scale and function. Despite this, it does not appear continuous or diverse because it is
clustered by type and size, rather than intermixed. Farther north along I-680, the buildings become larger and more commercial.

The flat marshland east of I-680 contains little diversity but has a distinct texture and brown/green color created by the marsh plants.

**Existing Visual Quality**

Suisun Marsh, to the east of I-680, is fairly visually intact and unified since there are few man made elements visible in the marshland. However, the landscape west of I-680 is not visually unified and detracts from the visual quality of this landscape unit. Views of Suisun Marsh in the foreground and distant views to the hills to the north contribute to a moderate vividness and intactness in this landscape unit (Table 3.1.7-4).

**Table 3.1.7-4. Visual Quality in Landscape Unit 3**

<table>
<thead>
<tr>
<th>Visual Quality Criteria</th>
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<th>Visual Quality (Average Scores for Vividness, Intactness, and Unity)</th>
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<td>Low</td>
<td>3</td>
<td>Moderately Low</td>
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</table>

**Landscape Unit 4**

Landscape Unit 4 consists of flat agricultural fields in Suisun Valley on either side of I-80 between developed areas of Fairfield. This landscape unit includes the existing I-80/SR 12E interchange.

Farmhouses, outbuildings, and commercial farm businesses are scattered throughout the area. Solano Community College and the new Fairfield Corporate Commons business park are also in this landscape unit. Agricultural lands consist of row crops, orchards, and vineyards. Dan Wilson Creek and Suisun Creek flow from north to south.

**Existing Visual Character**

East of Dan Wilson Creek (the western boundary of Landscape Unit 4), the project area becomes rural in character. I-80 constitutes a line of man-made development through flat farmland on the valley floor. Several rural homes and farm buildings are scattered throughout the landscape unit on the agricultural land. The presence of agriculture creates a texture and a brown/green color. Due to its scale relative to other elements in this landscape unit, one building, a Budweiser brewery, dominates the southeastern portion of the landscape. The rural character of this landscape unit is continuous with the exception of the Budweiser brewery.

**Existing Visual Quality**

The rural character of this landscape unit creates a moderate level of vividness (Table 3.1.7-5). Although the majority of the landscape unit appears intact and unified in its agricultural character, encroachment of industrial uses (e.g., the brewery) in the eastern portion of the unit detracts from the overall intactness and unity.
Table 3.1.7-5. Visual Quality in Landscape Unit 4

<table>
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</table>

**Landscape Unit 5**

This landscape unit is generally flat. It encompasses SR 12E and the man-made development on either side of the highway. Single-family residential development is north of SR 12E, while commercial and industrial structures with grass and parking lots between them are south of SR 12E. This landscape unit also includes train tracks and a portion of downtown Suisun City at its eastern end. Commercial/industrial buildings, including an Amtrak station, are present in this portion of downtown Suisun City.

**Existing Visual Character**

Landscape Unit 5 is characterized by buildings along SR 12E. Large retail and industrial buildings generally characterize the area south of SR 12E. Although an undeveloped area of Suisun Marsh lies between the existing commercial development south of SR 12E and downtown Suisun City, a mixed-use development project planned for this area by Suisun City will extend the existing commercial/industrial character on the south side of SR 12E in this landscape unit. Structures north of SR 12E are mostly single-family homes separated from SR 12E by a wall. The buildings north of SR 12E are smaller than those to the south. SR 12E divides the visual character in this landscape unit.

In addition to SR 12E, the train tracks form a line through this landscape unit west of downtown Suisun City. The area of downtown Suisun City in this landscape unit consists of commercial/industrial buildings, mostly gray and earth toned in color, that are smaller and older than those west of the train tracks.

**Existing Visual Quality**

The mix of commercial and residential development in this landscape unit is not vivid (Table 3.1.7-6). Because the pattern of development switches from clusters of large commercial/industrial buildings to single-family residential to smaller, older commercial/industrial buildings, this landscape unit is not intact or unified. The walls around the majority of residential development also detract from the unity of this landscape unit.

Table 3.1.7-6. Visual Quality in Landscape Unit 5

<table>
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<th>Visual Quality Criteria</th>
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<td>Existing Conditions</td>
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</table>
**Viewer Sensitivity and Response**

Viewer sensitivity is defined both as the viewers’ concern for scenic quality and the viewers’ response to change in the visual resources that make up the view. Local values and goals may confer visual significance on landscape components and areas that would otherwise appear unexceptional in a visual analysis. Community aspirations for visual quality can be expressed in local publications and planning documents.

Viewer response is typically assessed by measuring the number of viewers exposed to the resource change, type of viewer activity, duration of views, speed at which the viewer moves, and position of the viewer.

Three different sets of viewer groups were identified for this analysis as discussed below. These groups represent people with views from the project and people with views of the project.

**Motorists**

Motorists comprise both drivers and passengers traveling on I-80 in the project area. Motorists in approximately 160,000 vehicles drive through the project area during each weekday. These viewers experience a constantly changing sequence of views as they travel along I-80 in the project area.

Motorist sensitivity to visual change would vary depending on the individual’s role as passenger or driver and the level of traffic congestion experienced. Drivers traveling at normal speeds usually need to focus their attention on long-range, non-peripheral views (Federal Highway Administration 1981). However, passengers likely have a more heightened awareness of a wide range of views because they are not concentrating on the task of driving and can look out the side window toward their side of the highway. Motorists traveling at normal highway speeds would have a much shorter duration of view than motorists driving slowly due to congested traffic (which is common in the project area during peak periods). For safety reasons, motorists experiencing congested traffic conditions are likely to focus on views of the existing highway and the traffic in front of them.

**Residents**

Thousands of residents live near the project area. The greatest number of homes are west of I-680 in the Gold Hill area of Fairfield and on the north side of SR 12E in Fairfield. Other residential areas are Cordelia, Green Valley, and scattered rural residences. Some residents have distant views of the I-80/I-680/SR 12 interchange from their homes in the hills northeast of the I-80/SR 12W interchange. Others have middle ground views of the existing highways from their homes. Community residents are likely to experience views of long duration. Most residential views of the existing highways are screened by walls, landscaping, or both.

Residents are likely to have a higher concern about the project than motorists. It is expected that residents would be concerned with effects on views from their homes and neighborhoods.

**Commercial Area Employees and Customers**

A variety of commercial uses, ranging from shopping centers to hotels, line portions of the roadways that constitute the project area. Commercial uses are concentrated along I-80, east of its intersection with SR 12W and west of Dan Wilson Creek; east of the I-80/SR 12E
interchange; and on the west side of I-680, north of Red Top Road. Consequently, hundreds of
viewers per day would have short duration, middle ground-to-distant views of the project.
Viewer awareness would be low and sensitivity medium-to-low, because these viewers would
generally be concentrating on specific indoor tasks, not looking at the highway.

**Environmental Consequences**

Because it is not feasible to analyze all the views in which the project alternatives would be seen,
it is necessary to select a number of viewpoints that most clearly reflect the visual effects of the
project. Viewpoints also represent the primary viewer groups that would potentially be affected
by the project. The locations of the viewpoints selected for this analysis are shown in Figure
3.1.7-3. The viewpoints and visual simulations are presented in Figures 3.1.7-4 through 3.1.7-27.

The most substantial visual effects would be associated with Alternatives B and C. The visual
effects of the fundable first phases of the project alternatives (Phase 1s) would be similar but
reduced. Accordingly, there is no separate discussion for the fundable first phases in this
analysis.

The 14 viewpoints used in this analysis were selected in consultation with the Department’s
Office of Landscape Architecture to represent views of Alternatives B and C. Viewpoint 1 was
adjusted to a slightly different position for Alternative C to better represent the alternative’s
features. Viewpoint 14 was selected as a point of interest for Alternative B to depict the central
interchange configuration. Alternative C does not include this interchange; accordingly, a
simulation of Alternative C at Viewpoint 14 is not included in this analysis.

At several viewpoint locations, the future view of project components is the same or nearly the
same for both alternatives. The simulations for the two alternatives are essentially the same at
viewpoints 5, 12, and 13. The simulations at viewpoints 2, 3, 9, and 11 reflect minor variations
between the two alternatives, such as a slight difference in a sign or a sidewalk; both simulations
are shown even though the resulting visual impact is the same.

The visual impacts of project alternatives are determined by assessing the visual resource change
caused by the project and predicting viewer response to that change.

Visual resource change is the sum of the change in visual character and the change in visual
quality. The first step in determining visual resource change is to assess the compatibility of the
proposed project with the visual character of the existing landscape. The FHWA’s Method of
Visual Resource Analysis, discussed above in the section titled “Affected Environment,” is used
to determine visual character and visual quality. As part of this process, vividness, intactness,
and unity of the viewpoint were each rated on a scale from 1 to 7 (Table 3.1.7-1). These scores
were averaged and rounded to the nearest whole number to determine an overall visual quality
score for each viewpoint.

The second step is to compare the visual quality of the existing resources with the projected
visual quality after the project is constructed. For this analysis, simulations of the build
alternatives were prepared for each viewpoint (Figures 3.1.7-4 through 3.1.7-27) and the “future”
condition visual quality was calculated (Table 3.1.7-1). Visual impact was determined by
subtracting the “future” visual quality score from the existing visual quality score. An effect is
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Visual and Aesthetic Resources

considered adverse if the visual quality score would decrease by two points or more. Beneficial effects to visual quality would occur if there would be an increase in the visual quality score.

The viewer response to project changes is the sum of viewer exposure and viewer sensitivity to the project as determined in the preceding section. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.

Temporary Visual Impacts Caused by Construction Activities

During construction, small trees and shrubs adjacent to the freeway would be removed. Crops in areas immediately adjacent to construction areas may also be removed during grading, exposing the soils underneath. Construction equipment would be visible along the highway. Disturbed earth and construction equipment would introduce an encroaching element into an otherwise agricultural setting. However, ongoing and recently completed major construction activities are widespread throughout most of the project area. Projects currently under construction include the Fairfield Corporate Commons, along the north side of I-80 in the central section, and the North Connector Project, which will be a local frontage road along the north side of I-80 in the central section. Because of the considerable extent of recent development activity in the I-80/I-680/SR 12 interchange area, construction sites would not be out of character with the existing visual environment. The construction process would decrease visual quality by interrupting and decreasing the vividness of views, and create encroaching elements, reducing the intactness and unity of views. In addition, construction sites may include lighting, introducing new sources of light and glare. Although adverse visual impacts would occur during construction, these impacts would be temporary and would not contrast with the existing visual character of the area.

There would be no effect under the No-Build Alternative because no construction would take place.

Long-Term Changes in Visual Quality and Character

The project would result in several localized changes to visual character. Alternative B would result in two beneficial impacts to visual quality (viewpoints 1 and 10) and two adverse impacts to visual quality (viewpoints 2 and 8); Alternative C would result in only one beneficial impact to visual quality (viewpoint 10), and would result in three adverse impacts to visual quality (viewpoints 2, 6, and 8). However, since the project is the improvement of an existing interchange, as a whole it would not be out of character with the existing major highway interchange or add substantial new sources of light and glare. The project as a whole would not result in an extreme visual change or create severe adverse visual impacts.

Although the project as a whole would not result in severe visual impacts, it would alter the existing visual quality in the selected viewpoints. Overall, one of the alternatives would result in more dramatic visual quality changes than the other.
Alternative C would have a greater adverse visual impact than Alternative B. The variation in height and the large scale of the interchange structures of Alternative C would contrast more dramatically with the existing rural and suburban aesthetic and decrease visual quality more severely than Alternative B.

Table 3.1.7-7. Summary of Change to Visual Quality Scores

<table>
<thead>
<tr>
<th>Location</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Location</th>
<th>Alternative B</th>
<th>Alternative C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Unit 1</td>
<td></td>
<td></td>
<td>Landscape Unit 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viewpoint 5</td>
<td>3 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 1</td>
<td>2 Existing</td>
<td>4 Proposed</td>
</tr>
<tr>
<td>Viewpoint 6</td>
<td>4 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 4</td>
<td>2 Existing</td>
<td>2 Proposed</td>
</tr>
<tr>
<td>Viewpoint 7</td>
<td>4 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 2</td>
<td>5 Existing</td>
<td>3 Proposed</td>
</tr>
<tr>
<td>Viewpoint 8</td>
<td>5 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 3</td>
<td>4 Existing</td>
<td>3 Proposed</td>
</tr>
<tr>
<td>Landscape Unit 3</td>
<td></td>
<td></td>
<td>Landscape Unit 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viewpoint 9</td>
<td>4 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 10</td>
<td>2 Existing</td>
<td>3 Proposed</td>
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<tr>
<td>Viewpoint 10</td>
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<td>3 Proposed</td>
<td>Viewpoint 11</td>
<td>4 Existing</td>
<td>4 Proposed</td>
</tr>
<tr>
<td>Viewpoint 11</td>
<td>4 Existing</td>
<td>3 Proposed</td>
<td>Viewpoint 12</td>
<td>4 Existing</td>
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<tr>
<td>Viewpoint 12</td>
<td>4 Existing</td>
<td>4 Proposed</td>
<td>Viewpoint 13</td>
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<tr>
<td>Viewpoint 13</td>
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<td>2 Proposed</td>
<td>Viewpoint 14</td>
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<tr>
<td>Viewpoint 14</td>
<td>2 Existing</td>
<td>2 Proposed</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Effect on Officially Designated Scenic Highways

There are no officially designated state scenic highways or highways eligible for such designation within the project limits.

The following roadways within or in close proximity to the project area are identified as being scenic roadways in the Solano County General Plan Scenic Roadway Element (1977):

- I-80 from Carquinez Strait at Vallejo to Solano-Yolo County line at Davis.
- I-680 from Carquinez Strait at Benicia to I-80 at Cordelia.
- SR 12 from the Solano-Napa County line to I-80 and from Union Pacific Railroad at Fairfield to Solano-Sacramento County line at Rio Vista.
- Green Valley Road from I-80 at Cordelia to Rockville Road.
- Oliver Road from I-80 at Fairfield to Mankas Corner Road and Waterman Boulevard.

The project includes changes to I-680 within the Fairfield Urban Limit Line. This area of I-680 is considered a scenic roadway by the City of Fairfield Scenic Vistas and Roadways Plan (1999).

All build alternatives would result in several adverse and beneficial localized changes to visual character. The visual changes in Landscape Unit 3 which includes changes along State Route 12 West and I-80 would be the most dramatic and result in an adverse visual impact. However, because the alternatives involve improvement of existing freeways and interchanges, as a whole the alternatives would not be out of character and would not be expected to result in changes to local scenic roadway designations and therefore would not result in an adverse visual impact.

No-Build Alternative

There would be no changes to the visual quality and character of the project area under the No-Build Alternative.

Light and Glare

Under all build alternatives, new lighting would be incorporated into portions of the proposed project which would affect the surrounding neighborhoods. Under Alternative C, tall utility towers would cross over the proposed I-80/I-680 freeway-to-freeway ramps. These towers would have blinking red lights at their tops that would create a new source of light during the night. However, because such lighting would be consistent with existing freeway lighting and because adjoining land uses in areas where new lighting would be installed currently include lighting fixtures such as street lights, this effect would not be severe. Moreover, as discussed below in the section titled “Avoidance, Minimization, and/or Mitigation Measures,” incorporation of appropriate light and glare screening measures would ensure this effect is not adverse.

Under the No-Build Alternative there would be no changes to lighting and therefore no effects from light and glare.
Avoidance, Minimization, and/or Mitigation Measures

The Department mandates that a qualitative/aesthetic approach should be taken to minimize visual quality loss in the project area. This approach addresses the actual cumulative loss of visual quality that will occur in the project viewshed when the project is implemented. It also constitutes minimization measures that can more readily generate public acceptance of the project.

Visual minimization measures will consist of adhering to the following design requirements in cooperation with the Department’s District Landscape Architect. While these measures will not fully reduce or avoid effects such as view blockage that will occur at several viewpoints, the measures will help to reduce the overall visual effects of the project and project elements.

All visual minimization measures will be designed and implemented with the concurrence of the Department’s District Landscape Architect.

Replace Landscaping as Appropriate

The Department will replace highway planting within the project limits per policy.

Light and Glare Screening Measures

Light and glare screening measures shall be incorporated into project plans during final design, including the use of downward-cast lighting.

Building Materials and Forms for the Westbound Truck Scales

The I-80 westbound truck scales building materials and forms are to blend with local architectural features of the surrounding community, consistent with the architecture and landscaping of the I-80 Eastbound Truck Scales Relocation Project.

Incorporate Aesthetic Recommendations in Design of Freeway-Related Structures

Sound walls, overpass structures, landscaping, and other freeway-related structures and features will be consistent with the corridor aesthetic recommendations for the I-80 corridor being prepared by the STA.
Figure 3.1.7-1
Project Viewshed

Source: CirclePoint 2009.
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Figure 3.1.7-2
Landscape Units

Project Location

Source: CirclePoint 2009.

Legend

I-80/I-680/SR12 Interchange

Landscape Units

1 inch equals 3.250 feet

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Figure 3.1.7-4
Viewpoint 1, Alternative B

Existing view from Central Way south of Ritchie Road looking north

Visual simulation of Alternative B
Figure 3.1.7-5
Viewpoint 2, Alternative B

Existing view from Red Top Road at Lopes Road looking east

Visual simulation of Alternative B
Existing view from Interstate 680 northbound near Red Top Road looking north (VP 3)

Visual simulation of Alternative B

Figure 3.1.7-6
Viewpoint 3, Alternative B
Existing view from I-80 westbound near Green Valley Road overhead looking southwest

Visual simulation of Alternative B

Figure 3.1.7-7
Viewpoint 4, Alternative B
Figure 3.1.7-8
Viewpoint 5, Alternatives B and C

Existing view from I-80 westbound near Red Top Road looking west

Visual simulation of Alternatives B & C
Figure 3.1.7-9
Viewpoint 6, Alternative B

Existing view from I-80 eastbound near Red Top Road looking northeast

Visual simulation of Alternative B
Environmental Vision

Rev072010

Visual Simulation

Solano I-80/I-680/SR12 Interchange Project

Solano County, CA

Existing view from State Route 12 eastbound near Red Top Road (VP 7)

Visual simulation of Alternative B

Figure 3.1.7-10
Viewpoint 7, Alternative B
Figure 3.1.7-11
Viewpoint 8, Alternative B

Existing view from State Route 12 westbound near Red Top Road (VP 8)

Visual simulation of Alternative B
Note: The Eastbound truck scales depicted in this simulation are being constructed as a separate project. The architectural expression of the building is not intended to represent the actual design of the facility, but does accurately represent the location, mass, and scale of the new facility within the view.
Existing view from State Route 12 eastbound near Pennsylvania Avenue (VP 10)

Visual simulation of Alternative B

Figure 3.1.7-13
Viewpoint 10, Alternative B
Existing view from Pennsylvania Avenue near Illinois Street

Visual simulation of Alternative B

Figure 3.1.7-14
Viewpoint 11, Alternative B
Figure 3.1.7-15
Viewpoint 12, Alternatives B and C
Viewpoint 13, Alternatives B and C

Existing view from Main Street at Common Street

Visual simulation of Alternatives B & C

Figure 3.1.7-16
Figure 3.1.7-17
Viewpoint 14, Alternative B
Figure 3.1.7-18
Viewpoint 1, Alternative C
Viewpoint 2, Alternative C

Figure 3.1.7-19

Existing view from Red Top Road at Lopes Road looking east

Visual simulation of Alternative C
Figure 3.1.7-20
Viewpoint 3, Alternative C
Visual simulation of Alternative C

Existing view from Interstate 80 westbound near Green Valley overcrossing looking southwest (VP 4)
Existing view from Interstate 80 eastbound near Red Top Road looking northeast (VP 6)

Visual simulation Alternative C
Figure 3.1.7-23
Viewpoint 7, Alternative C

Existing view from SR12W eastbound near Red Top Road

Visual simulation of Alternative C

Source: Environmental Vision, 2008
Figure 3.1.7-24

Viewpoint 8, Alternative C

Existing view from SR12W westbound near Red Top Road

Visual simulation of Alternative C
Note: The Eastbound truck scales depicted in this simulation are being constructed as a separate project. The architectural expression of the building is not intended to represent the actual design of the facility, but does accurately represent the location, mass, and scale of the new facility within the view.
Figure 3.1.7-26

Viewpoint 10, Alternative C

Existing view from State Route 12 eastbound near Pennsylvania Avenue (VP 10)

Visual simulation of Alternative C
Figure 3.1.7-27
Viewpoint 11, Alternative C
3.1.8 Cultural Resources

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

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, the FHWA, the State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

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

Section 4(f) of the U.S. Department of Transportation Act
Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the “use” of land from historic properties. Section 4(f) applies to lands of a historic site of national, state, or local significance. Significance for historic sites under Section 4(f) means that the site is listed in or eligible for listing in the National Register of Historic Places (NRHP) and is a historic property as defined by Section 106 of the NHPA, as amended. The criteria for evaluating the significance of cultural resources are set forth in 36 Code of Federal Regulations (CFR) 60.4. If the historic site is not listed in or eligible for listing in the NRHP, the provisions of Section 4(f) do not apply (23 CFR 774.11[e]). For historic sites, the land would not need to be publicly owned for Section 4(f) to be triggered.

With regard to archaeological sites, Section 4(f) would not apply to such resources, even if they are eligible for the NRHP, if the Department concludes that “the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place” (23 CFR 774.13[b]). Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section
5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

Section 4(f) De Minimis Use
The requirements of Section 4(f) will be considered satisfied with respect to a Section 4(f) resource if it is determined that a transportation project will have only a minimal impact on the 4(f) resource. Specifically for historic sites, de minimis impact means that the Department has determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project, or the project will have “no adverse effect” on the property in question.

Local

Solano County General Plan
The Solano County Board of Supervisors conditionally adopted the new 2008 General Plan in August 2008. County voters approved Measure T on the November 4, 2008, ballot and confirmed the Board of Supervisors approval of the General Plan. Chapter 4 of the new General Plan addresses resources, including “substantial historic and prehistoric sites.” Its purpose is to identify the goals and policies Solano County will implement in its daily decision-making process to protect resources. The following goals and policies, as stated in Solano County’s General Plan, pertain to cultural resources.

RS.G-1: Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations.

RS.G-4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.

RS.P-38: Identify and preserve important prehistoric and historic structures, features, and communities.

RS.P-39: Tie historic preservation efforts to the County’s economic development pursuits, particularly those relating to tourism.

RS.P-40: Consult with Native American governments to identify and consider Native American cultural places in land use planning.

Additionally, the new General Plan provides implementation programs that identify specific action plans to achieve the goals and policies discussed above.

RS.I-25: Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation may include:

- having a qualified archaeologist present during initial grading or trenching (monitoring);
• redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources);

• capping the site with a layer of fill; and/or

• excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.

• alert applicants for permits within early settlement areas to the potential sensitivity if significant archaeological resources are discovered during construction or grading activities, such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation.

RS.1-26: Work with federal and state agencies to identify, evaluate and protect the county’s important historic and prehistoric resources. Programs administered by such agencies may include:

• California Historical Landmarks

• California Points of Historical Interest

• California Register of Historic Resources

• National Register of Historic Places

• State Historic Building Code

RS.1-27: Refer to the state Senate Bill 18 guidelines and requirements regarding cultural resources. Programs the County will engage in may include:

• ensuring local and Native American governments are provided with information early in the planning process,

• working with Native American governments to preserve and protect Native American cultural sites by designating them as open space where possible,

• providing management and treatment plans to preserve cultural places, and working with Native American groups to manage their cultural places.

RS.1-38: Protect and promote the county’s historic and prehistoric resources by:

• providing educational programs to the public, staff, and commissions that promote awareness of the county’s history and the value in preserving historic or prehistoric resources; and

• exploring and developing historic or prehistoric sites that can be used appropriately as visitor-oriented destinations.

RS.1-29: Develop historic preservation programs and development guidelines to prevent the loss of significant historic buildings and structures. This should be done in conjunction with Program SS.1-16 (Solano County General Plan 2008).

Affected Environment
Information presented in this section is derived from technical studies conducted for the proposed project. These studies include:


Area of Potential Effects
The westernmost extent of the Area of Potential Effects (APE) is approximately 0.5 mile west of I-80 at the Red Top Road exit extending east along I-80 to Ledgewood Creek. The APE also encompasses I-680 from Gold Hill Road north to the I-80 interchange; SR 12E from the I-80 interchange (west of Abernathy Road) to Suisun City and SR 12W.

The APE map included in this report (Figure 3.1.8-1) is an overview depiction; the entire 15-page APE map sets for archaeological and architectural resources are available in the HPSR. The APE for this undertaking was established by the Department in accordance with Stipulations VI.B.7 and VIII.A of the PA. Most relevant to this report, the APE follows the area of impact resulting from all activities associated with both alternatives, including all construction activities, easements, and staging areas. The architectural history APE includes parcels immediately adjacent to the existing right-of-way from which new rights-of-way would be acquired through project activities.

Methodology
An investigation for the cultural resources located in the project APE was conducted beginning in 2007. The investigation included a records search, Native American consultation, archaeological and architectural field surveys, archaeological investigations, and additional research.

Records Search
A background literature review for the area of potential effect (APE) and a 2-mile radius around the APE (the study area) was conducted on May 14, 2008, at the California Historical Resources Information System’s Northwest Information Center (NWIC), located at Sonoma State University. The purpose of this review was to determine the geographic boundaries of previous surveys, the location of potential significant historical resources, and the number of documented sites near the APE. Sources reviewed include archaeological site maps and records, archaeological study maps and reports, historic maps, and local reference books. The data were used to assess the likelihood of unrecorded resources based on historical references and the distribution and environmental setting of nearby sites. Subsequent records searches were conducted (October 2008, February 2009) to gather additional information for sites pertinent to this study but outside the 1-mile radius.

The records search identified 30 previous studies within or abutting portions of the APE.
Two archeological sites are recorded within the APE; however, neither has been located again since being recorded in the 1970s. One archeological site was mapped in two separate locations (as CA-SOL-242 and CA-SOL-242S) within the project APE in the vicinity of Green Valley Creek. No site records exist for this site at either location, and it has long been assumed that this site was mislocated or was a duplicate of CA-SOL-18—a nearby site. Several studies (including this study) have tried to locate this site again, and examinations of areas near the mapped locations (both surface and creek banks) have failed to identify prehistoric deposits of any kind.

**Additional Research**

Background research was conducted to arrive at a general understanding of the history of Cordelia, Fairfield, and Suisun City with a general focus on the history of the settlement and development of the project area. Research was undertaken at the California State Library, Sacramento; the Office of the Solano County Assessor/Recorder, Planning Department and Resource Management Building and Safety Services Division; the Fairfield Civic Center Library; the Solano County Archives; the Solano County Library; and the Transportation Library History Center, Sacramento.

**Consultation**

On October 15, 2008, a letter providing a brief project description, a map of the project area, and a summary of the background research was sent to all Native American representatives identified by the Native American Heritage Commission. The letter also requested that the recipient respond with any concerns or information. Follow-up phone calls were made on March 2, 2009; there was no response as of June 22, 2010. However, Caltrans was contacted directly by Mr. Reno Franklin, Tribal Historic Preservation Officer of the Yocha Dehe Wintun Nation in late June 2010. Mr. Franklin requested to be involved in additional studies, and the Yocha Dehe Wintun would like to be consulted in the development of the Programmatic Agreement (PA) for this project (discussed below under Avoidance and Minimization Measures and provided in Appendix H).

During an introductory meeting between Department staff and Yocha Dehe Wintun Nation tribal representatives on July 19, 2010, the Yocha Dehe requested a meeting to specifically discuss the project with the proponents and the Department.

As a result, a consultation meeting was held on August 23, 2010. During this meeting the Yocha Dehe indicated that any comments or concerns regarding the PA and HPTP or any information on resources that may be affected by the project could be provided within 30 days of receipt of the documents. Following this meeting, a copy of the Draft PA and HPTP were mailed to the Chairman on November 1, 2010.

A subsequent meeting was held on November 29, 2010 with tribal representatives to provide the Yocha Dehe with an opportunity to ask questions or request more detailed information about the project and the documents. Tribal representatives indicated that a written response to the PA and HPTP would be provided following a scheduled Tribal Council meeting on December 14, 2010.

On January 7, 2011, an email was received by the Department with the commented-upon PA attached. The email, sent by Yocha Dehe Tribal Historic Preservation Officer, Reno Franklin, included a request to provide the Yocha Dehe signatory status on the PA, instead of the current
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concurring party status. The Department has continued to meet with the Yocha Dehe regularly and consultation is ongoing.

In November 2008, letters describing the proposed project and requesting information on cultural resources in the project area were sent to the Solano County Historical Society, Solano County Genealogical Society, and the Solano County Archives. As of July 2010, no responses were received.

Field Methods
The project area was surveyed between 2004 and 2008. No new archaeological resources were encountered during these surveys.

The areas near the recorded locations of CA-SOL-242 and CA-SOL-262 were inspected for any evidence of cultural material. Because the mapping for these sites is suspect, a large area near the mapped locations was observed. No evidence of cultural material or archaeological deposits was observed at CA-SOL-242.

A sensitivity analysis was conducted as part of the ASR to assess the potential for buried resources. Sediment and soils research suggests that portions of the APE may have the potential for buried resources and paleosols based on the age of the deposits. Several factors potentially altering the likelihood for buried archaeological sites were taken into account, such as distance to water, soil classification, and landform stability. As an initial program of archaeological assessment, twelve subsurface mechanical test trenches were excavated within the project area. Locations were chosen to sample different zones of the proposed project—primarily highly sensitive areas.

One possible isolated prehistoric feature was encountered (near Suisun Creek). This feature consisted of a discrete area of concentrations of carbon at approximately 40 inches below the ground surface, with one piece of faunal bone recovered. No indications of culturally modified rock, shell, or bone were observed in other trenches, and no other cultural resources were identified during testing. However, geoarchaeological research, as well as archival research, strongly suggests that areas within 100 meters of creeks have the greatest potential to contain buried archaeological deposits.

Qualified architectural historians surveyed and recorded built-environment cultural resources in the architectural APE on November 1, 2007, November 19, 2007, December 13, 2007, March 13, 2008, April 18, 2008, April 25, 2008, June 4, 2008, January 30, 2009, and March 9, 2009. The surveys were conducted according to guidelines established in The Department’s 2004 draft Environmental Handbook, Volume 2: Cultural Resources (California Department of Transportation 2004 [as amended]). Madeline Bowen, Kathryn Haley, Patricia Ambacher, Tim Yates, and Maya Beneli conducted the surveys. Ms. Bowen, Ms. Haley, Ms. Ambacher, and Mr. Yates all meet the qualifications of an Architectural Historian per Attachment 1 of the Programmatic Agreement. The survey effort included the formal recordation of properties with digital photographs and handwritten notes.
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**Significant Cultural Resources**
This section summarizes the significant or potentially significant archaeological sites and architectural resources identified through the background research and as part of the field survey efforts. More detailed information on the architectural resources can be found in the DPR 523 forms in Appendix E of the HRER. Concurrence of eligibility of districts, buildings, and structures, and of the development of a PA and HPTP was received from SHPO on March 20, 2010 (Appendix H). The PA was approved by SHPO and Caltrans HQ on November 7, 2011 and by the Caltrans District 04 Director on November 8, 2011.

**Archaeological Resources**
No new archaeological resources were observed during the survey or subsurface investigation completed to date for the proposed project. Additional identification and evaluation of archaeological properties, and any adverse effects, are provided for in the PA (provided in Appendix H). The PA provides for a phased approach to the identification, evaluation and application of the criteria of adverse effects in consultation with the Yoche Dene Wintun Nation prior to the beginnings of construction stages.

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

If 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 contacted. Pursuant to Public Resources Code 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). At this time, the person who discovered the remains will contact The Office of Cultural Resource Studies Office Chief so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

**Architectural Resources**
Architectural historians identified 209 properties that contained buildings or structures and one irrigation feature within the project area that predated 1965. Of the 209 properties, 122 are recommended as eligible for the NRHP (26 as contributors to the Village of Cordelia Historic District, 95 as contributors to the Suisun Historic District, and the Suisun City Train Depot). Properties within the Village of Cordelia Historic District were determined eligible by SHPO in 1989 and the Suisun City Train Depot was determined eligible in 1981. Concurrence from the SHPO regarding eligibility of the properties within the Suisun Historic District was received on March 20, 2010. Properties within the APE that are listed in, or eligible for listing in, state and federal registers are summarized below.

**177 Main Street (APN 0032-020-240):** This property features a train station (Suisun City Train Depot) with a medium-pitched, hipped roof, with wide open eaves, exposed rafters, and dormers. The building is clad in beveled horizontal wood siding and includes original wood frame windows.
The Suisun City Train Depot building was determined eligible for the NRHP in 1981. ICF Jones & Stokes revisited the property as part of this study to assess its integrity and found the 1981 finding remains valid. The building meets the criteria for inclusion on the California Register of Historic Resources (CRHR).

**Village of Cordelia Historic District, Cordelia:** This district contains 26 contributing buildings consisting primarily of residential buildings; however, civic, institutional, and agricultural-related buildings are included in the boundary. Most of the buildings were constructed between 1890 and 1915 and represent a variety of architectural styles, from foursquare to Greek revival. The agricultural-related buildings are largely vernacular.

The Village of Cordelia Historic District was determined eligible for the NRHP in 1989 under Criteria A, in the areas of commerce and social history, and C in the area of architecture, with 33 contributing buildings and six non-contributing buildings. Since that determination of eligibility, five buildings no longer contribute to the district because of a lack of integrity, and because they were constructed outside the district’s period of significance (1870–1934). The original six non-contributing buildings remain non-contributors. One property, 2172 Bridgeport (APN 0045-132-080) was not evaluated as part of the district in 1989, but is within the district’s boundaries. It was constructed outside the district’s period of significance and is counted as a non-contributor. To date, the district has 26 contributing buildings, and 14 non-contributing buildings. The district is eligible for the NRHP and therefore is also considered a historical resource for the purposes of CEQA.

**Suisun City Historic District, Suisun City:** This district is comprised of 95 contributing buildings and an additional 34 non-contributing buildings. It is a mixture of one- and two-story residential buildings, commercial buildings, churches, and social halls constructed between 1880 and 1934. Architecturally, the buildings represent a variety of styles, including colonial revival, shingle, Queen Anne, and craftsman bungalows. The commercial buildings are largely single-story commercial buildings.

The district features one building, 623 Main Street (Masonic Lodge #55), that is listed in the NRHP. Concurrence from the SHPO regarding eligibility of the properties within the Suisun Historic District was received on March 20, 2010. The district is eligible for listing in the NRHP at the local level of significance under Criterion A in the area of community development, and Criterion C as significant and distinguishable, reflecting the architectural evolution of Suisun City. The district’s period of significance is 1880–1934. The district meets the criteria for eligibility for listing in the CRHR.

**Environmental Consequences**

Based on the above-mentioned technical studies, two historic districts and one historic property within the APE for the proposed project are listed in or are eligible for listing in the NRHP and therefore eligible for protection under Section 4(f). The locations of these historic properties are shown in Figure 3.1.1-1.

**Effects on Unknown or Known Resources from Construction**

Research indicates that previously unidentified buried archaeological resources, both prehistoric and historic, could be present in the project area. Such resources could be discovered through
subsurface construction activities such as grading and excavations at the work areas. If buried cultural resources are inadvertently encountered during construction, disturbance could result in the loss of integrity of cultural deposits, loss of information, and the alteration of an archaeological site setting. Inadvertent exposure of prehistoric or historic-era archaeological resources could make the resources susceptible to vandalism. Inadvertent discovery of prehistoric or historic-era archaeological resources during construction would have a potentially adverse effect.

Conducting further research as guided by the PA for this project (provided in Appendix H) will ensure that additional identification efforts are completed prior to construction and any historic properties identified are treated appropriately. The execution of the project PA signifies completed compliance with Section 106 of the NHPA. Under the No-Build Alternative there would be no construction and therefore, no potential to disturb or destroy buried resources as a result of construction.

**Potential to Affect Historic Properties at APN 0032-020-240 (Suisun City Train Depot)**

Under both alternatives, construction would occur in the southern portion of this parcel and the building (Suisun City Train Depot) is located in the northern section of the parcel, which is partially sheltered by SR 12E that runs above the building’s northwest corner. The proposed project would not constitute an adverse effect because it would take place some distance (approximately 300 feet) from the building and would not lead to the physical destruction, alteration or relocation of the historic resource. The proposed construction would occur in the southern section of the parcel, near Spring Street, where there is a median strip with modern covered benches used by waiting passengers. The proposed project would create a visual impact, but the effect is not considered adverse because it would not substantially alter the existing setting of the parcel. The building’s overall setting was compromised by the construction of SR 12E in the mid-twentieth century as well as by the modern development that has occurred in close proximity to the parcel. Furthermore, the railroad tracks located near the parcel’s west side are not being altered or realigned, so the depot would continue to retain its relationship with the tracks, which would help the depot retain its feeling, association, and immediate setting.

No construction would occur in the vicinity of the Suisun City Train Depot under the fundable first phase of either alternative or under the No-Build Alternative.

**Potential to Affect Village of Cordelia Historic District**

Under Alternative B and Alternative B, Phase 1, construction would occur in the vicinity of the Village of Cordelia Historic District. However, this effect would not be adverse because the proposed improvements are occurring in the existing right-of-way and on a parcel that no longer contains a building. None of the contributing properties within the district would be demolished, altered, or relocated. Under Alternative B project improvements would occur on a parcel located on Cordelia Road at the district’s western boundary. When this district was originally evaluated, a contributing building was located on that parcel. Since the time of the determination of eligibility that building has been demolished or removed. Therefore, no building, contributing or non-contributing, would be affected by project construction. Proposed project improvements would not alter the overall integrity of the district as the parcel is located at the edge of the district boundary and the number of contributing resources within the district would be retained. Overall, the district would retain a high concentration of contributing properties and would
continue to convey a sense of place and time. The character-defining features of the district would remain intact.

The proposed improvements under Alternative B and Alternative B, Phase 1 would have a visual impact on the district’s setting because there would be elevated construction where none has previously existed. This visual impact would not be considered an adverse effect because the setting of the district was already compromised when the existing interstate was built in the mid-to-late twentieth century. The Village of Cordelia Historic District as a whole would continue to convey its significance and maintain its integrity of location, design, workmanship, materials, setting, feeling and association.

Under Alternative C and Alternative C, Phase 1, the I-80/I-680 interchange would be relocated to the vicinity of the existing I-80/SR 12W interchange. The elevated ramps would be removed. The ramps are located far enough from the district (approximately 0.25 mile) that no direct effects would occur with their removal. The visual effect may be beneficial because the existing ramps would no longer be within the viewshed of the district.

Under the No-Build Alternative, there would be no construction and no changes to the project area and therefore no potential to affect the Village of Cordelia Historic District.

**Potential to Affect Suisun City Historic District**

Under both alternatives improvements would occur near and within the boundary of the Suisun City Historic District, but would not constitute an adverse effect on the district. Although the proposed improvements would not lead to the physical destruction, alteration or relocation of historic properties, it would result in a visual impact because there would be elevated construction where none historically existed. This visual impact would not be an adverse effect to the district because while elevated, the construction would not be directly over the district. Rather, it would be to the northwest of the district’s north boundary and would not alter the district’s overall sense of place and time. Therefore, it would not have an adverse effect on the district’s overall integrity.

Additionally, both alternatives would disrupt a portion of the northwest district boundary because the design of an original street in the district (Sacramento Street) would be altered. Sacramento Street has historically been a through street between Main Street to the east and West Street to the west. The proposed project would convert Sacramento Street into a cul-de-sac. This impact would not be considered adverse because the core of the district, including the highest concentration of contributing properties, sits to the south and east of the proposed improvements. Those areas south and east of the proposed improvement would still provide a strong sense of place and time for the district’s period of significance (1880–1927). Only eight contributing properties front the proposed improvements, and these resources are not individually eligible.

The district would retain its high number of contributors and it would continue to be geographically united. The district’s overall integrity of location would remain intact because the proposed improvements do not necessitate the removal of properties. Integrity of workmanship and materials can be seen throughout the district’s contributing buildings in their architectural styles. The district’s overall integrity of feeling and association would also remain intact.
The district’s setting and design would be altered on the northwest border. The design of the remaining streets within the district would not be altered and would continue to allow the district to convey its significance. Integrity of setting would also be altered along Sacramento Street, but it would not have an adverse effect on the district as a whole. Overall, the historic character of the Suisun City Historic District would remain intact and the district would continue to possess the essential physical features that allow it to convey its significance.

No construction would occur in the vicinity of the Suisun City Historic District under the fundable first phase of either alternative or under the No-Build Alternative and, therefore, there would be no potential to affect it.

**Historic Resources Protected Under Section 4(f)**

**APN 0032-020-240 (Suisun City Train Depot)**
As noted above, this property was evaluated in 1981 and determined eligible for the NRHP. Per the recent HRER for the proposed project, the building continues to retain its historic integrity and therefore continues to be eligible for the NRHP. The SHPO concurred that this property is eligible under Criterion C in the area of architecture at the local level of significance. Its period of significance is 1906, the estimated year of its construction. As such, the property is an eligible historical resource on the NRHP, and is therefore considered a Section 4(f) resource.

**Potential to Affect the Suisun City Train Depot**
In the vicinity of the Suisun City Train Depot, both alternatives include improvements occurring within the boundaries of the parcel on which the eligible property is located. The construction activities occurring within the property under the two alternatives would involve identical features.

The Suisun City Train Depot is located directly south of SR 12E and adjacent to the UPRR tracks on the east. Proposed project improvements under Alternative B and Alternative C would involve the extension of West Street northward from Solano Street to Spring Street in Suisun City. It would be on an embankment supported by retaining walls to intersect the roadway crossing over the existing UPRR tracks. Approximately 0.27 acre located within the southern section of the parcel would be acquired by these improvements. The proposed improvements would occur within the southern section of the parcel, approximately 250 feet south of the train depot. The eligible building would not be demolished or moved. The building’s overall setting was compromised by the construction of SR 12E in the mid-twentieth century as well as by the modern development that has occurred in close proximity to the parcel. Furthermore, the railroad tracks located near the parcel’s west side are not being altered or realigned, so the depot would continue to retain its relationship with the tracks, which would help the depot retain its feeling, association, and immediate setting.

Based on traffic noise modeling results, noise levels taken from one prediction site northwest of the property were calculated for existing and future conditions with and without the project alternatives. The existing traffic noise level at the loudest hour was estimated to be 61 dBA. The future levels (2035) at this site were predicted to be between 64–65 dBA with Alternative B and Alternative C and 63 dBA under the No-Build Alternative. Although both alternatives would increase noise levels 1 to 2 dBA higher than under the No-Build Alternative, the noise level does
not approach or exceed the NAC for the land use (67–72 dBA) under 23 CFR 772. Therefore, there would be no impacts due to noise.

Access to the train depot would not permanently change. During construction, access to the property would be maintained because the main entrance is located adjacent to the train depot and north of the proposed project improvements. Proposed project improvements would occur along Spring Street, the train depot’s southern parking lot entrance, and short-term disruptions in access could occur at this location. However, implementation of the TMP would ensure that nearby businesses and residents are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

The Suisun City Train Depot would be able to maintain its integrity of location, design, workmanship, materials, setting, feeling, and association under Alternative B and Alternative C. Consequently, the proposed project would not have an adverse affect on this property. Furthermore, as the proposed project does not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the work occurring within this eligible NRHP property appears to meet the qualifications for a de minimis impact finding. Thus, per 49 U.S.C. 303 and 23 U.S.C. 138, no discussion of avoidance alternatives is listed for this resource. As indicated in Stipulation II.B.4 of the 80/680/12 Programmatic Agreement (See Appendix H) there will be no adverse effect on eligible built environment properties. The SHPO's signature on the PA constitutes agreement with that determination.

**Measures to Minimize Harm to the Suisun City Train Depot**
Measures to minimize harm to this Section 4(f) resource would include maintaining property access and communicating the proposed construction activities with the nearby businesses and property residents. Implementation of the TMP would ensure that nearby businesses and residents are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

**Coordination for the Suisun City Train Depot**
During preparation of the HRER and the evaluation of the Suisun City Train Depot, project historians coordinated with the Department’s Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian.

**Concluding Statement for the Suisun City Train Depot**
The project alternatives would not affect the significance and character-defining features of the Suisun City Train Depot that contribute to its eligibility for listing in the NRHP. Accordingly, the effects of the project on this Section 4(f) resource appear to meet the requirements for a *de minimis* impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

**Village of Cordelia Historic District**
As noted above, the Village of Cordelia Historic District was determined eligible for the NRHP in 1989 under Criteria A, in the areas of commerce and social history, and C in the area of architecture, with 33 contributing buildings and six non-contributing buildings. Since that determination of eligibility, five buildings no longer contribute to the district because of a lack of
integrity, and because they were constructed outside the district’s period of significance (1870–1934). The original six non-contributing buildings remain non-contributors. One property, 2172 Bridgeport (APN 0045-132-080) was not evaluated as part of the district in 1989, but is within the district’s boundaries. It was constructed outside the district’s period of significance and is counted as a non-contributor.

With the re-evaluation of the district, the HRER determined the district is now comprised of 26 contributing buildings and 14 non-contributing buildings. The district is eligible for the NRHP; thus, this district is considered a protected resource under Section 4(f).

**Potential to Affect the Village of Cordelia Historic District**

Construction is proposed in the vicinity of the Village of Cordelia Historic District under all build alternatives. However, only Alternative B and Alternative B, Phase 1 have improvements occurring within the boundaries of this district (see Figure 3.1.8-2).

The Village of Cordelia Historic District is located just south of the I-80/I-680 interchange and directly east of northbound I-680. Under Alternative B and Alternative B, Phase 1, a third mixed-flow lane would be constructed to northbound I-680 beginning 1,000 feet south of the Cordelia overhead within this portion of the proposed project area. With this proposed lane addition, approximately 0.47 acre of a non-contributing parcel, located on Cordelia Road at the district’s western boundary, would be acquired by these improvements. This acquisition would not alter the overall integrity of the district. Because the building on this parcel no longer exists, it cannot be eligible individually or as a contributor to the district. This, combined with the property’s location at the edge of the district’s boundary, lessens the effect to the district as a whole. Cordelia Road would still retain a high number of contributing resources at its west end. Overall, the district would retain a high concentration of contributing properties and would continue to convey a sense of place and time. The character-defining features of this district would remain intact.

The improvements under Alternative B and Alternative B, Phase 1 would affect the district’s visual setting because there would be elevated construction where none has previously existed. However, this visual affect would not be considered adverse under Section 106 because the setting of the district was already compromised when the interstate was created. The elevated construction would not alter the setting of the overall district enough that the district would lose the ability to convey significance in the areas of commerce, social history, and architecture.

Based on traffic noise modeling results, noise levels at two monitoring sites and one prediction site within the district were applied for existing and future conditions with and without the Alternative B. The existing traffic noise levels at the loudest hour were predicted to be between 63–68 A-weighted decibels (dBA). The future noise levels (2035) at these three sites were predicted to be between 63–71 dBA with Alternative B and Alternative B, Phase 1 alignments and between 63–71 dBA under the No-Build Alternative. The noise levels with Alternative B would be the same or one dBA less than the future design-year (2035) noise levels under the No-Build Alternative. As such, while the projected noise levels under Alternative B would exceed the noise abatement criteria (NAC) under 23 CFR 772 for the land use (67 dBA), they would not
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment, Cultural Resources

exceed the future design-year (2035) No-Build noise levels and no impacts attributable to noise would occur.

No improvements under Alternative B or Alternative B, Phase 1 would occur on the roadways within the district boundaries, and access within the district would be maintained during construction. Improvements under Alternative B would only occur on a vacant parcel on the western edge of the district. However, approximately 250 feet north of the district, project improvements on the local roadways are proposed. These improvements could result in short delays in access to the district. However, with implementation of a transportation management plan (TMP), overall access to the district would be maintained.

The Village of Cordelia Historic District as a whole would be able to maintain integrity of location, design, workmanship, materials, setting, feeling, and association under Alternative B and Alternative B, Phase 1. Consequently, the project alternatives would not have an adverse effect on this District. Furthermore, as the project alternatives do not appear to adversely affect the activities, features, or attributes that make the District eligible for Section 4(f) protection, the work occurring within this eligible NRHP resource appears to meet the qualifications for a de minimis impact finding. Thus, per 49 U.S.C. 303 and 23 U.S.C. 138, no discussion of avoidance alternatives is listed for this resource. As indicated in Stipulation ILB.4 of the 80/680/12 Programmatic Agreement (See Appendix H) the project, as currently proposed, will result in no adverse effect on eligible built environment properties. The SHPO's signature on the PA constitutes agreement with that determination.

Measures to Minimize Harm to the Village of Cordelia Historic District

Measures to minimize harm to this potential Section 4(f) resource would include maintaining access and existing circulation patterns within this district. The non-contributing building that was located on the parcel that is being affected by the proposed project has been demolished and no longer exists. This vacant parcel does not have any driveway or access points onto the surrounding roadways. Because it is on the district’s western boundary, the proposed project improvements would not affect overall access to this district. Furthermore, a TMP would be implemented to ensure that property owners within and nearby the district are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

Coordination for the Village of Cordelia Historic District

During preparation of the HRER and the evaluation of the Village of Cordelia Historic District, project historians coordinated with the Department’s Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian.

Concluding Statement for the Village of Cordelia Historic District

The project alternatives would not affect the significance and character-defining features of the Village of Cordelia Historic District, which make it eligible in the NRHP. Accordingly, the effects of the project on this Section 4(f) resource appear to meet the requirements for a de minimis impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.
**Suisun City Historic District**

As discussed above, the Suisun City Historic District is comprised of 95 contributing buildings and 34 non-contributing buildings, and has a period of significance between 1880 and 1934. The district is eligible for the NRHP under Criterion A at the local level of significance in the area of community development, and Criterion C as a collection of late nineteenth- and early twentieth-century architecture. The district features one building, 623 Main Street (Masonic Lodge #55) that was listed on the NRHP in 1978. The district is an eligible historical resource listed on the NRHP, and therefore is considered a protected resource under Section 4(f).

**Potential to Affect the Suisun City Historic District**

In the vicinity of the Suisun City Historic District, both Alternative B and Alternative C would have project improvements occurring directly adjacent to the district boundaries (see Figure 3.1.8-3). The construction activities occurring adjacent to the district under both alternatives involve identical features. The Suisun City Historic District is located south of SR 12E and adjacent to the UPRR tracks on the west. Proposed project improvements under Alternative B and Alternative C would involve the extension of West Street northward from Solano Street to Spring Street in Suisun City. The West Street extension would be on an embankment supported by retaining walls to intersect the roadway crossing over the existing UPRR tracks. Additionally, under both alternatives, the proposed project would convert Sacramento Street into a cul-de-sac. Under this alternative, proposed project improvements would occupy approximately 0.38 acre of Sacramento Street.

Although the proposed improvements would occur near and within the boundary of the proposed Suisun City Historic District, the physical destruction, alteration, or relocation of historic properties would not occur. The proposed improvements would affect the district’s visual setting because there would be elevated construction where none has previously existed. This elevated construction would involve extending West Street along an embankment supported by retaining walls that would run from road stationing 10+50 to 25+00 (North of Solano Street to South of Spring Street). The eastern portion of this retaining wall would be adjacent to the Suisun City Historic District, and located near two contributing properties (properties 63 and 75 on Figure 3.1.8-3) within the District. The retaining wall would be located approximately 25 feet away from the building located on contributing property 63 and approximately five feet away from the building located on contributing property 75. The elevated roadway would begin along the curb line of West Street, abutting contributing property 75. At this location the retaining wall and concrete barrier would be approximately six feet in height. At its peak, the retaining wall would be approximately 34 feet above ground surface. However, this elevated construction would not be directly over the district, but rather to the northwest of the district’s north boundary and would not alter the district’s overall sense of place and time. Therefore, it would not affect this district’s overall integrity.

Additionally, the proposed improvements would disrupt a portion of the northwest district boundary because the design of an original street in the district, Sacramento Street, would be altered. Sacramento Street has historically been a through street between Main Street to the east and West Street to its west. However, because the core of the district sits to the south and east of the proposed improvements, the district would have the ability to convey its significance for its association with community development and for its many distinctive nineteenth-century and
early twentieth-century architectural styles. Those areas south and east of the proposed improvements would still provide a strong sense of place and time for the district’s period of significance (1880–1934).

The highest concentration of contributing properties is located within the core area of the district, away from the proposed improvements. Only six contributing properties front the proposed improvements, and these resources are not individually eligible. This district would retain its high number of contributors and it would continue to be geographically united. The district’s overall integrity of location would remain intact because the proposed improvements do not necessitate the removal of properties. The district’s overall integrity of feeling and association would also remain intact. Although the district’s setting and design would be altered on the northwest border, the design of the remaining streets within the district would not be altered and would continue to allow the district to convey its significance. The Suisun City Historic District would continue to possess the essential physical features that would allow people to understand its importance to the development of the city.

Taken from one noise prediction site within the district, noise modeling results were forecast for existing and future conditions with and without the project alternatives. The existing traffic noise levels at the loudest hour were predicted to be 51 dBA. With Alternative B and C future levels (2035) were estimated to be between 54–59 dBA, and 53 dBA under the No-Build Alternative. Although noise levels with the project alternatives would be up to six dBA higher compared to the No-Build conditions, noise levels would still not approach or exceed the NAC under 23 CFR 772 for the land use (67 dBA). Therefore, there would be no impacts due to noise.

Although project alternatives would occur adjacent to and within the boundary of the district (along Sacramento Street), access to and from the district would be maintained. Neither alternative would involve improvements along Main Street, which serves as the main entrance to the district. Construction along Sacramento Street would result in short delays in access to the residences along the roadway. However, with implementation of the TMP (see Chapter 3, Section 3.1.5, “Utilities and Emergency Services”) residents would be notified of any delays so that property access during construction would be coordinated with the timing of construction activities.

The Suisun City Historic District would continue to share its historic associations and the majority of the district’s historic character would remain intact under Alternative B and Alternative C. As such, the project alternatives would not have an adverse affect on this District. Furthermore, as the project alternative do not appear to adversely affect the activities, features, or attributes that make the District eligible for Section 4(f) protection, the work occurring within this eligible NRHP resource appears to meet the qualifications for a de minimis impact finding. As indicated in Stipulation II.B.4 of the 80/680/12 Programmatic Agreement (See Appendix H) the project, as currently proposed, will result in no adverse effect on eligible built environment properties. The SHPO’s signature on the PA constitutes agreement with that determination.

Thus, per 49 U.S.C. 303 and 23 U.S.C. 138, no discussion of avoidance alternatives is listed for this resource.
Measures to Minimize Harm to the Suisun City Historic District

Measures to minimize harm to this potential Section 4(f) resource would include maintaining access and existing circulation patterns within the district. As noted above, proposed project improvements would occur adjacent to and within the boundary (along Sacramento Street) of the Suisun City Historic District. However, the physical destruction, alteration, or relocation of historic properties would not occur. Access into the district would be preserved along Main Street. Implementation of the TMP would require that the contractor notify property owners within and nearby the district of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements. Residents would also be notified in advance about potential access or parking effects before construction activities begin.

Coordination for the Suisun City Historic District

During preparation of the HRER and the evaluation of the Suisun City Historic District, project historians coordinated with the Department’s Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian.

Concluding Statement for the Suisun City Historic District

The project alternatives would retain the significance and character-defining features of the Suisun City Historic District, which contribute to its eligibility in the NRHP. Accordingly, the effects of the project on this Section 4(f) resource appear to meet the requirements for a de minimis impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

Avoidance, Minimization, and/or Mitigation Measures

Because the potential remains for archaeological resources to be discovered in the project area, a PA between Caltrans and the SHPO and other stakeholders has been prepared that includes a Historic Properties Treatment Plan (HPTP). The HPTP includes a detailed protocol for identification, evaluation and treatment of any affected historic properties. The HPTP also includes protocols for archeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking.
Figure 3.1.8-1
Area of Potential Effect Overview
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Legend
- Architectural APE
- Alternative B/Option 2
- Alternative B, Phase 1
- Alternative C/Option 1
- Alternative C, Phase 1
- Initial Phase 1
- Existing ROW
- Cordelia Historic District Boundary (previously mapped)
- Contributor
- Non-contributor
- Area of Project Impact

Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.8-2
Cordelia Historic District
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Figure 3.1.8-3
Suisun City Historic District
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Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hydrology and Floodplain

3.2 Physical Environment

3.2.1 Hydrology and Floodplain

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

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- 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.”

**Affected Environment**
The following text is based on the I-80/I-680/SR-12 Interchange Project, Location Hydraulic Study & Summary Floodplain Encroachment Report (LHS) prepared in 2011.

The project area is comprised of relatively flat grazing plains and rural open space with gently sloping hills adjacent to the I-80/I-680/SR-12 interchange. The Vaca Mountains lie to the north of Suisun Valley and Fairfield. Along the reach of the project, nine named creeks convey runoff to Suisun Bay to the South: American Canyon Creek, Jameson Creek, Green Valley Creek, Dan Wilson Creek, Suisun Creek, Raines Drain, Alonzo Drain, Ledgewood Creek, and Pennsylvania Avenue Creek.

Solano County, a central region of California, is characterized by a Mediterranean climate. Summer is dominated by subtropical high pressure cells, with dry sinking air capping a surface marine layer of varying humidity, making rainfall impossible or unlikely but for the odd thunderstorm. During winter, the polar jet stream and associated periodic storms reach into the lower latitudes of the Mediterranean zones, bringing approximately 95% of the total precipitation for the region.
The San Francisco Bay Regional Water Quality Control Board (RWQCB) lists this region as Area 2 of its domain. The San Francisco Bay RWQCB further notes that its rainy season is from October 15 to April 15. The California Irrigation Management System (CIMIS) station collects meteorological data and is located in Suisun Valley (Station Number 123). Minimum, mean and maximum monthly precipitation values from August 1994 through February 2010 are included in Table 3.2.1.1. Note that the minimum precipitation values are only the minimum value recorded on a single day within that month. Thus each month since 1994 had at least one day where no precipitation was recorded.

<table>
<thead>
<tr>
<th>Month</th>
<th>Minimum</th>
<th>Mean</th>
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The land gradually slopes south toward Suisun Bay and all drainages within the project limits drain to Suisun Bay. The area is composed of relatively flat grazing plains and rural open space with gently sloping hills adjacent to the I-80/I-680 interchange. The Vaca Mountains lie to the north of Suisun Valley and Fairfield. Along the reach of the project area, nine named creeks convey runoff to Suisun Bay to the south: American Canyon Creek, Jameson Canyon Creek, Green Valley Creek, Suisun Creek, Raines Drain, Alonzo Drain, Ledgewood Creek, and Pennsylvania Avenue Creek. Historically, agriculture has affected runoff patterns in the areas adjacent to the proposed project. There is extensive urban development in areas to the west and east of the project but not in the immediate project area.

The Federal Emergency Management Agency (FEMA) delineates flood zones on Flood Insurance Rate Maps (FIRMs) and each FIRM depicts specific flood zones based primarily on topography and the areas likelihood of flooding. A 100-year flood is a flood that has a 1% chance of being equaled or exceeded in any given year. Zone X flooding are areas determined to be outside the 0.2% annual chance floodplain. “Patterned” Zone X flooding are areas protected by levees from the 1% annual chance flooding; or areas subject to 1% annual chance flooding with average depths less than 1-foot, or with drainage areas less than one square mile; or Areas of 0.2% annual chance flooding. Zone A is an area subject to 1% annual flooding that does not have flood elevations or depths defined. Zone AE is defined as areas subject to 1% annual flooding with base flood elevations determined. Figures 3.2.1-1 through 3.2.1-7 are each individual maps of the multiple flood zones along the project alignment.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hydrology and Floodplain

American Canyon Creek
The American Canyon Creek drainage area is approximately 6.8 square miles at I-680, flowing east. The 100-year flow rate at the I-680 crossing is approximately 1,250 cubic feet per second (cfs). At I-680, American Canyon Creek passes under the freeway in a double box culvert; each cell is 12 feet wide. The 100-year flood is conveyed through the highway bridge without flooding the highway, as shown on the FEMA FIRMs. The most recent modifications to the FEMA-defined floodplain for American Canyon Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-680 was studied with approximate methods, and shows the 100-year floodplain as Zone A contained within the waterway upstream of the freeway and crossing under the freeway completely contained in the bridge crossing through the double 12-foot-wide reinforced concrete box (Figure 3.2.1-1).

Jameson Canyon Creek
The Jameson Canyon Creek drainage area is approximately 4.2 square miles at I-680, flowing east. The 100-year flow rate at the I-680 crossing is approximately 750 cfs. At I-680, Jameson Canyon Creek passes under the freeway in a double box culvert. The 100-year flood is conveyed through the highway bridge without flooding the highway, as shown on the FEMA FIRMs. The most recent modifications to the FEMA-defined floodplain for Jameson Canyon Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek between I-680 and I-80 was studied with approximate methods, and shows the 100-year floodplain as Zone A contained within the waterway and crossing under each freeway completely contained in the bridge crossings at I-80 and I-680 (Figure 3.2.1-2). The culverts at I-80 and I-680 will be extended to accommodate the widened freeways.

Green Valley Creek
The Green Valley Creek drainage area is approximately 17.8 square miles at I-80, flowing south. The 100-year flow rate at I-80 crossing is 3,300 cfs. Near I-80, Green Valley Creek passes under a series of bridges: the Green Valley Road crossing just north of I-80, four bridges that are part of the freeway crossing, and the Central Way Bridge immediately south of the freeway. The most recent modifications to the FEMA-defined floodplain for Green Valley Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-80 was studied with detailed methods, and shows the 100-year floodplain as Zone AE contained within the waterway upstream of the freeway and crossing under the freeway completely contained within the multiple multi-span bridge crossings (Figure 3.2.1-3). Farther downstream of I-80, the 100-year floodplain exceeds the channel banks. For this reach, including a portion of I-80, FEMA has also identified a “patterned” Zone X to indicate an area protected by levees from 1% annual chance flooding (Figure 3.2.1-3).

Dan Wilson Creek
Dan Wilson Creek flows south with a drainage area at I-80 that is approximately 4.6 square miles. Upstream of I-80, flows in Dan Wilson Creek can be diverted to two detention basins located just west of the creek. These detention basins release back into the creek. Levees line the creek and approximately 190 meters of I-80 just to the west of the creek. The floodplain also receives overflows from Suisun Creek located east of Dan Wilson Creek. Dan Wilson Creek floods when the water surface elevation of the creek reaches an elevation of approximately 29.5 feet. The most recent modifications to the FEMA-defined floodplain for Dan Wilson Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-80 was
studied with detailed methods, and shows the 100-year floodplain as Zone AE (Figure 3.2.1-4). Both upstream and downstream of I-80, portions of the 100-year floodplain exceed the channel banks. At the freeway, the 100-year runoff is completely contained within the multiple multi-span bridge crossings. Since the most recent levee improvements were made along the west bank north of I-80, FEMA has revised the flooding maps to show the 100-year runoff in Dan Wilson as contained by the existing highway bridge with no flooding onto the highway traveled way. A small area north of I-80 and west of the creek is identified as patterned Zone X, an area protected by levees (Figure 3.2.1-4).

**Suisun Creek and Raines Drain**

Beginning at Lake Curry to the north, the Suisun Creek watershed area is approximately 48.8 square miles. During historic flooding, water from Suisun Creek has overflowed to Ledgewood Creek near the most northern crossing of Suisun Valley Road. One-hundred-year overtopping occurs near the most southern crossing with Suisun Valley Road and flows to Dan Wilson Creek to the west and Raines Drain to the east.

During a 100-year runoff event, Suisun Creek exceeds its bank capacity farther upstream from the highway. Overtopping flows go to Ledgewood Creek and Raines Drain to the east and to Dan Wilson Creek to the west. At the highway, the flow that still remains within the banks of Suisun Creek passes through the highway bridge without additional flooding. Flood flows do not encroach on the highway traveled way at Suisun Creek Bridge. However, those 100-year flows that leave Suisun Creek and flow to Raines Drain, combine with runoff from the Raines Drain Watershed and overtopping flows from the upper reaches of Ledgewood Creek, and overtop the I-80 Freeway. FEMA has designated this area as a “Patterned” Zone X, indicating there is flooding up to a depth of one foot during the 100-year event (Figure 3.2.1-5).

The Raines Drain watershed has a watershed size of 2.3 square miles at I-80. The watershed, located just east of Suisun Creek and south of Ledgewood Creek, collects runoff from local agricultural lands and from over-bank flows from Suisun Creek and Ledgewood Creek during extreme events.

Raines Drain refers to a trapezoidal, concrete-lined ditch that begins at Rockville Road and extends southward across the agricultural floodplain to I-80. At I-80 the ditch transitions to a 66-inch-diameter reinforced concrete pipe (RCP) and then to a 60-inch-diameter RCP under the freeway. In addition to the main culvert at I-80, there is a 42-inch culvert constructed in 1986, and two more 42-inch culverts installed in the 1960s. However, one of the 42-inch culverts is currently closed off on both ends. On the southern side of I-80, all the pipes transition back to a trapezoidal concrete-lined channel.

The 100-year flow in Suisun Creek passes under the I-80 bridge without flooding the highway. The 100-year flood elevation is 36 feet just upstream of the bridge and the low point roadway elevation is 39 feet. However, at several locations within four miles upstream of I-80, 100-year flows escape from the banks of Suisun Creek, flowing away from the creek toward Raines Drain. Some of these flood flows encounter the I-80 embankment at Raines Drain. The capacity of the Raines Drain cross culverts is not sufficient to carry the 100-year flood flows (including those escaping Suisun Creek) beneath the highway, causing flood flows to overtop the highway at Raines Drain, as defined on the FEMA FIRMs. The freeway low point elevation at Raines Drain
is 34.4 feet. The FEMA maps do not indicate a floodplain elevation at this location, but indicate that the flooding is less than one foot deep (Figure 3.2.1-5).

Alonzo Drain

The Alonzo Drain watershed upstream from I-80 and SR 12E is bounded by Raines Drain to the west and Ledgewood Creek to the north and east. The watershed collects runoff from local agricultural lands and from over-bank flows from Ledgewood Creek and Suisun Creek during extreme events.

The existing waterway crossing under I-80 consists of a single 48-inch RCP with collector ditches north of the highway leading to the culvert. South of the highway is a series of storm drains owned by the City of Fairfield that connects the 48-inch RCP to a large trapezoidal channel with a 100-year capacity. The trapezoidal channel was constructed in the 1980s to convey the 100-year flow in Alonzo Drain, including overflows from Ledgewood Creek. Approximately one mile farther downstream, the improved Alonzo Drain crosses SR 12E in a six-cell 60-foot-wide RCB and joins Ledgewood Creek just east of Beck Avenue. The City of Fairfield indicated that the trapezoidal channel was designed for a 100-year flow of 2,500 cubic feet per second.

The existing 48-inch culvert under the I-80 does not have the hydraulic capacity to convey the 100-year runoff from the direct watershed and the overflows from Ledgewood Creek. FEMA identifies this area of 100-year flooding as Zone AO, with 1-foot-deep flooding (deeper flooding may exist in local low-lying areas) (Figure 3.2.1-6).

FEMA has not performed hydraulic calculations or prepared flood profiles for Alonzo Drain. West Yost & Associates has prepared a separate report for the Solano County Water Agency that includes hydrologic and hydraulic calculations for Alonzo Drain, identifying the manner and frequency of overtopping of I-80 (West Yost & Associates 1999).

I-80 flooding in the area of Alonzo Drain and Ledgewood Creek has occurred as recently as December 31, 2005, closing westbound I-80 traffic for several hours. This highway flooding is attributable to the deficiencies at the Alonzo Drain I-80 crossing and to overtopping of Ledgewood Creek upstream of I-80. The FEMA maps indicate flood flows overtopping the highway, but the presence of a 3-foot-high concrete median barrier inhibits overtopping flows, causing ponded upstream flows to seek relief toward the Ledgewood Creek Bridge to the east.

The most recent modifications to the FEMA defined floodplain for Alonzo Drain are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses SR 12 was studied with approximate methods, and shows the 100-year floodplain as Zone AO (depth one foot) flowing across the location of SR 12E (Figure 3.2.1-6). This analysis of the Alonzo floodplain was performed before this reach of SR 12E was improved to current conditions and before the Alonzo Drain was improved between I-80 on the upstream end to downstream of SR 12E and Beck Avenue to the confluence with Ledgewood Creek. It is understood by Solano County and the Solano County Water District that the current improvements to Alonzo Drain between I-80 and SR 12E and downstream of SR12E are sufficient to convey the peak 100-year flow.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hydrology and Floodplain

Ledgewood Creek
The Ledgewood Creek drainage area at I-80 is approximately 16.8 square miles (Figure 3.2.1-6). At SR 12, the Ledgewood Creek drainage area is about 0.5 square miles greater. Far upstream of I-80, Ledgewood Creek receives overflows from Suisun Creek during a 100-year runoff event. South of where overflows are received from Suisun Creek (and still upstream from I-80), overflows escape from Ledgewood Creek, flowing to the west and south to join with the Alonzo Drain and Raines Drain at the highway crossing.

At I-80, the flow that still remains within the banks of Ledgewood Creek passes through the highway bridge without additional flooding. Flood flows do not encroach on the I-80 traveled way at Ledgewood Creek Bridge. While there has been flooding of the highway in the area of Ledgewood Creek as recently as December 31, 2005, this flooding is attributable to the deficiencies at the Alonzo Drain highway crossing and the fact that Ledgewood Creek overtopped upstream of I-80. At SR 12E, Ledgewood Creek crosses the highway in a five-cell 75-foot-wide RCB.

The most recent modifications to the FEMA-defined floodplain for Ledgewood Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses SR 12E was studied with detailed methods, and shows the 100-year floodplain as Zone AE contained within the waterway upstream of the freeway and crossing under the freeway completely contained within the existing bridge crossings (Figure 3.2.1-6). Farther downstream of SR 12E, the 100-year floodplain is shown within the stream banks. However, the FEMA maps show a Zone AO (depth one foot) flooding beyond the Ledgewood stream banks beginning just upstream of SR 12E and extending far downstream of the highway. The Summary Floodplain Encroachment Report does not state if this flood depth is from overflows or mixing of Alonzo Drain, Ledgewood Creek, and/or Pennsylvania Avenue Creek. Flooding of Ledgewood Creek has occurred as recently as December 31, 2005 at I-80 and reaches both upstream and downstream of I-80, but no flooding was observed at the SR 12E crossing of Ledgewood Creek.

Pennsylvania Avenue Creek
The Pennsylvania Creek watershed area at SR 12E is approximately 3.2 square miles. Pennsylvania Avenue Creek crosses under SR 12E in a triple cell box culvert. The FEMA FIRMs indicate that the 100-year flow is contained in the culverts located in Pennsylvania Avenue upstream of SR 12, however the same flood maps indicate that the 100-year flooding inundates SR 12E.

The most recent modifications to the FEMA-defined floodplain for Pennsylvania Avenue Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses SR 12E was studied with detailed methods, and shows the 100-year floodplain as Zone AE to a point just upstream of SR 12E (Figure 3.2.1-7). At this point, the 100-year flood is completely contained in the existing culvert upstream of the highway. However, downstream of SR 12E and immediately upstream, the FEMA maps show a Zone AO (1-foot depth) flooding to the west of Pennsylvania Avenue Creek and Zone AE (elevation ten feet) to the east of the creek. It is not known if these flood depths and elevations are from overflows or mixing of Alonzo Drain, Ledgewood Creek, and/or Pennsylvania Avenue Creek.
Finally, The FEMA profile gives a roadway elevation of 10.1 feet. Current topographic mapping (using the same datum) indicates the roadway is just below elevation 13.0 feet. The current understanding is that the existing triple box culvert is sufficient to carry the 100-year flow. The existing box culvert will be extended as appropriate for the project improvements.

**Environmental Consequences**

The project alternatives would not involve construction of housing in the local 100-year floodplain. The truck scale facility structures would be elevated above the floodplain. The project alternatives will not result in a significant encroachment on the floodplains. The project alternatives are not downstream of any dams or large bodies of water (as it is located approximately 15 miles north of Suisun Bay) and would not pose any risk of flooding hazards as a result of dam failure. Although levees line some of the creeks that cross under the highway, the risk of a levee failure significantly affecting people or structures would be low. The project area is located in an area of relatively flat topography that is not near any large bodies of water. The potential for a seiche, tsunami, or mudflow is low.

The LHS concluded that the project alternatives would not affect the hydraulic capacity or floodplain of American Canyon Creek and Jameson Creek, the existing culvert waterway crossings are intended to be extended in-kind, not replaced. Therefore, these creeks are not discussed further. Table 3.2.1-2 summarizes floodplain impacts by creek.

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<tr>
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<tr>
<td>Pennsylvania Avenue Creek</td>
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Coordination on the existing conditions and the potential project impacts on the existing waterways and floodplains of Suisun Creek and Raines Drain has included specific discussions with Caltrans District 4 Hydraulics office, the County of Solano, the Solano County Water District and the Solano Irrigation District.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hydrology and Floodplain

Hydraulic Capacity and Floodplain of Green Valley Creek
With the use of levees, the 100-year flow is currently contained within Green Valley Creek. Major reconstruction of this waterway crossing would occur under both alternatives. However, as discussed below, the reconstruction would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The five existing waterway bridges would be removed, including the numerous columns and pier walls in the active waterway.
- The new low-elevation bridges (four under Alternative B and three under Alternative C) would be longer than the existing bridges, and would clear-span the waterway above the 100-year water surface elevation.
- The four high-elevation bridges proposed in Alternative B would be constructed with no columns in the active waterway.
- The side slopes and bottom of the existing Green Valley Creek would be restored to a more natural condition than that of the existing waterway.
- There are no planned longitudinal encroachments to the Green Valley Creek floodplain.
- Currently, the 100-year flow is contained within Green Valley Creek and the proposed project would not change these conditions.
- The project will not increase the base floodplain elevation.

Under the No-Build Alternative, no changes would be made to Green Valley Creek or the bridges that cross it, and therefore there would be no change in the hydraulic capacity and floodplain of Green Valley Creek.

Hydraulic Capacity and Floodplain of Dan Wilson Creek
Reconstruction of the Dan Wilson Creek waterway crossing would occur under Alternative B, Alternative C, and Alternative B, Phase 1. However, as discussed below, the planned improvements would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The existing waterway bridge would be removed, including the numerous columns and pier walls in the active waterway.
- The new bridge would clear-span the waterway, be longer than the existing bridge, and be placed above the 100-year water surface elevation.
- The side slopes and bottom of the existing Dan Wilson Creek would be restored to a more natural condition than the existing waterway.
- There are no planned longitudinal encroachments to the Dan Wilson Creek floodplain.
- The project will not increase the base floodplain elevation.

There would be no changes to the Dan Wilson Creek Crossing under Alternative C, Phase 1 and under the No-Build Alternative and therefore there would be no potential to change the hydraulic capacity or floodplain.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hydrology and Floodplain

Hydraulic Capacity and Floodplain of Suisun Creek
The 50-year design flood and the 100-year base flood are both contained within Suisun Creek. Reconstruction of the Suisun Creek waterway crossing would occur under both alternatives. However, as discussed below, the planned improvements would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The existing highway bridge is three spans wide and 72 feet long (in the direction of traffic). The new Suisun Creek bridge would be significantly longer at 110 feet and would clear-span the creek.
- Additionally, both alternatives include an adjacent bridge that would carry the westbound truck scales on-ramp to I-80.
- The Suisun Creek side slopes and bottom would not be affected by the new Suisun Creek bridges, and there are no planned modifications to Suisun Creek.
- Soffit elevations for all bridges would be placed above the existing FEMA 100-year flow elevation.
- There are no planned longitudinal encroachments to the floodplain.
- The project will not increase the base floodplain elevation.

No changes to Suisun Creek or the creek crossing are proposed under the fundable first phase of either alternative or the No-Build Alternative, and therefore there would be no change in the hydraulic capacity at that location.

Hydraulic Capacity and Floodplain of Raines Drain
The location where Raines Drain crosses the highway is a low point in the highway’s vertical profile. Originally constructed for irrigation purposes, Raines Drain also serves as a storm drain. The waterway crossing consists of four culverts ranging in size from 18 inches to 66 inches in diameter. One of the 42-inch culverts is blocked at both the upstream and downstream ends per agreement between the Department and the Solano Irrigation District. At I-80, the lined ditch enters a 66-inch diameter reinforced concrete pipe from the north highway right-of-way, connecting to a 60-inch diameter reinforced concrete pipe that crosses under the freeway mainline. In addition to the main culvert at I-80, there is also a 42-inch culvert constructed in 1986 (more recently blocked to flow), and two additional 42-inch culverts installed in the 1960s. On the southern side of I-80, all the pipes transition back to a trapezoidal concrete-lined channel.

This section of the I-80 has been evaluated for a 50-year event consistent with correspondence from FHWA (see Appendix H). WRECO prepared a separate report for the Department, District 4, which includes detailed hydrologic and hydraulic calculations for Raines Drain, identifying the manner and frequency of highway overtopping under existing conditions (WRECO 2003). According to the LHS, water would encroach on the traveled way beginning at elevation 33.5 feet, and begin to overtop the highway at the low-point elevation of approximately 34.4 feet. According to the WRECO report, for the 50-year event depths of flow on the roadway were estimated to be a maximum of 1.5 feet in the westbound lanes and about 0.5 foot in the eastbound lanes. The capacity of the existing Raines Drain culverts is 355 cfs with surcharge.
elevation to the edge of existing pavement, and 470 cfs with surcharge elevation to the overtopping elevation; compared to the 50-year peak flow of 925 cfs. In other words, existing conditions can barely convey half of the 50-year peak flow of 925 cfs. This stated 50-year flood event for Raines Drain includes flood overflows from Suisun Creek in addition to the direct Raines Drain watershed. Even more flows (not identified here) could contribute from the upper Ledgewood Creek.

Under both alternatives, two features of the proposed project would result in impacts on the existing floodplain:

1. The centerline elevation of the reconstructed mainline roadway would be approximately three feet higher than the existing condition. If the freeway elevation were raised without increasing the capacity of the culverts or other mitigation, flood waters would rise to a higher elevation (up to three feet higher) upstream of the freeway before overtopping the roadway resulting in increased ponding elevation upstream. However, if additional culvert capacity were constructed without peak flow mitigation, more frequent and severe flooding might occur downstream because the reduction in peak flow attenuation from the existing upstream ponding.

2. The construction of the relocated westbound truck scales and associated on- and off-ramps will reduce the attenuation potential of the existing upstream condition by filling an area subject to shallow flooding, or ponding upstream of the freeway. Without the existing attenuation potential, peak runoff events may increase downstream of the freeway.

As part of the project, an upstream inlet and underground stable cavities (for stormwater storage) would be constructed beneath the new westbound truck scale facility. This would minimize changes in condition of floodplain of Suisun Creek and Raines Drain as a result of project operation. If possible, construction would occur during the dry season to minimize the effects to water quality and would be completed prior to operation of the proposed project. These structures would allow flooding up to the existing elevation of overtopping without increasing the flow passing under the freeway. Flows in excess of the overtopping event would be captured in a separate inlet structure upstream of the freeway. That inlet structure would mimic the manner and capacity of flows that overtop the existing freeway. These captured excess flows would be conveyed under the freeway and released on the downstream side of the freeway via a lateral structure to redistribute the flows across the existing floodplain. In addition, stable cavities would be created beneath the truck scale that would mitigate the reduction of floodplain storage from the placement of fill material in the floodplain.

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1 A separate Suisun Floodplain study is being conducted jointly by the Solano Transportation Authority and the Solano County Water Agency. Preliminary data from this study indicate that peak 50-year storm flows may be substantially greater than 925 cfs and may be closer to 6,450 cfs at the Raines Drain crossing of I-80. This separate study is a regional flood control study intended to identify flooding impacts, potential improvements, and benefits in the lower Suisun Creek, Ledgewood Creek, Dan Wilson, Raines Drain, and Alonzo Drain. The Raines Drain crossing of I-80 is one of several benefitted locations. The Location Hydraulic Study Form and Summary Floodplain Encroachment Report have been updated and resubmitted with this additional information.

2 If the Suisun Floodplain study currently underway confirms that the 50-year peak flood flows are substantially greater than 925 cfs (increased to 6,450 cfs), the stormwater conveyance improvements proposed as part of the project would require upsizing to provide additional storm conveyance under I-80 and avoid increasing the flood elevations on adjacent properties. The potentially upsized drainage facilities would be placed within the proposed project right-of-way.
Stable cavities are meant to be spaces, vaults or other below ground storage devices for storm runoff intended to mitigate for lost floodplain storage. The cavities will not impact the groundwater because they are intended to be placed at or above the existing ground elevation within the new fill for the westbound truck sales.

Additionally, over-excavation in open areas within the project limits would also create additional storage to offset the additional fill material, ultimately increasing the size of the floodplain and minimizing the effect of the proposed project on the floodplain.

Construction of upstream inlet structures, new highway cross culverts, an outlet structure, and stable cavities would ensure that this effect would not be adverse. Both alternatives would not increase the 50-year floodplain elevation.

No changes to Raines Drain are proposed under the fundable first phase of either alternative or the No-Build Alternative, and therefore, there would be no change in the hydraulic capacity at that location.

**Hydraulic Capacity and Floodplain of Alonzo Drain and Ledgewood Creek**

The LHS concluded that the project alternatives would not affect the Alonzo Drain or Ledgewood Creek floodplain for the following reasons:

- The improvements across SR 12E include minor widening.
- The multi-cell box culvert at Beck Avenue would be replaced with a significantly elevated clear span structure, improving the hydraulics at that crossing.
- The existing floodplain is completely contained in the existing Alonzo Drain and Ledgewood Creek RCBs under SR 12E.
- The existing RCB at Alonzo Drain would be lengthened 30 feet in both the upstream and downstream directions under Alternative B, Alternative B, Phase 1, and Alternative C. Under Alternative C, Phase 1, the RCB would be lengthened 30 feet in the downstream direction only.
- Between the SR 12E crossing and the Beck Avenue Crossing there would be a slight encroachment to the left channel bank with the construction of the Beck Avenue off ramp. This is a man-made reach of Alonzo Drain that is sized to allow the existing earth-side slope to be modified to a vertical embankment or retaining wall. This would be a minimal effect on the very wide trapezoidal channel.
- As with the removal of the RCB at Beck Avenue, the existing waterway would be returned to a more natural state.
- Improvements to the Ledgewood Creek crossing on SR 12E include minor widening on both the upstream and downstream ends for Alternative B, Alternative B, Phase 1, and Alternative C; and only downstream widening for Alternative C, Phase 1.
- The existing RCB on Ledgewood Creek would be lengthened 15 feet in both the upstream and downstream directions under Alternative B and 45 feet in both directions under Alternative C.
Over Ledgewood Creek, Alternative B has two additional bridges for collector roads, one immediately upstream and one immediately downstream of the widened mainline. The upstream bridge would be a three-span bridge 244 feet long, significantly longer than the existing 85-foot bridge. The downstream bridge would be two-span bridge 164 feet long, also significantly longer than the existing 85-foot bridge.

There are no planned modifications to Ledgewood Creek except for the RCB extension.

The project will not increase the base floodplain elevation to either Alonzo or Ledgewood creeks.

No changes to Alonzo Drain and Ledgewood Creek are proposed under the No-Build Alternative, and therefore, there would be no change in the hydraulic capacity and floodplain at that location.

**Hydraulic Capacity and Floodplain of Pennsylvania Avenue Creek**

The LHS concluded that the project alternatives would not affect the Pennsylvania Avenue Creek hydraulic capacity and floodplain under either Alternative B or Alternative C for the following reasons:

- The 100-year floodplain AE Zone is completely contained in the existing triple cell box culverts located in Pennsylvania Avenue just upstream of SR 12E. The 100-year elevation at the upstream side of SR 12 is 11 feet, and ten feet at downstream side. Though the FEMA maps indicate overtopping flooding of the culverts crossing SR-12, it is understood that the current condition of this crossing is that the existing triple box culvert is sufficient to convey the 100-year flood under the freeway.

- Immediately east of the Pennsylvania Avenue Creek crossing of SR-12 are ten small diameter culverts that drain a small isolated area across the freeway. These several culverts will be extended to match the highway improvements.

- For Alternative B, the cross culvert under SR 12E would be extended. A new culvert would be added under the proposed Meyer Way Extension.

- For Alternative C, the cross culvert under SR 12E would be extended upstream (with a possible gap within the loop ramp), connecting to the existing culvert in Pennsylvania Avenue, and extended downstream to clear the mainline widening. A new culvert would be added under the proposed connector street.

- There are no planned modifications to the natural portions of Pennsylvania Avenue Creek except for the new and extended culvert.

- There are no planned longitudinal encroachments to the floodplain.

- The project will not increase the base floodplain elevation.

No construction is proposed in this area under the fundable first phase of either alternative or under the No-Build Alternative and therefore, there would be no change in the hydraulic capacity at this location.
Avoidance, Minimization, and/or Mitigation Measures
The project alternatives have no potential to result in a significant encroachment on the floodplains. For the Raines Drain area, the two features of Alternative B and C would result in impacts on the existing floodplain, however, the proposed construction of an upstream inlet and underground stable cavities for stormwater storage beneath the new westbound truck scale facility would minimize changes in conditions of the floodplain.
Figure 3.2.1-1
100-Year Floodplains
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Figure 3.2.1-2
100-Year Floodplains
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Figure 3.2.1-3
100-Year Floodplains

See Figure 3.2.1-1 for Map Legend
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See Figure 3.2.1-1 for Map Legend

100-Year Floodplains
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Figure 3.2.1-5

100-Year Floodplains

See Figure 3.2.1-1 for Map Legend
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See Figure 3.2.1-1 for Map Legend

Figure 3.2.1-7

100-Year Floodplains
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Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Water Quality and Stormwater Runoff

3.2.2 Water Quality and Stormwater Runoff

Regulatory Setting

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

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal license or permit to conduct any activity, which 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. [Most frequently required in tandem with a Section 404 permit request. See below.]
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

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

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA’s Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable
alternative which would have less adverse effects. The Guidelines state that 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. Per 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 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 the Wetlands and Other Waters section.

**State Requirements: Porter-Cologne Water Quality Control Act**

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

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are 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 controls, the CWA requires establishing Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

**State Water Resources Control Board and Regional Water Quality Control Boards**

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

**National Pollution Discharge Elimination System (NPDES) Program**

**Municipal Separate Storm Sewer Systems**

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

The Department’s MS4 Permit, under revision at the time of this update, contains three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (see below);
2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and
3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs) and other measures.

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

Part of and appended to the SWMP is the Storm Water Data Report (SWDR) and its associated checklists. The SWDR documents the relevant storm water design decisions made regarding project compliance with the MS4 NPDES permit. The preliminary information in the SWDR prepared during the Project Initiation Document (PID) phase will be reviewed, updated, confirmed, and if required, revised in the SWDR prepared for the later phases of the project. The information contained in the SWDR may be used to make more informed decisions regarding the selection of BMPs and/or recommended avoidance, minimization, or mitigation measures to address water quality impacts.

**Construction General Permit**

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges...
associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one 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 storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 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 storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department’s Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

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 body 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 USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Caltrans Statewide NPDES Permit requires the Department to submit a Notice of Intent (NOI) to the RWQCB to obtain coverage under the Construction General Permit. Upon project completion, a Notice of Termination (NOT) is required to suspend coverage. This process will continue to apply to Department projects until a new Caltrans Statewide NPDES Permit is adopted by the SWRCB. An NOI or equivalent form will be submitted to the RWQCB at least 30 days prior to construction if the associated DSA is 1 acre or more. In accordance with the Department’s Standard Specifications, a Water Pollution Control Program (WPCP) is used for projects with DSA less than 1 acre. A Storm Water Pollution Prevention Plan (SWPPP) is used for projects with DSA more than 1 acre.
Affected Environment

The following discussion is based on information taken from the I-80/I-680/SR-12 Interchange Project, Water Quality Report prepared for the proposed project in 2010.

The project area is within the watersheds of Jameson Creek, Green Valley Creek, Dan Wilson Creek, Suisun Creek, American Canyon Creek, Pennsylvania Avenue Creek, Raines Drain, Alonzo Drain, and Ledgewood Creek. The general topography of the land is gradually sloping to the south towards Suisun Bay, 15 miles downstream. These creeks and drainages cross the project area and discharge to the Suisun Marsh wetlands, which are between 1 and 2 miles downstream. The proposed project is located in the Suisun-Fairfield Valley groundwater basin (basin 2–3). The depth to groundwater ranges from three to 20 feet as reported in the as-built Log of Test Borings from 1950, 1960, and 1970.

The Water Quality Control Plan for the San Francisco Bay Basin (basin plan) establishes beneficial uses for waterways and water bodies within the region. Existing beneficial uses for Suisun Creek include freshwater supply, areas of special biological significance, cold freshwater habitat, fish migration, water contact recreation (potential), noncontact water recreation (potential), fish spawning, warm freshwater habitat, and wildlife habitat (San Francisco Bay Regional Water Quality Control Board 2007). Ledgewood Creek is the only other water body with defined beneficial uses in the basin plan. The beneficial uses for Ledgewood Creek are the same as Suisun Creek, with the exception that both contact and noncontact water recreation beneficial uses are existing as opposed to potential (San Francisco Bay Regional Water Quality Control Board 2007).

Section 303(d) of the 1972 CWA states that territories and authorized tribes are required to develop a list of water quality–limited segments that do not meet water quality standards, even after point sources of pollution have the minimum required levels of pollution control technology. The water bodies to which the proposed project discharges are not listed on the EPA’s 303(d) List of Water Quality Limited Segments.

Of the named water bodies within the project vicinity, the San Francisco Bay RWQCB lists only the Suisun Marsh wetlands as impaired. Specifically, metal concentrations such as arsenic, cadmium, chromium, copper, lead, nickel, and zinc from urban runoff and storm sewers exceed the targeted design total maximum daily loads (TMDLs). However, the proposed project will not directly drain into the Suisun Marsh and these constituents have low TMDL priority. Farther downstream, the Suisun Bay and Carquinez Strait also contain several CWA Section 303(d)–listed pollutants (organic compounds, polychlorinated biphenyls [PCBs], mercury, selenium, general particulates, dissolved metals, nutrients, and salinity). A 2008 Draft List for TMDLs was adopted by the San Francisco Bay RWCQB in February 2009. When finalized these TMDLs will be required control targets for the project. As construction phases occur, the current TMDL requirements should be identified and met, in addition to consultation with the San Francisco Bay RWCQB.

Based on the highway stormwater runoff data collected by the Department’s Storm Water Research and Monitoring Program, pollutants that are expected to be found in runoff from the proposed action include conventional constituents (biochemical oxygen demand [BOD], calcium carbonate [CaCO₃], chemical oxygen demand [COD], total dissolved solids [TDS], total organic
carbon [TOC], total suspended solids [TSS] and total volatile suspended solids [TVSS], etc.) hydrocarbons, metals, microbial agents, nutrients, volatile organics, semi-volatile organics, pesticides, and herbicides. Pollutants are usually deposited on the roadway as a result of fuel combustion processes, lubrication system losses, tire and brake wear, transportation load losses, paint from infrastructure, and atmospheric fallout. Constituent testing for another project in the area (the I-80 HOV widening project) revealed ADL soils are present within the project’s limits. Sources of specific pollutants are outlined in Table 3.2.2-1 below.

### Table 3.2.2-1. Known Roadway Pollutants

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Primary Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulates</td>
<td>Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance</td>
</tr>
<tr>
<td>Nitrogen, Phosphorus</td>
<td>Atmosphere, roadside fertilizer application, sediments</td>
</tr>
<tr>
<td>Lead</td>
<td>Auto exhaust, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout</td>
</tr>
<tr>
<td>Zinc</td>
<td>Tire wear, motor oil, grease</td>
</tr>
<tr>
<td>Iron</td>
<td>Auto body rust, steel highway structures, moving engine parts</td>
</tr>
<tr>
<td>Copper</td>
<td>Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicide and insecticide application</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Tire wear, insecticide application</td>
</tr>
<tr>
<td>Chromium</td>
<td>Metal plating, moving engine parts, brake lining wear</td>
</tr>
<tr>
<td>Nickel</td>
<td>Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving</td>
</tr>
<tr>
<td>Manganese</td>
<td>Moving engine parts</td>
</tr>
<tr>
<td>Bromide</td>
<td>Exhaust</td>
</tr>
<tr>
<td>Cyanide</td>
<td>Anticake compound used to keep deicing salt granular</td>
</tr>
<tr>
<td>Sodium, Calcium</td>
<td>Deicing salts, grease</td>
</tr>
<tr>
<td>Chloride</td>
<td>Deicing salts</td>
</tr>
<tr>
<td>Sulphate</td>
<td>Roadway bed, fuel, deicing salts</td>
</tr>
<tr>
<td>Petroleum</td>
<td>Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt leachate</td>
</tr>
<tr>
<td>PCBs, Pesticides</td>
<td>Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires</td>
</tr>
<tr>
<td>Pathogenic bacteria</td>
<td>Soil litter, bird droppings, trucks hauling livestock/stockyard waste</td>
</tr>
<tr>
<td>Rubber</td>
<td>Tire wear</td>
</tr>
<tr>
<td>Asbestos(^a)</td>
<td>Clutch and brake lining wear</td>
</tr>
</tbody>
</table>

Source: Federal Highway Administration 1996.

\(^a\) No mineral asbestos has been identified in runoff; however some breakdown products of asbestos have been measured.

Soils information for the project area has been obtained from the related project geotechnical reports and the U.S. Department of Agriculture, National Resource Conservation Service. The soils within the project limits are as described in Table 3.2.2-2 below.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Water Quality and Stormwater Runoff

Table 3.2.2-2. Soils in the Project Area

<table>
<thead>
<tr>
<th>Map Unit Name</th>
<th>Map Unit Symbol</th>
<th>Hydrological Soil Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sycamore silty clay loam</td>
<td>(Sr)</td>
<td>D</td>
</tr>
<tr>
<td>Yolo Silty clay loam</td>
<td>(Ys)</td>
<td>D</td>
</tr>
<tr>
<td>Sycamore silty clay loam</td>
<td>(Sr)</td>
<td>D</td>
</tr>
<tr>
<td>Sycamore silty clay loam drained</td>
<td>(Ss)</td>
<td>D</td>
</tr>
<tr>
<td>Sycamore silty clay loam</td>
<td>(Sr)</td>
<td>D</td>
</tr>
<tr>
<td>Antioch-San Ysidro Complex, 0–2 percent slopes</td>
<td>(AoA)</td>
<td>D</td>
</tr>
<tr>
<td>Brentwood clay loam, 0–2 percent slopes</td>
<td>(BrA)</td>
<td>D</td>
</tr>
<tr>
<td>Antioch-San Ysidro Complex, thick surface, 0–2 percent slopes</td>
<td>(AsA)</td>
<td>D</td>
</tr>
<tr>
<td>Pescadero clay</td>
<td>(Pe)</td>
<td>D</td>
</tr>
<tr>
<td>Clear Lake clay, 0–2 percent slopes</td>
<td>(CeA)</td>
<td>D</td>
</tr>
</tbody>
</table>

Hydrological Group D soils have the highest runoff potential, very low infiltration rates when thoroughly wetted, and may be subject to erosion by water.

Environmental Consequences

Increased Runoff and Associated Operational Water Quality Issues

Implementation of both alternatives would involve significant mainline and interchange improvements. The general drainage design is to collect and convey pavement runoff while not conveying runoff within the travelled way. Once collected from the pavement or graded areas, runoff will be conveyed in non-erosive culverts, ditches, or swales to an existing waterway that currently receives highway runoff. The project alternatives would increase the amount of stormwater runoff within the state right-of-way by increasing the total impervious surface. The approximate acreage of impervious surface for each of the project alternatives is summarized in Table 3.2.2-3 below.

Table 3.2.2-3. Acreage of Impervious Surfaces

<table>
<thead>
<tr>
<th>Alternative</th>
<th>New Impervious</th>
<th>Reworked</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>128.2 acres</td>
<td>251.7 acres</td>
</tr>
<tr>
<td>C</td>
<td>123.2 acres</td>
<td>219.9 acres</td>
</tr>
<tr>
<td>B-1</td>
<td>27.8 acres</td>
<td>71.4 acres</td>
</tr>
<tr>
<td>C-1</td>
<td>51.9 acres</td>
<td>90.1 acres</td>
</tr>
</tbody>
</table>

Increased runoff and operation water quality issues are integral to projects with new or reconstructed impervious surfaces. Increased impervious surfaces result in increased stormwater runoff which could lead to additional pollutants entering waterways. The project alternatives will incorporate approved permanent stormwater treatment BMPs to minimize potential water quality impacts. The exact amount of new or reconstructed pavement tributary to each waterway for each project alternative has not been determined at this phase of the project.

Effects on the receiving water bodies would be the result of capacity changes to the hydraulic features of the drainage system. To manage the stormwater runoff the on-site drainage facilities would be reconfigured within the proposed right-of-way as part of the project design. Additionally, stable cavities discussed in Section 3.2.1 would reduce the potential of flooding.
and, therefore, the potential for resulting water quality issues. Therefore, the associated watersheds would be only minimally affected from the additional stormwater runoff from the increase in impervious surface.

Stable cavities are meant to be spaces, vaults, or other below ground storage devices, for storm runoff intended to mitigate for lost floodplain storage. The cavities will not impact the groundwater because they are intended to be placed at or above the existing ground elevation within the new fill for the westbound truck sales.

Both project alternatives have very similar water quality issues. The magnitude of the issues is very similar with both alternatives covering an area of approximately 350 acres of new or reworked pavement plus over 100 acres of graded surfaces. The footprint for both of these alternatives is substantially the same with no conditions or issues unique to either alternative.

Likewise, under the fundable first phase of either alternative, there would also be increased runoff and associated water quality issues. However the magnitude of runoff impacts for the fundable first phases of both alternatives are significantly reduced due to the smaller project footprints (100 acres of total new or reworked pavement for Alternative B, Phase 1, and 140 acres of total new or reworked pavement for Alternative C, Phase 1) compared to the full build alternatives.

All of the waterways in the project area are included in three hydrologic sub-areas 207.21, 207.22 and 207.23 as defined by the State Water Board. None of these hydrologic sub-areas currently have defined TMDL listings. (A draft TMDL listing dated 2008, not yet approved, lists Suisun Creek with dissolved oxygen and temperature, and Ledgewood Creek with diazinon.) At the downstream end of these three watersheds is the Suisun Marsh Wetlands for which there are Targeted Design Constituents of metals and nutrients. The proposed permanent treatment BMPs such as bioswales, biostrips, and infiltration devices will be effective for metals and nutrient uptake, minimizing the project impacts of these constituents (and others) to the receiving waters and the Suisun Marsh Wetlands. Treatment BMPs are included in all alternative layouts to manage all possible pavement runoff.

Discussions of other water quality issues are included in Section 3.2.1 (Hydrology and Floodplain), Section 3.2.5 (Hazardous Waste/Material), Section 3.3.2 (Wetlands and other Waters), the discussions of fish species in Section 3.3.4 (Animal Species) and Section 3.3.5 (Threatened and Endangered Species) and other sections within this document. Refer to Chapter 4, CEQA Evaluation, for discussion of non-jurisdictional perennial marsh, and non-jurisdictional seasonal wetland.

There would be no increase in pavement under the No-Build Alternative and therefore no potential to increase runoff and associated water quality issues.

According to the Department’s NPDES permit and the Construction General Permit, best management practices (BMPs) will be incorporated into the proposed project to reduce the discharge of pollutants during construction and operation to the maximum extent practicable. These BMPs fall into three categories: temporary construction site BMPs, design pollution
prevention BMPs, and permanent treatment BMPs. Temporary construction site BMPs are discussed below under construction impacts.

**Permanent Design Pollution Prevention BMPs**

**Slope/Surface Protection Systems**

To minimize erosion from any of the new slopes, mitigating design features have been considered, including minimizing cut-and-fill slopes, shaping slopes to reduce concentrated flow, and collecting concentrated flows in stabilized channels. All graded slopes, either cut or fill, will be constructed with proper erosion control and permanent plantings. Except at bridges, no retaining walls are anticipated.

Certain areas of the project alternatives would be hardscaped as required for safety (ramp gores), maintenance (pullout areas), and slope stability (under bridges).

Construction of the project alternatives would remove moderate amounts of vegetation within the project right-of-way. In many locations, the project alternatives would replace existing unpaved areas with pavement or impervious structures. At all areas where new slopes are constructed, proper vegetation will be planted, monitored, and maintained to establish permanent cover. Approval of the erosion control plan by the Department’s Division of Design, Landscape Architecture will occur during final design.

To minimize erosion potential, slopes will be rounded and or shaped to reduce concentrated flows, concentrated flows will be collected in stabilized drains or channels, slopes will be 1:4 or flatter and those greater than 1:2 will have an erosion control plan approved by the district landscape architect according to the project Geotechnical Design Report.

Given the characteristics of the in-situ soils, there are some slope stability concerns on this site. Slope and surface protection systems will be incorporated per Checklist DPP-1, Part 3. To minimize erosion from any of the slopes the methods being considered include:

- Minimizing cut and fill slopes,
- Shaping slopes to reduce concentrated flow, and
- Collecting concentrated flows in stabilized channels.

**Concentrated Flow Conveyance Systems**

Concentrated flow conveyance systems are used to collect, transport, convey, and/or dissipate stormwater flows. A variety of concentrated flow conveyance devices exist along the length of the proposed project. Along most of the existing reach of the highway, runoff sheet-flows off of the pavement, crossing several feet of vegetated strips before entering a swale oriented longitudinally to the right-of-way. The existing concentrated flow conveyance devices include lined and unlined ditches and swales, drainage inlets and culverts, asphalt concrete (AC) dikes and overside drains, flared end sections, rock slope protection (RSP) pads, flow energy dissipation devices, and other approved drainage design devices. For the proposed project, the planned drainage pattern will replicate as much as possible the existing runoff pattern. The
drainage improvements will direct pavement runoff to sheet flow to the outside edge of the new pavement where improved drainage devices will collect and convey the project runoff.

Preservation of Existing Vegetation
One goal of the project alternatives and construction activities is to preserve areas of existing vegetation wherever possible. Preserving existing vegetation is essential in the protection of water quality due to the elevated chances of cleared areas increasing erosion and sedimentation to waterways. At all areas where existing vegetation (on land to remain) is affected, or where new slopes are constructed, proper vegetation will be placed, monitored, and maintained to establish permanent cover. For those areas on the outside of the highway, pavement will be minimized in favor of retaining existing vegetative cover. In many locations the proposed project will replace existing unpaved areas with impervious surface. Approval of the erosion control plan by a landscape architecture and maintenance plan will occur in final design.

Bridge construction will take place at all seven water crossings that are ESAs. ESAs exist at other project locations as well and are potentially affected by the proposed project.

Permanent Treatment BMPs
Because the project alternatives are considered a major reconstruction project, they are not exempt from incorporating treatment BMPs. Treatment BMPs are permanent devices and facilities that will store and treat increased stormwater runoff expected with operation of the project alternatives in an effort to preserve water quality and reduce the potential for flooding. The Department’s approved treatment BMPs are biofiltration swales, infiltration basins, detention basins, traction sand traps, dry weather flow diversions, media filters, gross solids removal devices (GSRDs), multi-chamber treatment trains, and wet basins. Those most feasible in the Bay Area are biofiltration swales, infiltration basins, detention basins, media filters, multi-chamber treatment trains, and wet basins.

Because of potential high groundwater within the project area, infiltration and detention basins would not be feasible. As such, biofiltration swales and biostrips have been investigated as possible alternatives. Both treatment BMPs treat the same types of constituents: TSS, particulate metals, and litter. Both biofiltration swales and strips are viable cost-effective treatment BMPs.

Because of the limited permeability of the soils and potentially high groundwater, infiltration devices and other filters allowing percolation of stormwater back into the ground are not a consideration. However, engineered biofiltration strips and swales are proposed. Biofiltration strips and swales are effective at trapping litter, TSS, and particulate metals. Where possible, it is recommended that the existing vegetation be evaluated for use as effective biostrip cover, or the proposed project should establish the proper vegetative cover and/or swale dimensions at each treatment location.

Locations within the project limits (primarily in the area between the toe of fill slopes and the right-of-way) are available to be used for permanent treatment BMPs. Plans developed at a later stage in design will be more specific in their location, size, vegetative characteristics, and performance measures.
Biofiltration Swales/Strips
Due to the flat topography of the project area, biofiltration would be the primary treatment option for stormwater runoff. Preliminary plans provided in the SWDR identify all potential BMP locations. Exact locations will be determined during final project design. Biostrips would be designed to provide the maximum water quality treatment time of stormwater. The tributary area to the biostrips is the length of pavement from the highway median to the outside edge of pavement. Bioswales would be designed according to the Department’s guidance documents, to ensure maximum treatment of water. Additional right-of-way for the project improvements and treatment BMPs has been identified and is included on the project layout sheets included in the SWDR.

Dry Weather Diversion
Dry weather flow diversion BMPs were dropped from further considered for the proposed project because there is no dry weather flow.

Infiltration Devices
Infiltration device BMPs are not feasible for the project alternatives for the following reasons:

• Through much of the project area, the groundwater is too high.
• Most of the soils are Hydraulic Soil Group C or D, limiting the usefulness of infiltration.
• A gravity outlet cannot be created because of the flat terrain.
• There is no room within the right-of-way along most of the project area.
• Areas beyond the right-of-way are mostly prime farmland under cultivation.

Detention Devices
Detention basin BMPs are not feasible for the project alternatives for the following three reasons:

• There is not enough hydraulic head available for proper design.
• There are several locations where the groundwater is high.
• Along most of the project area, there are significant constraints on acquiring new right-of-way, with areas beyond the existing right-of-way consisting mostly of prime farmland under cultivation.

Detention as a treatment device may have negative hydraulic impacts because the project alternatives are located far downstream in the watershed, and detaining the peak runoff from the tributary shed may increase the peak runoff from the entire shed. If hydromodification control is a requirement of the approved project alternative, then detention facilities can be designed for that mitigation, but they would not specifically function as treatment for the reasons stated.

Gross Solids Removal Devices
Litter is not on the 303(d) list or identified as a TMDL for the water bodies near the project area; therefore, GSRDs are not incorporated.
Traction Sand Traps
Traction sand trap BMPs are not appropriate for the project alternatives because traction sand is not applied within the project limits.

Media Filters
Media filter BMPs are not feasible for the project alternatives for the primary reason that the seasonally high groundwater table is likely to be too close to the invert of the filter. Depending on the specific location within the project limits, there are two other reasons that media filters are not an appropriate consideration: 1) there is not enough hydraulic head available for proper design, and 2) along most of the project area, there is no room within the right-of-way, and areas beyond the right-of-way are completely developed.

Multi-Chambered Treatment Trains
Multi-chambered treatment train BMPs are used to treat stormwater in critical source areas. Critical source areas are more common in urbanized environments and are established to facilitate the treatment stormwater runoff in particularly vulnerable or polluted areas. The project alternatives are not considered to be located in a critical source area.

Wet Basins
Wet basin BMPs are not feasible for the project alternatives for the following reasons:

- There is not enough hydraulic head available for proper design.
- There are several locations where the groundwater is high along much of the project area.
- There is limited ability to purchase additional right-of-way, and areas beyond the right-of-way are largely developed.
- Along most of the project area, there is no permanent source of water available to maintain a permanent wet pool.

Maintenance BMPs (Drain Inlet Stenciling)
Nearly all the improvements under both alternatives are located within the highway right-of-way. However, no drain inlet stenciling is necessary for these inlets. At locations where ramp termini meet local streets where pedestrian access is possible, inlet stenciling will be placed on inlets. This stenciling will inform the public that no dumping is allowed and will help protect water quality.

Hydromodification Control
All state or local transportation projects and some non-transportation projects must incorporate hydromodification measures to ensure that hydraulics and flooding are not affected by the new construction.

Potential Water Quality, Erosion and Sediment Control Issues during Construction
Disturbed soil could cause potential erosion and sediment control issues during the construction of all build alternatives. During the storm season, disturbed soil is exposed and can erode into rills and transport sediment to waterways.
Construction of the project alternatives would involve the use of construction equipment and associated fuels, solvents, lubricants, and other pollutants. These substances may be released into the environment during construction and could result in adverse effects to water quality.

Proper erosion and sediment control measures would be effective because of the relatively flat terrain and low grading heights. Preparing and implementing a SWPPP and implementing best management practices would reduce the severity of this effect.

Under the fundable first phases, there would also be potential water quality, erosion, and sediment control issues, however, to a lesser extent because the project footprints are not as large.

The following construction site BMPs will be in place during construction.

**Construction Site BMPs**

Construction site BMPs would be applied during construction activities to reduce the pollutants in the stormwater discharges throughout construction. Temporary construction BMPs included in the Department’s *Storm Water Quality Handbook* will be included in the SWPPP. Such BMPs may include the following:

- Hydraulic mulch.
- Hydroseeding.
- Soil binders.
- Silt fence.
- Sediment traps.
- Sand bags.
- Fiber rolls.
- Straw bale barrier.

One critical construction activity, dewatering, may be necessary for the proposed project because of the high groundwater levels. Early discussion will be initiated regarding the handling and disposal of this water during the design phase. A project-specific Low Threat Discharge and Dewatering NPDES permit that would contain Waste Discharge Requirements to ensure that the groundwater meets or exceeds water quality standards prior to discharge may be required from the RWQCB if substantial dewatering is to be done.

It is anticipated that dewatering will need to occur at all bridge locations involved in the chosen project alternative. A Notice of Intent shall be submitted and a NPDES Low Threat Discharge and Dewatering Permit obtained from the San Francisco Bay RWQCB prior to any dewatering.

At this phase of the project development process, no specific coordination with the Department’s Division of Construction has occurred for the stormwater management issues.
Potential to Require Dewatering during Construction

According to the SWDR for the project, groundwater levels in the project area range from three feet to 18 feet below ground surface. As such, groundwater may be encountered during structure excavations. Proper handling, treatment, and discharge of groundwater would be performed as necessary. It is anticipated that dewatering of groundwater would need to be done at all bridge locations involved in the chosen project alternative. Groundwater in the general area is used for local domestic and agricultural use. Quality is generally good with typically minimal treatment.

There would be no construction under the No-Build Alternative and therefore no potential to require dewatering.

Conclusion

The project alternatives would increase the amount of stormwater runoff within the state right-of-way by increasing the total impervious surface. As a result, the increased stormwater runoff could lead to additional pollutants entering waterways. The project alternatives will incorporate approved stormwater treatment BMPs to minimize potential water quality impacts by reducing discharges into waterways and/or filtering out pollutants prior to discharging. These BMPs fall into three categories: design pollution prevention BMPs, permanent treatment BMPs, and temporary site BMPs during construction. Avoidance, Minimization, and/or Mitigation Measures

With implementation of BMPs no avoidance, minimization or mitigation measures would be necessary.
3.2.3 Geology/Soils/Seismic/Topography

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 the California Environmental Quality Act.

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. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE) from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

State Standards

Alquist-Priolo Earthquake Fault Zoning Act
California’s Alquist-Priolo Act (PRC 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as active, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are sufficiently active and well-defined. A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for the purposes of the act as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

Seismic Hazards Mapping Act
Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.
Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in Seismic Hazard Zones until appropriate site-specific geologic or geotechnical investigations have been carried out, and measures to reduce potential damage have been incorporated into the development plans.

**California Building Standards Code**

The State of California’s minimum standards for structural design and construction are given in the California Building Standards Code (CBSC) (24 CCR). The CBSC is based on the Uniform Building Code (UBC) (International Code Council 1997), which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC requires that “classification of the soil at each building site will be determined when required by the building official” and that “the classification will be based on observation and any necessary test of the materials disclosed by borings or excavations.” In addition, the CBSC states that “the soil classification and design-bearing capacity will be shown on the (building) plans, unless the foundation conforms to specified requirements.” The CBSC provides standards for various aspects of construction, including (i.e., not limited to) excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. New structures constructed as part of the project would be required to comply with all applicable provisions of the CBSC.

**California Department of Transportation Standards**

In addition to the CBSC, the Department’s highway and bridge facilities are subject to numerous standards, including *Caltrans Guidelines for Structures Foundations Report, Version 2* (California Department of Transportation 2006a); *Caltrans Seismic Design Criteria* (California Department of Transportation 2006b); *Caltrans Highway Design Manual (Topic 829)* (California Department of Transportation 2008); *Caltrans Bridge Design Specifications (Section 8)* (California Department of Transportation 2004); and *Caltrans Standard Specifications* (California Department of Transportation 2006c). These standards were developed to ensure that all Department facilities are constructed and maintained to the highest safety standards.

**Landslide Hazard Identification Program**

The Landslide Hazard Identification Program requires the State Geologist to prepare maps of landslide hazards within urbanizing areas. According to Public Resources Code Section 2687(a), public agencies are encouraged to use these maps for land use planning and for decisions regarding building, grading, and development permits.

**Local Standards**

**Geotechnical Investigations**

Local jurisdictions typically regulate construction activities through a multistage permitting process that may require the preparation of a site-specific geotechnical investigation. The purpose of a site-specific geotechnical investigation is to provide a geologic basis for the development of appropriate construction design. Geotechnical investigations typically assess bedrock and Quaternary geology, geologic structure, soils, and the previous history of excavation and fill placement.
Regulation HS.I-22 of the Public Health and Safety Element of the Solano County General Plan (Solano County 2008) requires geotechnical evaluations and recommendations before new development occurs in areas with geologic, soils, or seismic hazards (see the section titled “Solano County General Plan”).

**Solano County General Plan**

Goals, policies, and implementation programs contained in the Public Health and Safety Element of the Solano County General Plan (Solano County 2008) that are applicable to the proposed project are as follows:

**HS.G-1:** Minimize the potential for loss of life and property resulting from natural or human-caused hazards.

**SEISMIC SAFETY AND LAND STABILITY**

**Policies**

**HS.P-12:** Require new development proposals in moderate or high seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.

**HS.P-13:** Review and limit the location and intensity of development and placement of infrastructure in identified earthquake fault zones.

**HS.P-14:** Identify and minimize potential hazards to life and property caused by fault displacement and its impact on facilities that attract large numbers of people, are open to the general public, or provide essential community services and that are located within identified earthquake fault zones.

**HS.P-15:** Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.

**HS.P-16:** Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.

**HS.P-17:** Restrict the crossing of ground failure areas by new public and private transmission facilities, including power and water distribution lines, sewer lines, and gas and oil transmission lines.

**HS.P-18:** Make information about soils with a high shrink-swell potential readily available. Require proper foundation designs in these areas.

**HS.P-19:** Minimize development in areas with high landslide susceptibility.
Implementation Programs

**Regulations**

**HS.I-19:** Adopt and enforce the most current versions of the International Building Codes, as modified by the California Building Standards Commission.

**HS.I-21:** Require geotechnical investigation and recommendations for buildings meant for public occupancy within geologic hazard areas. A state certified Engineering Geologist shall produce a report examining development issues that considers:

- soil, slope, or other geologic hazard conditions found on site;
- potential off-site development impacts, such as increased runoff and/or slope instability; and
- requirements of any regulations concerning the hazard area.

**HS.I-22:** Require geotechnical evaluation and recommendations before new development in moderate or higher-hazard areas. Such geotechnical evaluation shall analyze the potential hazards from:

- landslides
- liquefaction
- expansive soils
- steep slopes
- erosion
- subsidence
- Alquist-Priolo Earthquake Fault Zones or other identified fault zones
- tsunamis
- seiches

Require new development to incorporate project features that avoid or minimize the identified hazards. Costs related to providing or confirming required geotechnical reports will be borne by the applicant.

**Affected Environment**

The Assessment of Fault Rupture and Analysis of Displacement Hazard, Solano Transportation Authority Interchange Project, Cordelia, California (I-80/I-680/SR 12 Interchange) (Fault Rupture Assessment) and the Environmental Geotechnical Memorandum, I-80/I-680/SR 12 Interchange Project, Solano County, California, 04-Sol-12, 680, 80 PM Var. (Environmental Geotechnical Memorandum) were prepared for the project alternatives in 2009. Addenda to the Environmental Geotechnical Memorandum were prepared in July and August of 2010. All suggested and applicable measures have been incorporated into the section below. However, as mentioned in both of these studies, additional site-specific study will be required during latter phases of project development. These future studies are also mentioned in the section below.
The project area is located in the Coast Ranges geomorphic province (California Geological Survey 2002). The analysis presented herein focuses on the Quaternary sediments and geologic hazards pertaining to the project area, except for the ground shaking analysis. This analysis requires a broader view of the region due to the potential for other primary impacts should fault rupture or displacement occur in outlying areas.

**Geology and Topography of the Project Area**

**Surface Geology**

Because of the geographical extent of the project alternatives, the project area is divided into three segments: western, central, and eastern. The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/Suisun Valley Road interchange. The central segment begins at the I-80/Suisun Valley Road interchange and ends at the SR 12E/Chadbourne Road interchange. The eastern segment begins at the SR 12E/Chadbourne Road interchange and ends at the Fairfield Overhead where SR 12E crosses over the UPRR tracks west of Suisun City.

The Environmental Geotechnical Memorandum indicates that the project area is underlain by alluvial and bedrock units. Bedrock consists of sedimentary rock formations, metamorphic rocks, and volcanic rock units that extend across Solano County from the marshlands on the east to the foothills on the west. Geologic units and structures in the vicinity of the project area have been mapped by several geologists, including Wagner and Portugno (1982), Manson (1998), Bezore et al. (1988), and Graymer et al. (2002).

Based on the published geologic maps, the central and eastern portions of the project area are underlain by late Pleistocene to Holocene age alluvial fan deposits (Qf) and Holocene fan deposits (Qhf), which are the most extensive Quaternary age units in the project area. The alluvial fan deposits consist of sediments deposited by streams that originate from mountain canyons and flow onto alluvial valley floors or alluvial plains in the form of debris flows, hyperconcentrated mudflows, or stream flows. The particle size of these deposits typically decreases downslope from the fan apex. In some places, Holocene fan deposits (Qhf) may be only a thin veneer over late Pleistocene to Holocene fan deposits (Qf). Holocene-age natural levee deposits (Qhl) were formed by streams that overtopped their banks and deposited sediment adjacent to their channels.

The southwestern (western segment) portion of the project area is located on hillside terrain underlain by bedrock units that consist primarily of sedimentary and volcanic formations that have been folded and faulted as well as having been influenced by local landslides. The Eocene-age Markley Formation (Tmk) consists of micaceous marine sandstones. The overlying Pleistocene-age Sonoma volcanics contain extrusive basalt and ryholite flows, agglomerates and tuffs, ash-flow tuffs, and andesitic-flow breccias and agglomerates. Potassium/argon radiometric dating of the Sonoma volcanics exposed locally near St. Helena indicates an age of 2.9 million years.

Figure 3.2.3-1 depicts lithologic descriptions, as shown in the Environmental Geotechnical Memorandum for the project alternatives. The main geologic units, as described by Bezore et al. (1998), mapped within the project area include:

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1 Relevant portions of these published maps are shown on Plates 4, 5, and 6 of the Environmental Geotechnical Memorandum.
• Qhf—Fan deposits (Holocene): Moderately sorted to poorly sorted and moderately bedded to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains.

• Qhl—Natural levee deposits (Holocene): Moderately sorted to well-sorted sand with some silt and clay deposited by streams that overtop their banks during flooding.

• Qf—Fan deposits (late Pleistocene to Holocene): Poorly sorted, moderately bedded to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf.

• Qls—Landslide deposits (Holocene and Pleistocene): Chaotic deposits of sand, silt, clay, angular boulders, and blocks of bedrock up to hundreds of feet long deposited by gravity-driven skidding and flow.

• Tsv—Sonoma volcanics, undivided (Pleistocene): Basalt to rhyolite flows, agglomerates, and tuffs.

• Tst—Ash-flow tuff (Pliocene): Pumicitic, locally welded, with agglomeritic tuff.

• Tsa—Andesites (Pliocene): Andesitic flows, breccias, and agglomerates.

• Tss—Sandstone and volcanic gravel (Pliocene): Poorly consolidated, tuffaceous sandstone with lenses of volcanic conglomerate.

• Tmk—Markley formation (Eocene): Gray to yellow-brown, micaceous marine arkosic sandstone. Massive to well-bedded; contains abundant muscovite.


Subsurface Geology
According to published geologic maps and as reported in the project’s Environmental Geotechnical Memorandum, the geologic units beneath specific portions of the project area are those shown in Table 3.2.3-1.

Table 3.2.3-1. Subsurface Geologic Units for the Project Areaa

<table>
<thead>
<tr>
<th>Approximate Location and Segment</th>
<th>Geology</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-80/SR 12W interchange and its vicinity (eastern and central segments)</td>
<td>Fan deposits (Qf) (late Pleistocene to Holocene); alluvium, undivided (Qa) (late Pleistocene to Holocene); artificial fill (af); Markley formation (Tmk) (Eocene); andesites (Tsa) (Pliocene); Sonoma volcanics, undivided (Tsv) (Pliocene)</td>
</tr>
<tr>
<td>Future I-680/Red Top Road interchange and its vicinity (western segment)</td>
<td>Fan deposits (Qf) (late Pleistocene to Holocene); fan deposits (Qhf) (Holocene); some modern stream channel deposits (Qhc) (Holocene)</td>
</tr>
<tr>
<td>Green Valley Road and its vicinity (western segment)</td>
<td>Fan deposits (Qf) (late Pleistocene to Holocene); fan deposits (Qhf) (Holocene); ash-flow tuff (Tst) (Pliocene); some modern stream channel deposits (Qhc) (Holocene)</td>
</tr>
<tr>
<td>Suisun Valley Road and its vicinity (western and central segments)</td>
<td>Fan deposits (Qhf) (Holocene); ash-flow tuff (Tst) (Pliocene)</td>
</tr>
<tr>
<td>I-80/SR 12E interchange and SR 12E (eastern segment)</td>
<td>Mainly alluvial fan deposits (Qhf) (Holocene); natural levee deposits (Qhl) (Holocene)</td>
</tr>
</tbody>
</table>

a Adapted from the first table shown on page 4 of the project’s Environmental Geotechnical Memorandum.
For more information on subsurface geology and structure, including a detailed explanation of bedding planes, folds, and faults, refer to the Environmental Geotechnical Memorandum prepared for the proposed project.

**Topography**
Review of the 1980 United States Geologic Survey (USGS) map for the Fairfield South and Cordelia, California quadrangles indicates that the project area is located at approximate elevations between more than ten and more than 250 feet above mean sea level. The project area generally slopes to the east, toward wetlands and sloughs associated with Suisun Bay. The general terrain of the project area consists of hills on the north and northwest sides near Red Top Road and relatively level areas (Suisun Valley and Green Valley) in the central and eastern segment of the project area.

**Seismicity**
The project area is located in a region of California characterized by locally high historical seismic activity and is within UBC Seismic Hazard Zone 4. A number of active faults and fault zones are present in and adjacent to the project area. Consequently, the project area is subject to surface fault rupture and ground shaking (primary hazards), and seismically induced ground failure (a secondary hazard).

**Fault Rupture Hazard**
The purpose of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) is to regulate development near active faults to mitigate the hazard of surface rupture. Faults in an Alquist-Priolo Earthquake Fault Zone are active faults. As defined under the Alquist-Priolo Act, an active fault is one that has had surface displacement within Holocene time.

The dominant tectonic features in the project area are the Green Valley fault and the Cordelia fault zone, both of which are zoned by the State of California pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Hart and Bryant 1997), and are considered a Type A (highest risk) seismic source by the UBC and California Building Codes (International Conference of Building Officials 1998).

The Green Valley fault extends from Suisun Bay northwest to Wooden Valley, traversing the rapidly developing I-680 corridor in central and eastern Solano County, near Fairfield. Along its length, the Green Valley fault intersects several major transportation routes, rail lines, power transmission lines, pipelines, and levees.

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2 The Green Valley fault is often grouped together with the Concord fault and referred to as the Concord-Green Valley fault system. Part of the eastern San Andreas fault system, it is composed of at least two major fault segments, from south to north: the Concord fault (10–15 miles long) and the Green Valley fault (18–27 miles long).

3 The Green Valley fault in the vicinity of the project area consists of four distinct fault strands (Fault Rupture Assessment; Environmental Geotechnical Memorandum).

4 The 1998 International Conference of Building Officials maps have recently been superseded by an interactive U.S. Geological Survey website (http://gldims.cr.usgs.gov/webapps/cfusion/Sites/qfault/index.cfm) that plays the same role relative to the International Building Code (IBC) and the later (post-1997) versions of the CBSC, which are based on IBC instead of UBC. The older information and classification of these faults is provided herein to stress their high seismic potential.
The Cordelia fault zone, located approximately 5,800 feet east of the Green Valley fault, has a well-defined north-striking surface expression, and may represent a secondary trace of the Green Valley fault, according to the Fault Rupture Assessment. See Plate 7 of the Environmental Geotechnical Memorandum for images of these earthquake fault zones as they relate to the project area. Also see Plate 3 of the Environmental Geotechnical Memorandum for a map of the regional faults surrounding the project area.

Both of the faults are generally located in the western segment of the project area. The Green Valley fault and the Cordelia fault zone cross the project alignment of Alternative B. These faults are within State (Alquist-Priolo) Earthquake Fault Zones. No fault is directly beneath any proposed elevated structures that are proposed for Alternative B or Alternative B, Phase 1. However, under Alternative C and Alternative C, Phase 1, several proposed structures are located in the vicinity of the Green Valley fault.

In summary, the potential for surface fault rupture in the vicinity of the project area is generally high.

**Ground-Shaking Hazard**

The project area is located within UBC Seismic Hazard Zone 4 and is located in a region of California characterized by locally high historical seismic activity. The State of California (Hart and Bryant 1997) and the U.S. Geological Survey (U.S. Geological Survey 2008) recognize various active seismic sources in the project area vicinity. As described above, the risk of surface rupture in the study area is generally high because of its proximity to active faults. Earthquake-induced ground shaking also poses a substantial hazard.

The intensity of ground shaking that would occur in the project area as a result of an earthquake is partly related to the size of the earthquake, its distance from the project area, and the response of the geologic materials within the project area. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site, the greater the intensity of ground shaking. When various earthquake scenarios are considered, ground-shaking intensities will reflect both the effects of strong ground accelerations and the consequences of ground failure.

**Estimates of Earthquake Shaking**

Based on the seismic hazard map prepared by Mualchin (1996), the peak bedrock acceleration in the project area ranges from 0.5 g to 0.6 g (where one g equals the force of gravity). According to the *Caltrans Guidelines for Structures Foundation Report* (California Department of Transportation 2006a), the value of peak bedrock acceleration (for a specific project site or area) from the seismic hazard map should be verified using the attenuation relation by Sadigh et al.

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5 The primary rupture zone for the Cordelia fault does not intersect the proposed elevated structure, and thus the risk for surface-fault rupture is considered low. However, to account for uncertainty in the borehole and geophysical data and the spacing between boreholes that led to these conclusions, the proposed structure should be designed to accommodate minor secondary displacement (e.g., tilting, shearing, and settlement) associated with an earthquake on the Cordelia fault, as recommended in the Fault Rupture Assessment. See the section titled “Avoidance, Minimization, and/or Mitigation Measures” for more information.

6 Several primary active faults directly impact the proposed structures within the Green Valley fault, but Alternative C has more proposed structures in the vicinity of the Green Valley fault compared to Alternative B (Fault Rupture Assessment; Environmental Geotechnical Memorandum).
(1997). Based on the attenuation relation, the controlling fault is the Cordelia fault, and peak bedrock acceleration of 0.6 g is anticipated in the project area. Furthermore, based on a probabilistic seismic hazard map that depicts the peak horizontal ground acceleration values exceeded at a 10% probability in 50 years (Cao et al. 2003; California Geological Survey 2003), the probabilistic peak horizontal ground acceleration values in the project area range from 0.5 g to 0.6 g, thus confirming that the possibility of the project area experiencing strong ground shaking may be considered moderate to high.

Based on existing published data on officially recognized faults, the following faults are considered to have the greatest potential to affect the project area due to both fault rupture and ground shaking: the Cordelia fault, the Green Valley fault, and the Vaca-Kirby Hill–Montezuma Hills faults (these latter faults are considered early Quaternary and therefore “potentially active”).\(^7\) Maximum credible earthquake magnitudes for some of the major faults in the vicinity of the project area determined by Mualchin (1996) are summarized in Table 3.2.3-2. Based on the project’s Environmental Geotechnical Memorandum, these maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure.

Table 3.2.3-2. Characteristics of Local Faults\(^a\)

<table>
<thead>
<tr>
<th>Fault/Faults</th>
<th>Maximum Credible Earthquake Magnitude(^b)</th>
<th>Distance between Fault/Faults and Project Area (miles)</th>
<th>Peak Bedrock Acceleration (g)(^b)</th>
<th>Zoned by State of California</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cordelia</td>
<td>6.5</td>
<td>0</td>
<td>0.6</td>
<td>Yes</td>
</tr>
<tr>
<td>Green Valley</td>
<td>6.75</td>
<td>0</td>
<td>0.6</td>
<td>Yes</td>
</tr>
<tr>
<td>Vaca-Kirby Hill–Montezuma Hills</td>
<td>6.75</td>
<td>~7</td>
<td>0.6</td>
<td>Yes</td>
</tr>
</tbody>
</table>

\(^a\) Adapted from Table 1 on page 11 of the Environmental Geotechnical Memorandum prepared for the proposed project.

\(^b\) Mualchin 1996.

Accordingly, based on available geological and seismic data, the possibility of the project area experiencing strong ground shaking may be considered moderate to high.

**Liquefaction Susceptibility**

Liquefaction is a phenomenon in which the strength and stiffness of unconsolidated sediments are reduced by earthquake shaking or other rapid loading. Poorly consolidated, water-saturated fine sands and silts having low plasticity and within 50 feet of the ground surface are typically considered to be the most susceptible to liquefaction. Soils and sediments that are not water saturated and that consist of coarser or finer materials are generally less susceptible. Geologic age also influences the potential for liquefaction. Sediments deposited within the past few thousand years are generally much more susceptible than older Holocene sediments; Pleistocene sediments are even more resistant; and pre-Pleistocene sediments are generally immune (California Division of Mines and Geology 1997).

\(^7\) Based on research conducted on the earthquake probabilities in the San Francisco Bay region, the Working Group on California Earthquake Probabilities (2003) suggests the Green Valley fault has a 4% probability of one or more major (i.e., magnitude greater than 6.7) earthquakes during the coming 30 years. According to the same study, there is a 62% probability of at least one earthquake of magnitude 6.7 or greater striking the San Francisco Bay region before 2031.
The potential for liquefaction in the project area was preliminarily evaluated by the project’s Environmental Geotechnical Memorandum. Based on available boring information, the project area is generally underlain by stiff to very stiff clay with occasional pockets/lenses/layers of loose to medium dense sands. Also, based on the Liquefaction Susceptibility Map included as Plates No. 8-1 and 8-2 in the project’s Environmental Geotechnical Memorandum, the liquefaction potential within the project area corridor is considered moderate, with the exception of areas along the eastern portion of Jameson Canyon Creek; at Suisun Creek, Green Valley Creek, and Ledgewood Creek; and in the eastern segment of the project area, where it is considered high. See Plate 8 of the project’s Environmental Geotechnical Memorandum for the liquefaction susceptibility map for the project area.

Two potential ground failure types associated with liquefaction are lateral spreading and differential settlement (Association of Bay Area Governments 2001). Lateral spreading involves a layer of ground at the surface being carried on an underlying layer of liquefied material over a nearly level surface toward a river channel or other open face. Differential settlement occurs when the layers that liquefy are not of uniform thickness, a common problem when the liquefaction occurs in artificial fills. Settlement can range from 1% to 5%, depending on the cohesiveness of the sediments (Tokimatsu and Seed 1984). The moderate liquefaction susceptibility in the project area and the soil characteristics equate to a high risk of lateral spreading along the creek areas and a moderate risk of differential settlement elsewhere.

**Seismically Induced Ground Failure and General Slope Stability**

The project alternatives would extend across hillsides and slopes that may pose some risk from landslides or debris flows. According to the State’s Landslide Hazard Report for the Cordelia Quadrangle (Manson 1998), there are landslide deposits, elevated landslide potential, and some debris-flow potential in the southwestern portion of the project area (see Parikh 2009, Plates 10-1 and 10-2 for Manson’s [1998] Landslide Inventory Map; Plates 11-1 and 11-2 for the Landslide Susceptibility Map; and Plates 12-1 and 12-2 for the Debris-Flow Susceptibility Map).

Approximately 400 to 1,400 feet northwest of its intersection with I-80, the proposed extension of Red Top Road under both alternatives would cross a large mapped landslide which appears to have moved toward the east. Where the proposed extension of Red Top Road intersects SR 12W, it would cross onto a series of mapped landslides that, except for 450 feet of apparently intact bedrock ridgeline, extend approximately 1,400 feet to the northeast where the proposed road will curve around and reach the valley margin. Where the Red Top Road extension is planned, Manson (1998) categorized the hillsides as “Area 4—most susceptible to landsliding” and the eastern half of that area as “Area C—most susceptible to debris flows.”

**Soils**

**Surface Soil Conditions**

According to the Soil Survey of Solano County, California (Bates 1977), the predominant surface soil materials within the project area are the Clear Lake clay (CeA), Conejo gravelly loam (Co), Sycamore silty clay loam (Sr), and Yolo silty clay loam (Ys). These soils are

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8 See Plate 9 of the Environmental Geotechnical Memorandum for a figure showing all surface soil map units in the project area.
generally fine-textured, poorly drained to well drained, have slopes between 0%–2%, very slow runoff to slow runoff; low to high shrink-swell potential; and generally a slight hazard of water erosion.

Based on Table 3.2.3-3 and on Plate 9 of the project’s Environmental Geotechnical Memorandum, the soils in the project area are mainly silty clay loams and clay loams. Permeability or hydraulic connectivity is moderately low to high and runoff rate is very slow to rapid. Soils are poorly drained to well drained and erosion hazard is low to moderately high. Shrink-swell potential varies depending on texture, but is considered high for any soils with a high clay content.

Subsurface Soil Conditions
The underlying native soil map units and their characteristics are shown in Table 3.2.3-3. Additional subsurface soil conditions and groundwater conditions within the project area limits are shown in the first table on page 7 of the project’s Environmental Geotechnical Memorandum.

Table 3.2.3-3. Underlying Native Soil Map Unit Characteristics of the Project Area

<table>
<thead>
<tr>
<th>Soil Map Unit</th>
<th>Soil Map Unit Name</th>
<th>Surface Texture</th>
<th>Permeability</th>
<th>Slope (%)</th>
<th>Drainage</th>
<th>Available Water Holding Capacity</th>
<th>Erosion Hazard</th>
<th>Shrink-Swell Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr</td>
<td>Sycamore silty clay loam</td>
<td>Silty clay loam</td>
<td>Moderately high</td>
<td>0–2</td>
<td>Poorly drained</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Ss</td>
<td>Sycamore silty clay loam, drained</td>
<td>Silty clay loam</td>
<td>Moderately high</td>
<td>0–2</td>
<td>Poorly drained</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>CeA</td>
<td>Clear Lake clay</td>
<td>Clay</td>
<td>Moderately low to high</td>
<td>0–2</td>
<td>Poorly drained</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>HaF</td>
<td>Hambright loam</td>
<td>Loam to cobbly loam</td>
<td>Moderately high to high</td>
<td>15–40</td>
<td>Well drained</td>
<td>Very low</td>
<td>Moderately high</td>
<td>Low to moderate</td>
</tr>
<tr>
<td>CiA</td>
<td>Clear Lake clay, saline</td>
<td>Clay</td>
<td>Moderately low to high</td>
<td>0–2</td>
<td>Poorly drained</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>BrA</td>
<td>Brentwood clay loam</td>
<td>Clay loam</td>
<td>Moderately high</td>
<td>0–2</td>
<td>Well drained</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>AoA</td>
<td>Antioch–San Ysidro complex</td>
<td>Sandy loam to clay loam</td>
<td>Very low to moderately low</td>
<td>0–2</td>
<td>Moderately well drained</td>
<td>Very low</td>
<td>Moderately high</td>
<td>Low to high</td>
</tr>
</tbody>
</table>

* Adapted from the first table shown on page 13 of the project’s Environmental Geotechnical Memorandum and Soil Survey of Solano County, California (Bates 1977).

Environmental Consequences

Risk of Fault Rupture during Operations

Based on available knowledge of fault locations and fault rupture hazard, the risk of surface fault rupture in the project area is generally high because of its proximity to active faults. Fault rupture has the potential to compromise the structural integrity of proposed new facilities and cause injury to construction workers. Effects of the project alternatives related to potential structural

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9 Groundwater depths in the project area typically range from 10–15 feet below ground surface.
damage and injury caused by fault rupture would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new structures in the project area. There would be no potential structural damage or resulting injury caused by fault rupture associated with the No-Build Alternative.

**Risk from Ground Shaking during Operation**

Based on available knowledge of fault locations and ground shaking potential, the possibility of the project area experiencing strong ground shaking may be considered moderate to high because of its proximity to active faults. Without proper seismic engineering, a large earthquake on a nearby fault could cause moderate ground shaking in the project area, potentially resulting in liquefaction and associated ground failure, such as lateral spreading or differential settlement, which in turn could increase the risk of structural loss, injury, or death. Effects of the project alternatives related to potential structural damage and injury caused by ground shaking would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new structures in the project area. There would be no potential structural damage or resulting injury caused by ground shaking associated with the No-Build Alternative.

**Risks from Development on Unstable Materials**

Liquefaction in the project area could increase the risk of structural loss, injury, or death. Effects of the project alternatives related to potential structural damage and injury caused by liquefaction would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The impact of the post-liquefaction settlement on the roadway portions of the project alternatives is relatively small because the potentially liquefiable soil layers are generally covered by cohesive soils, which tend to serve as a “soil mat” and should reduce the potential impact of liquefaction. Any potential post-liquefaction settlement at abutments, bents, or piers of proposed bridge structures may cause downdrag (due to the clay above the liquefiable sand layer) and reduce the load carrying capacity of the piles. Typical mitigation (described below) is to design the foundation for such conditions. Based on the Environmental Geotechnical Memorandum prepared for the project alternatives, liquefaction should not have a significant affect on pavement surfaces because the resulting settlements are generally aerial in type and localized.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from development on materials prone to ground failure, including materials subject to liquefaction associated with the No-Build Alternative.
Risk from Landslides or Other Slope Failure during Operation

The project alternatives would extend across hillsides and slopes that may pose some risk from landslides or debris flows. As such, new construction in the project area would be at risk for structural damage or personal injury resulting from landslides or other slope failure.

Effects of the project alternatives related to potential structural damage and injury caused by landslides or other slope failures would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from landslides or other slope failure associated with the No-Build Alternative.

Risk during Operation as a Result of Development on Expansive Soils

Various soil map units (both surface and subsurface) in the project area have been identified as having moderate to high shrink-swell potential and therefore have the potential to compromise the structural integrity of proposed new facilities (including roadways, bridges, and other associated features). Effects of the project alternatives related to potential structural damage caused by shrink-swell would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports. Furthermore, project activities would cause no change in current conditions with respect to the current shrink-swell hazards.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from development on expansive soils associated with the No-Build Alternative.

Risk during Operation as a Result of Weak Foundation Materials and Postconstruction Settlement

In general, short-term and long-term consolidation settlements do not appear to be a reason for concern in the project area, except near Suisun Valley Road and Dan Wilson Creek where soft clays are indicated in test borings. In these areas, consolidation settlements may pose a substantial hazard to the immediate structures. Conducting future geotechnical investigations and implementing recommendations from the draft geotechnical reports would lessen the severity of this potential hazard.

The No-Build Alternative would not result in new construction in the project area and therefore, there would be no potential structural damage or resulting injury resulting from weak foundation materials and postconstruction settlement associated with the No-Build Alternative.

Runoff, Erosion, and Sedimentation from Grading Activities Associated with Construction

Grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase erosion and sedimentation. Construction
activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas.

A SWPPP will be developed by a qualified engineer or erosion control specialist and implemented before construction as described in Section 3.2.2, “Water Quality and Stormwater Runoff.” Furthermore, compliance with the County’s Grading Ordinance also would minimize any negative effects associated with erosion and sedimentation. A grading permit as required by Chapter 31 of the Solano County Code (Solano County 2009) will be required for this project. As part of this permit, the project applicant will be required to submit a grading and erosion control plan, vicinity and site maps, and other supplemental information. Additionally, standard conditions in the grading permit include an extensive list of BMPs similar to those described in a SWPPP above.

The No-Build Alternative would not result in new construction in the project area. There would be no effects from runoff, erosion, and sedimentation from grading activities associated with construction.

**Avoidance, Minimization, and/or Mitigation Measures**

Future measures need to be conducted/developed prior to/or during the plans, specification, and estimate phase for any build alternative.

**Implement Requirements from State and Local Standards into Final Project Design**

UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards are required to be implemented and incorporated into the project design for applicable features to minimize the potential fault rupture, ground shaking, liquefaction, and shrink-swell hazards on associated project features. Structures must and will be designed to meet the regulations and standards associated with UBC Seismic Hazard Zone 4 hazards.

**Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities**

Recommendations from both the Fault Rupture Assessment and the Environmental Geotechnical Memorandum for the proposed project will be incorporated in to the final project design.

The primary rupture zone for the Cordelia fault does not intersect proposed elevated structures, and thus the risk for surface-fault rupture is considered low. However, to account for uncertainty in the borehole and geophysical data that led to these conclusions, proposed structures should be designed to accommodate minor secondary displacement (e.g., tilting, shearing, and settlement) associated with an earthquake on the Cordelia fault.

The following recommendations from the Fault Rupture Assessment report and project’s Environmental Geotechnical Memorandum will be incorporated in to the final project design to accommodate permanent fault-related ground deformation effects from surface fault rupture on project facilities.
• As described in the Fault Rupture Assessment, fault rupture hazard maps prepared for both the Cordelia and Green Valley Project sites should be considered during design of the proposed elevated structures for mitigation of surface-fault rupture. This could include avoidance where possible, or if not possible, special design to accommodate the estimated coseismic displacement yielded by the two approaches.10

• As described in the Environmental Geotechnical Memorandum, if avoidance is not possible, special design should be considered to accommodate the displacement estimated by the Department and based on scenario-based fault displacement hazard (FDHA) analysis approach.

• Department engineers responsible for the design of the elevated structures should evaluate the state’s recommended criteria, Draft Memo to Designers 20-10 (California Department of Transportation 2007) for surface-fault rupture with regard to the results of the fault hazard displacement analysis. A geotechnical engineer and/or structural engineer should review the results of the two methods, consider an appropriate factor of safety and design the structures with respect to permanent ground deformation, as recommended in the Fault Rupture Assessment.

• On the basis of the Department’s Draft Memo to Designers 20-10 (California Department of Transportation 2007), a fault displacement of 1.9 feet from the Green Valley fault should be considered in the design of elevated structures crossing the fault zone.

Based on the attenuation relation by Sadigh et al. (1997), the controlling fault is the Cordelia fault, and peak bedrock acceleration of 0.6 g is anticipated in the project area. The following recommendations from the Fault Rupture Assessment and the Environmental Geotechnical Memorandum will be incorporated in to the final project design to accommodate effects of ground shaking on project facilities:

• Structures should be designed based on the Acceleration Response Spectrum (ARS) Curve according to the Caltrans Seismic Design Criteria Manual.11

• Geologic conditions encountered at the Cordelia project site included lenses of saturated granular deposits. The Cordelia project site should be evaluated for liquefaction, lateral spreading and settlement associated with strong ground shaking.

• Geologic conditions encountered at the Green Valley project site included lenses of saturated fine- to coarse-grained deposits along the western and eastern margins of Quarry Hill. Portions of the Green Valley site should be evaluated for liquefaction, lateral spreading, and settlement associated with strong ground shaking.

10 The fault displacement hazard analysis and the resulting displacement values for the multiple fault traces comprising the Green Valley fault depend on site information and results from previous studies. Future investigations (trenches and boreholes) may allow refinement of the calculations, an improved model of uncertainties, and revised fault rupture hazard maps.

11 The criteria include, but are not limited to, designing infrastructure that can withstand an earthquake of magnitude 7.5 and a peak bedrock acceleration of 0.6 g with modifications. Other specific design criteria are further described in the Caltrans Seismic Design Criteria Manual (California Department of Transportation 2006b).
Conduct Future Geotechnical Investigations

In accordance with applicable state and local laws, a final geotechnical investigation (or investigations) will be conducted to evaluate the engineering properties of the subsurface soil materials for recommendation of geotechnical parameters, to address geotechnical hazards (e.g., slope stability, differential settlement) associated with different design elements, as well as hazards associated with potential fault rupture/creep or strong ground motion (e.g., shaking, liquefaction, earthquake-induced landslides). The final geotechnical investigation will include recommendations for designing specific project elements to accommodate the effects of fault rupture and ground shaking.

Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction

The following recommendations from the project’s Environmental Geotechnical Memorandum will be incorporated into the final project design.

- Design foundations to withstand the effects of liquefaction. Any downdrag load on the piles due to potential post-liquefaction settlement should be considered in the vertical pile capacity analyses.
- Shallow zones of liquefiable materials can be removed and replaced or treated with materials that can improve their properties (such as by grouting).
- Site-specific liquefaction potential in areas with moderate and/or high liquefaction susceptibility should be evaluated in the plans, specifications, and estimates phase.

If shallow zones of liquefiable soils or soils susceptible to seismically induced settlement are determined to be present at any location where project activities would occur, corrective actions shall be taken, including removal and replacement of soils; on-site densification; grouting; and design of special foundations or other similar measures, depending on the extent and depth of susceptible soils. All of these measures reduce pore water pressure during ground shaking by densifying the soil or improving its drainage capacity.

Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities

The following recommendations from the project’s Environmental Geotechnical Memorandum will be incorporated into the final project design.

- Because significant grading can be expected for construction of the roadway, site-specific investigation of those mapped landslides will be needed to assess the potential impacts and formulate appropriate mitigation measures.

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12 The last section of the Environmental Geotechnical Memorandum provides a recommended scope of geotechnical investigation.
• Specific recommendations pertaining to cut slopes and fill slopes/embankments should be incorporated into the final project design. For cut slopes, recommendations pertaining to suggested slope gradients, rock bedding and joint evaluation, drilling and geophysical testing, and slope stabilization measures should be implemented. For fill slopes/embankments, recommendations pertaining to suggested slope gradients and slope stabilization measures should be implemented.

Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Consolidation Settlements on Project Facilities

The following recommendations from the project’s Environmental Geotechnical Memorandum report will be incorporated into the final project design.

• Department embankment construction standards as outlined in Section 19 of the California Department of Transportation Standards Specifications (California Department of Transportation 2006c) should be followed.

• If further investigation shows that consolidation settlement may become critical to the other project improvements, mitigation measures such as phased construction, implementation of waiting periods, surcharge fill, wick drain installation, and monitoring may be required.
Figure 3.2.3-1
Geologic Map of the Project Vicinity

Geologic Unit (and Age)
af Artificial fill (Historic)
afbm Artificial fill over bay mud (Historic)
alf Artificial levee fill (Historic)
Qhf Alluvial fan deposits (Holocene)
Qhff Fine-grained alluvial fan deposits (Holocene)
Qhl Natural levee deposits (Holocene)
Qhbm Bay mud deposits (Holocene)
Qls Landslide deposits (Holocene and Pleistocene)
Qpf Alluvial fan deposits (Late Pleistocene)
Tsv Andesite to basalt flows
Tsva Andesite to basalt flows
Tsvr Rhyolite flows
Tsvt Ash-flow tuff
Tsvw Welded ash-flow tuff
TmK Markley Sandstone (Eocene)
Ku Undivided sandstone, siltstone, and shale of the Great Valley complex (late Cretaceous)
3.2.4 Paleontology

Regulatory Setting
Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects (e.g., Antiquities Act of 1906 [16 USC 431-433], Federal-Aid Highway Act of 1960 [23 USC 305], and the Omnibus Public Land Management Act of 2009 [16 USC 470aaa]). Under California law, paleontological resources are protected by the California Environmental Quality Act.

Federal Regulations

Omnibus Public Lands Act of 2009
The Omnibus Public Lands Act of 2009 (H.R. 146 [2009], Pub. L. No. 111-11) includes provisions for the protection and preservation of paleontological resources. Under this law, the Secretaries of both the Department of the Interior and the Department of Agriculture are directed to inventory, manage, and protect paleontological resources on the public lands they administer. In addition, the Secretaries are directed to coordinate these efforts and to establish education programs to increase public awareness of the significance of paleontological resources. The law also prohibits the collection of paleontological resources from federal land without a permit, except in the case of noncommercial collecting that complies with other regulations for that federal land.

State Regulations

California Environmental Quality Act
CEQA encourages the protection of all aspects of the environment by requiring state and local agencies to prepare multidisciplinary analyses of the environmental impacts of a proposed project and to make decisions based on the findings of those analyses.

CEQA includes in its definition of historical resources “any object [or] site … that has yielded or may be likely to yield information important in prehistory” (State CEQA Guidelines 15064.5[3]), which typically is interpreted as including fossil materials and other paleontological resources. More specifically, destruction of a “unique paleontological resource or site or unique geologic feature” constitutes a significant impact under CEQA (State CEQA Guidelines, Appendix G). The treatment of paleontological resources under CEQA is generally similar to the treatment of cultural resources, requiring an evaluation of resources in a project’s area of potential effects; an assessment of potential impacts on significant or unique resources; and the development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery or avoidance.
California Public Resources Code
Several sections of the California Public Resources Code (PRC) protect paleontological resources. PRC 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under the jurisdiction of a state, county, city, district, or public authority or under the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. PRC 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands. The sections of the California Administrative Code relating to the state Division of Beaches and Parks afford protection to geologic features and “paleontological materials” but grant the director of the state park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the state park system and for state park purposes (California Administrative Code 4307–4309).

Local Regulations
The Solano County General Plan does not have policies related to paleontological resources. However, the background report prepared for the Solano County General Plan update (EDAW 2006:7-23–7-26) assigns a paleontological sensitivity to geologic units found in the county. The sensitivity evaluations are based on the Society of Vertebrate Paleontology (SVP) guidelines and record searches of the University of California Museum of Paleontology (UCMP) database (EDAW 2006:7-20 and 7-26). In addition, the EIR written for the general plan update provides mitigation measures to protect paleontological resources (EDAW 2008:4.10-39–4.10-40).

Professional Standards and Guidelines
In response to a recognized need for standard guidance, the SVP published *Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources*, a set of standard guidelines that are now widely followed (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995, updated 2007). These guidelines are generally consistent with Caltrans criteria and represent the accepted standard of care for paleontological resources. The SVP guidelines identify two key phases in the process for protecting paleontological resources from project impacts.

1. Assess the likelihood that the project’s area of potential effect contains significant nonrenewable paleontological resources that could be directly or indirectly affected, damaged, or destroyed as a result of the project.

2. Formulate and implement measures to mitigate potential adverse impacts.

An important strength of the SVP’s approach to assessing potential impacts on paleontological resources is that the SVP guidelines provide some standardization in evaluating a project area’s paleontological sensitivity. Table 3.2.4-1 defines the SVP’s sensitivity categories for paleontological resources and summarizes SVP’s recommended treatments to avoid adverse impacts in each sensitivity category.
Table 3.2.4-1. Society of Vertebrate Paleontology’s Definitions of Sensitivity Categories and Recommended Treatment for Paleontological Resources

<table>
<thead>
<tr>
<th>Sensitivity Category</th>
<th>Definition</th>
<th>Recommended Mitigation Treatment</th>
</tr>
</thead>
</table>
| High                 | Areas underlain by geologic units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered | • Preliminary survey and surface salvage before construction begins  
• Monitoring and salvage during construction  
• Specimen preparation; identification, cataloging, curation, and storage of materials recovered  
• Preparation of final report describing finds and discussing their significance  
• All work should be supervised by a professional paleontologist who maintains the necessary collecting permits and repository agreements |
| Undetermined         | Areas underlain by geologic units for which little information is available | • Preliminary field surveys by a qualified vertebrate paleontologist to assess the project area’s sensitivity  
• Design and implementation of mitigation if needed, based on the results of field survey |
| Low                  | Areas underlain by geologic units that are not known to have produced a substantial body of significant paleontologic material | Protection and salvage generally are not required; however, a qualified paleontologist should be contacted if fossils are discovered during construction, in order to salvage finds and assess the need for further mitigation |


SVP’s guidelines also provide a working definition of significance as applied to paleontological resources. According to SVP, significant paleontological resources are those that fulfill one or more of the following criteria (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007).

- Provide important information shedding light on evolutionary trends and/or helping to relate living organisms to extinct organisms.
- Provide important information regarding the development of biological communities.
- Demonstrate unusual circumstances in the history of life.
- Represent a rare taxon or a rare or unique occurrence; are in short supply and in danger of being destroyed or depleted.
- Have a special and particular quality, such as being the oldest of their type or the best available example of their type.
- Provide important information used to correlate strata for which it may be difficult to obtain other types of age dates.

Significant paleontological resources may include vertebrate fossils and their associated taphonomic and environmental indicators; invertebrate fossils; and/or plant fossils.
**Affected Environment**

**Site Geology**
Site geology is provided in Section 3.2.3, “Geology/Soils/Seismic/Topography,” Figure 3.2.3-1 is a generalized geologic map of the project site, based on the work of Graymer et al. (2002).

**Paleontological Sensitivity**
Most of the project alternatives would be located on Holocene alluvial fan deposits (Qhf or Qhff) or levee deposits (Qhl) (Graymer et al. 2002) (Figure 3.2.4-1). These deposits are young and have low potential to contain paleontological resources (in contrast to older sediments of Pleistocene age), and there are no known records of vertebrate fossils in these deposits in Solano County (University of California Museum of Paleontology 2007). Although the alluvial fan deposits (Qhf) are not considered highly sensitive, they may overlie relatively shallow Pleistocene sediments that could be sensitive. The depth of the Holocene alluvial fan deposits ranges from approximately 0 to 25 feet.

The results of database and literature searches indicate that units are highly sensitive for paleontological resources. Table 3.2.4-2 summarizes paleontological resources and sensitivity of geological units in the project area.

Some of the western and southern portion of the project area is located in Late Pleistocene alluvial fan deposits (Qpf). Although there are no known fossils records from this deposit within Solano County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils. In addition, Pleistocene units containing nonmarine fossil are considered highly sensitive.

Outcrops of the Sonoma Volcanics (Tsvt and Tsva) occur in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange. Of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007a), 29 are from the Sonoma Volcanics unit. These records include horse, deer, and unidentified mammals. The unit is sensitive for paleontological resources because it is known to contain vertebrate fossils.

The Markley Sandstone occurs on the western edge of the project area. This unit is a marine deposit containing bony fish (Osteichthyes) fossils, as well as gastropods and microfossils. The UCMP (2007a) database has no records of fossils from the Markley Formation in Solano County, but it does have four records of Osteichthyes in this unit in neighboring Contra Costa County. The unit is sensitive for paleontological resources because it contains vertebrate fossils (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995).
Table 3.2.4-2. Preliminary Summary of Paleontological Resource Sensitivity for Geologic Units in the I-80/I-680/SR 12 Interchange Project Area

<table>
<thead>
<tr>
<th>Geologic Unit</th>
<th>Age</th>
<th>Fossil Content and Fossils</th>
<th>Solano County General Plan Background Report Description of Sensitivity</th>
<th>Potential to Contain Significant Fossils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial fill (af)</td>
<td>Historic</td>
<td>Deposits are artificial and will not contain fossils</td>
<td>Holocene alluvium does not contain paleontologically sensitive resources</td>
<td>No potential for fossils</td>
</tr>
<tr>
<td>Artificial fill over bay mud (afbm)</td>
<td>Historic</td>
<td>Deposits are artificial and will not contain fossils</td>
<td></td>
<td>No potential for fossils</td>
</tr>
<tr>
<td>Alluvial fan deposits (Qhf)</td>
<td>Holocene</td>
<td>No record of fossils in the project area; in general, these younger alluvial units do not contain significant vertebrate fossils</td>
<td></td>
<td>Low; however, it may form only a thin veneer over sensitive Pleistocene sediments (Graymer et al. 2002)</td>
</tr>
<tr>
<td>Fine-grained alluvial fan deposits (Qhff)</td>
<td>Holocene</td>
<td>No record of fossils in the project area; in general, these younger alluvial units do not contain significant vertebrate fossils</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Natural levee deposits (Qhl)</td>
<td>Holocene</td>
<td>No record of fossils in the project area; most likely no significant fossils in this unit</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Landslide deposits (Qls)</td>
<td>Holocene and Pleistocene</td>
<td>No record of fossils in the project area; these deposits are shed from the hills to the northwest; it is possible that landslide units of Pleistocene age could contain significant vertebrate fossils</td>
<td>Not applicable</td>
<td>Unknown and monitoring or detailed geologic mapping of this unit should occur</td>
</tr>
<tr>
<td>Alluvial fan deposits (Qpf)</td>
<td>Late Pleistocene</td>
<td>No record of fossils in the project area; however, diverse vertebrate faunas have been collected from other similar Pleistocene alluvial units in northern California; Pleistocene alluvial units tend to contain vertebrate fossils</td>
<td>Pleistocene alluvium is highly sensitive for paleontological resources</td>
<td>High</td>
</tr>
<tr>
<td>Sonoma Volcanics (Tsv) and ash-flow tuff (Tsvt)—subdivision of Sonoma volcanics</td>
<td>Pliocene and late Miocene</td>
<td>This unit is well known for its fossils; the UCMP (2007a) database includes 29 records of vertebrate fossils in this unit in Solano County alone; records are of unidentified mammals, one horse (<em>Equus occidentalis</em>), and deer (<em>Cervidae</em>)</td>
<td>Sonoma Volcanics are highly sensitive for paleontological resources</td>
<td>High</td>
</tr>
<tr>
<td>Markley Sandstone (Tmk)</td>
<td>Eocene</td>
<td>This unit is a marine deposit and contains bony fish (<em>Osteichthyes</em>) fossils, as well as gastropods and microfossils; no records of fossils from the unit in Solano County, but the UCMP (2007a) database contains four records of <em>Osteichthyes</em> (bony fishes) in neighboring Contra Costa County</td>
<td>Fossils commonly found in the Markley Formation are not highly sensitive because of their abundance, but there is potential for significant resources</td>
<td>High</td>
</tr>
<tr>
<td>Undivided sandstone, siltstone, and shale of the Great Valley complex (Ku)</td>
<td>Late Cretaceous</td>
<td>The UCMP database contains no records of fossils from the Great Valley complex (or sequence), and there is only one record of a Cretaceous fossil not assigned to a unit; however, strata of Great Valley complex in other areas are known to contain Cretaceous marine fossils, including invertebrates and marine reptiles (University of California Museum of Paleontology 2007b)</td>
<td></td>
<td>High</td>
</tr>
</tbody>
</table>

* a Information is based on geologic formations identified in the project area from the geologic map of Graymer et al. (2002), UCMP database searches (2007), and a review of the Solano County General Plan (EDAW 2006).  
* b EDAW 2006.
Environmental Consequences

Impacts on paleontological resources were analyzed qualitatively, based on professional judgment. This analysis focuses on (1) identifying activities with the potential to disturb, damage, or destroy paleontological resources if any are present on the work site and (2) developing a strategy to ensure that mitigation requiring paleontological sensitivity assessment and appropriate treatment developed on a site-specific basis is in place for those activities identified as likely to result in damage.

Two factors are considered when evaluating a proposed project’s potential to disturb or damage significant paleontological resources. First, most vertebrate fossils are rare and are therefore considered important paleontological resources. Second, unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and stratigraphic) of a unit or formation. In other words, once a unit is identified as containing vertebrate fossils or other rare fossils, the entire unit is a paleontological site (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007).

Because excavation can disturb or destroy paleontological resources, the potential for impacts on paleontological resources is based on the depth and extent of excavation and the paleontological sensitivity of the units. Figures 3.2.4-2, 3.2.4-3a and b, and 3.2.4-4a and b show areas where bridge work will occur and the area where excavation for the Red Top Road expansion will occur. These areas are overlain on the sensitivity of the geologic units for paleontological resources. Note that not all the ground in the bridge areas will be excavated (i.e., excavation for footings will occur in localized areas within the bridge areas), but the entire Red Top Road expansion area will be excavated. The figures evaluate the potential to encounter paleontological resources during excavation. Three designations are given to excavation:

- Excavation in areas with high potential for paleontological resources (i.e., areas of paleontologically sensitive high-potential units such as the Sonoma Volcanics and Late Pleistocene alluvial deposits, and areas with shallow low-potential units—Holocene deposits believed to be less than 15 feet thick—overlying high-potential units such as Late Pleistocene alluvial deposits).
- Excavation in areas with low potential for paleontological resources (i.e., Holocene deposits believed to be greater than 15 feet thick).
- Excavation in areas with unknown potential for paleontological resources (i.e., thickness of Holocene deposits is unknown).

Although Figures 3.2.4-2, 3.2.4-3a and b, and 3.2.4-4a and b provide more detailed information on the potential to encounter paleontological resources, the figures are approximate (i.e., they are not georectified and the exact boundaries and depths of geologic units is not known).
Destruction of Vertebrate or Otherwise Scientifically Significant Paleontological Resources as a Result of Construction Activities

Several units are sensitive for paleontological resources and fossils could be present in the project area. Figure 3.2.4-2, Figure 3.2.4-3a, and Figure 3.2.4-3b show the locations of the following sensitive units.

- Relatively shallow Pleistocene sediments that could be sensitive underlying Holocene alluvial fan deposits (Qhf), which range in depth from approximately 0 to 25 feet, in the central and eastern portion of the project area—the likelihood of encountering sensitive deposits increases with depth and with proximity to surficial exposures of sensitive deposits.

- Late Pleistocene alluvial fan (Qpf) deposits that are highly sensitive in the western portion of the project area—although there are no known fossils records from this deposit within Solano County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils.

- Outcrops of Sonoma Volcanics (Tsvt and Tsva) that are highly sensitive in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange—of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007), 29 of them are from the Sonoma Volcanics unit, including horse, deer, and unidentified mammals (Table 3.2.4-2).

If fossils are present in the project area, they could be damaged during project construction. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007) would represent an impact.

The effect under Alternative C would be the same as under Alternative B but to a greater extent (Figure 3.2.4-2, Figure 3.2.4-4a, and Figure 3.2.4-4b). Table 3.2.4-3 compares the impacts of major excavation areas for Alternatives B and C on paleontological resources based on depth and extent of excavation and the paleontological sensitivity of the unit. Only project components that differ between alternatives are included. It should be noted, however, that both alternatives involve extensive, deep grading associated with the Red Top Road expansion in the paleontologically sensitive Markley Sandstone (Eocene), Sonoma Volcanics (Pliocene and late Miocene), and alluvial fan deposits (Late Pleistocene). It would not be possible to avoid paleontologically sensitive units in the project area because they are widespread. Any improvements involving excavation for bridge or overcrossing footings in the vicinity of the I-80/I-680 or I-80/SR 12W interchanges would, therefore, have the potential to affect significant paleontological resources.
Table 3.2.4-3. Comparison of Paleontological Impacts by Alternative

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity</td>
<td>Sensitivity of Work Area</td>
<td>Activity</td>
</tr>
<tr>
<td>New Interchange at SR 12W and I-80</td>
<td>Excavation of bridge footings excavated for improvements</td>
<td>High</td>
<td>Excavation of numerous bridge footings for new interchange and expansion</td>
</tr>
<tr>
<td>Realignment of I-680</td>
<td>None</td>
<td>None</td>
<td>Grading</td>
</tr>
<tr>
<td>Improvements of I-80 and I-680</td>
<td>Grading for expanded interchange and excavation of footings for new bridge over Green Valley Creek</td>
<td>High to low</td>
<td>Excavation of footings for new bridge over Green Valley Creek</td>
</tr>
<tr>
<td>New Single-Span Bridges over Green Valley Creek</td>
<td>None</td>
<td>None</td>
<td>Excavation of bridge footings</td>
</tr>
<tr>
<td>New Bridge at Suisun Creek</td>
<td>Excavation of bridge footings</td>
<td>Low</td>
<td>None</td>
</tr>
<tr>
<td>Truck Scale On-Ramp to Eastbound I-80</td>
<td>Excavation of bridge footings</td>
<td>Low at surface but unknown at depth</td>
<td>None</td>
</tr>
<tr>
<td>New Central Interchange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widened Bridge at Myer Lane over Ledgewood Creek</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Overcrossing at Beck Avenue</td>
<td>None</td>
<td>None</td>
<td>Excavation of bridge footings for new overcrossing</td>
</tr>
</tbody>
</table>

Notes:  Project components common to both alternatives are not included in this table. Alternative with greater impact is shaded.

The effect under the fundable first phases of the alternatives would be the same as the full-build alternatives but to a lesser extent, given the smaller project footprint and the smaller amount of excavation. Implementation of avoidance and minimization measures listed below would result in no adverse effect relating to destruction of vertebrate or otherwise scientifically significant paleontological resources under all build alternatives.

There would be no excavation or other ground disturbance under the No-Build Alternative. Therefore, there would be no potential for adverse effect relating to paleontological resources under the No-Build Alternative.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Paleontology

Avoidance, Minimization, and/or Mitigation
Avoidance or minimization would not be possible because paleontologically sensitive units in the project area are widespread. Any improvements involving excavation for bridge or overcrossing footings in the vicinity of the I-80/I-680 or I-80/SR 12W interchanges would, therefore, have the potential to affect significant paleontological resources.

Mitigation measures that will be used to reduce project effects are described below. As part of the monitoring and mitigation strategy, further geotechnical data will be reviewed as they become available, and this information will be used to develop and refine an appropriate, effective, and feasible monitoring and mitigation strategy.

Conduct Preconstruction Surveys
The Department will conduct preconstruction studies to ensure that paleontological materials exposed at the surface are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means, and to further assess potential for impacts.

Educate Construction Personnel in Recognizing Fossil Material
The applicant will ensure that all construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists, to ensure that they can recognize fossil materials in the event any are discovered during construction.

Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities
In accordance with the Department’s standard mitigation procedures for construction in units with the potential to contain fossils, the applicant will retain a qualified professional paleontologist as defined by the Department’s Standard Environmental Reference to monitor activities during key portions of the project (typically, those involving substantial disturbance in previously undisturbed materials with paleontological sensitivity). Data gathered during preconstruction surveys for paleontological resources, and detailed project design, will be used to determine the activities that will require the presence of a monitor. In general, these activities include any ground-disturbing activities involving excavation in areas with high potential to contain fossils or excavation deeper than three feet in areas with low or unknown potential to contain fossils. Recovered fossils will be prepared so that they can be properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about their provenance, and make the information available to the scientific community.

Stop Work and Conduct Appropriate Treatment if Substantial Fossil Remains Are Encountered During Construction
In accordance with the Department’s standard mitigation procedures for construction in units with the potential to contain fossils, when requested by the paleontological monitor, earth-disturbing activities will be stopped in an area or diverted to allow for the safe recovery of fossil specimens. Additionally, if construction personnel observe fossils in an area where
paleontological resources were not anticipated and paleontological monitors are therefore not present, earth-disturbing activities will be stopped until the material can be evaluated by a monitor and appropriate treatment taken. Recovered fossils will be prepared so that they can be properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about their provenance, and make the information available to the scientific community. The applicant will be responsible for ensuring that monitor’s recommendations regarding treatment and reporting are implemented.
Figure 3.2.4-1
Paleontological Sensitivity Map of the Project Area

Geologic Unit (and Age)
- af: Artificial fill (Historic)
- afbm: Artificial fill over bay mud (Historic)
- alf: Artificial levee fill (Historic)
- Qhf: Alluvial fan deposits (Holocene)
- Qhff: Fine-grained alluvial fan deposits (Holocene)
- Qhl: Natural levee deposits (Holocene)
- Qhbm: Bay mud deposits (Holocene)
- Qls: Landslide deposits (Holocene and Pleistocene)
- Qpf: Alluvial fan deposits (Late Pleistocene)
- Tsv: Sonoma Volcanics (Pliocene and late Miocene)
- Tsva: Andesite to basalt flows
- Tsvr: Rhyolite flows
- Tsvt: Ash-flow tuff
- Tsvw: Welded ash-flow tuff
- Tmk: Markley Sandstone (Eocene)
- Ku: Undivided sandstone, siltstone, and shale of the Great Valley complex (late Cretaceous)

Potential to Contain Significant Fossils
- None
- Low
- Unknown
- High

Base Map: Graymer et al. 2002.
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New Roadway Connecting Red Top Road Interchange with Business Center Drive

New Interchange at Red Top Road and SR 12W

Improved/Expanded Interchange at I-80 and SR 12W (with HOV Lane Connectors)

Improved/Expanded Interchange at I-80 and I-680 (with HOV Lane Connectors)

Improved Interchange at I-80 and Green Valley Road

New Single Span Bridge over Green Valley Creek

New Single Span Bridge over Dan Wilson Creek

Improved/Expanded Interchange at I-80 and I-680

Potential to Contain Significant Fossils

Potential to Disturb Paleontological Resources

Legend

Bridge Area*
Red Top Road Expansion Area*

* Note: Excavation for footings will occur in localized areas within the bridge areas (i.e., not all the ground in the bridge areas will be disturbed), but deep excavation will occur in the entire Red Top Road expansion area.

See Figure 3.2.4-1 for List of Geologic Units

Base Map: Graymer et al. 2002.

Figure 3.2.4-3a

Alternative B Paleontological Sensitivity and Bridges
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Bridge Carrying Myer Lane over Ledgewood Creek
Widened Bridge over Ledgewood Creek
UPPR Overcrossing Providing Access to Suisun City
Improved/Expanded Interchange at I-80 and SR 12E
New Overcrossing at Chadbourne Road
Widened Culvert over Alonzo Drain
New Overcrossing at Beck Avenue
New Central Interchange
Widened Overcrossing at Pennsylvania Avenue
New Overcrossing at Pennsylvania Avenue
Widened Culvert over Alonzo Drain
Bridge Carrying Myer Lane over Ledgewood Creek

Legend
Bridge Area *

* Note: Excavation for footings will occur in localized areas within the bridge areas (i.e., not all the ground in the bridge areas will be disturbed).
Potential to Contain Significant Fossils
None
Low
Unknown
High
Potential to Disturb Paleontological Resources
High
Low
Low near Surface, but Unknown at Greater Depth

See Figure 3.2.4-1 for List of Geologic Units

Figure 3.2.4-3b
Alternative B Paleontological Sensitivity and Bridges
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This page intentionally left blank.
Widened Bridge over Ledgewood Creek
New Overcrossing at Beck Avenue
UPPR Overcrossing Providing Access to Suisun City
New Overcrossing at Pennsylvania Avenue
Improved/Expanded Interchange at I-80 and SR 12E
Widened Overcrossing at Chadbourne Road
Widened Culvert over Alonzo Drain

Legend
- Bridge Area *
  * Note: Excavation for footings will occur in localized areas within the bridge areas (i.e., not all the ground in the bridge areas will be disturbed).
Potential to Contain Significant Fossils
- None
- Low
- Unknown
- High
Potential to Disturb Paleontological Resources
- High
- Low
- Low near Surface, but Unknown at Greater Depth
See Figure 3.2.4-1 for List of Geologic Units

Figure 3.2.4-4b
Alternative C Paleontological Sensitivity and Bridges
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3.2.5 Hazardous Waste/Materials

Regulatory Setting
Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

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

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

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

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.
**Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hazardous Waste/Materials**

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**The California Health and Safety Code, Hazardous Waste Control**

The Hazardous Waste Control Act (HWCA) regulates the generation, treatment, storage, and disposal of hazardous waste. Hazardous waste is any material or substance that is discarded, relinquished, disposed of, or burned, or for which there is no intended use or reuse, and the material or substance causes or significantly contributes to an increase in mortality or illness; or the material or substance poses a substantial present or potential hazard to human health or the environment. These materials or substances include spent solvents and paints (oil and latex), used oil, used oil filters, used acids and corrosives, and unwanted or expired products (pesticides, aerosol cans, cleaners, etc.). If the original material or substance is labeled Danger, Warning, Toxic, Caution, Poison, Flammable, Corrosive or Reactive, the waste is very likely to be hazardous.

**The California Health and Safety Code, Underground Storage Tank Regulations**

Chapter 6.7 of the Health and Safety Code outlines the requirements for USTs, identifies requirements for corrective actions, cleanup funds, liability, and the responsibilities of owners and operators of USTs.

**Solano County, Environmental Health Services Division, Certified Unified Program Agency**

The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas within Solano County. The CUPA is a single local agency designated by the California Environmental Protection Agency as having regulatory authority for eight environmental programs. These programs are Hazardous Materials Business Plan, Hazardous Waste, California Accidental Release Prevention (Risk Management Plan), Aboveground Storage Tanks, Underground Storage Tanks, Emergency Response, Waste Tire Program, and Illegal Disposal/Complaints. The Solano County CUPA enforces those programs throughout the County. In addition to the CUPA Program, staff responds whenever there is an accidental release of hazardous materials.

In addition, the State Water Resources Control Board has contracted with the County of Solano to provide regulatory oversight for the cleanup of leaking underground storage tanks (LUSTs) under Local Oversight Program (LOP) contract. The programs service all the cities and unincorporated areas of Solano County.

The site cleanup program oversees the voluntary cleanup of contaminated property. Sections 101480 through 101490 of the California Health and Safety Code provide that a Responsible Party (RP) for a release site may request oversight of a site investigation and any remediation necessary to mitigate the site. Oversight activities include any review required of site assessment and remediation workplans, review of required sampling operations, analysis of sampling data, and establishment of site cleanup criteria. The RP can initiate oversight by submitting a written request for oversight. Once the signed agreement is received, the Environmental Health Services Division is required to notify the California Department of Toxic Substances Control (DTSC) and the applicable Regional Water Quality Control Board (RWQCB) to determine if these agencies have regulatory involvement with the site. If no concerns are raised by the State agencies, then a staff person of the Environmental Health Services Division Hazardous Materials...
Section will oversee the investigation and remediation of the site. After determining that the RP has completed the site investigation and remediation necessary to protect human health and the environment then, Environmental Health Services Division Hazardous Materials Section will prepare a no-further-action “closure” letter stating that the investigation and remediation is complete.

**Asbestos Regulations**
Title 8 California Code of Regulations Section 1529 regulates asbestos exposure in all construction work and defines permissible exposure limits and work practices. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of materials exceeds 1%, virtually all requirements of the standard become effective. With respect to potential worker exposure, notification, and registration requirements, the California Division of Occupational Safety and Health (Cal/OSHA) defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1% asbestos (8 CCR 341.6).

**Affected Environment**
The project consists of the project footprint and surrounding land in the vicinity of Fairfield and Suisun City, Solano County, California. The approximate site location is depicted on Figure 2-1. Environmental professionals have conducted studies, including an Initial Site Assessment. This section summarizes those studies.

**Initial Site Assessment Reports**
The information below is summarized from Initial Site Assessment, I-80, I-680, SR-12 Improvement Project, Solano County (ISA) prepared in 2008 and updated in 2009. The ISA reports were prepared in accordance with the Department’s Initial Site Assessment Guidance in order to determine the presence of hazards and hazardous materials within the project right-of-way and temporary construction easements.

The ISA reports included the following:

- Reviews of previously prepared environmental reports, Draft Private Property Investigation and Aerially-Deposited Lead Report. These reports document potential environmental concerns within the Department’s right-of-way and properties adjacent to the proposed project.
- Review of physical setting references and observations made to obtain information concerning the topographic, geologic, and hydrogeologic characteristics of the site and vicinity.
- Summary of a site reconnaissance conducted from public thoroughfares to observe conditions and activities for indications of evidence of recognized environmental conditions.
- Review of historical sources (including prior environmental reports, aerial photographs, and topographic maps) to develop a site history detailing previous uses of the site and the surrounding area to identify potential past uses that might have led to recognized environmental conditions.
• Review of publicly available federal, state, and local regulatory agency records to help identify recognized environmental conditions at or potentially affecting the site.

The information obtained for the ISA reports is relevant only for the dates of the records reviewed or as of the date of the latest site visit. Therefore, the information is valid only as of the date of the reports. Due to the lack of sufficient right-of-entry permits, site reconnaissance of private parcels and property owner interviews were not performed.

The ISA reports are not a comprehensive site characterization and should not be construed as such. The findings and conclusions presented are predicated on the site reconnaissance, a review of the historical usage of the site, and a review of the specified regulatory records as presented in the ISA. It should be noted that wetlands delineation and surveys of asbestos, lead-containing paint (non-bridge) structure, lead in drinking water, radon, methane gas, and mold were not included in the scope of services for these reports. Therefore, the ISA reports should be deemed conclusive only with respect to the information obtained.

Maps depicting the ISA study area and potential hazardous waste facilities are presented in Figures 3.2.5-1 through 3.2.5-9. Table 3.2.5-1, located at the end of this section, identifies potential hazardous waste facilities along with their respective Map ID numbers and potential impact (low and moderate risk) on right-of-way acquisition and build alternatives selection.

According to information presented in the Department of Conservation Division of Mines and Geology map, naturally occurring asbestos is not indicated in the project footprint or in the vicinity of the project (California Department of Conservation 2000).

Site Reconnaissance
Site reconnaissance of the project area was performed in April 2008 and April 2009. The purpose of the reconnaissance was to survey the existing I-80/I-680/SR 12 corridors, adjacent roadway connector and private property conditions within and adjacent to the area from public thoroughfares to attempt to identify visual indicators of potential hazardous waste facilities/impacts. The site reconnaissance excludes the segment of eastbound I-80 from SOL PM 14.0 to 15.7 and eastbound SR 12E from SOL PM L1.8 to L2.0, the eastbound I-80 Truck Inspection Facility, and portions of adjacent property south of I-80, which was addressed in the ISA for a previous study (I-80 Eastbound Truck Scales Relocation Project). Because no further construction is proposed in this area, it was not addressed in the site reconnaissance.

Aerially Deposited Lead
Aerially deposited lead (ADL) in soils adjacent to highways is attributed to the historic use of leaded gasoline. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the time period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in the top two feet of material in areas within the highway right-of-way. Soils within the Department’s right-of-way that contain hazardous waste concentrations of ADL can be reused under the authority of variances issued by the DTSC. The variances allow stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels on the Department’s right-of-way when specific conditions are met.
The ADL report for the I-80 Eastbound Cordelia Truck Scale Relocation Project (a nearby project) is summarized in the 2009 ISA update. ADL investigation of the Department’s right-of-way consisting of the eastbound shoulder of I-80, from PM 10.0 to 15.7, and eastbound SR 12E from PM L1.8 to L2.0 were performed. A total of 105 soil samples were collected for lead analysis. Additionally, 20 step-out borings were advanced and 24 soil samples were collected. Soil samples were collected from the step-out borings at selected depths between the surface and 2.5 feet, and were based upon the depth intervals where reported soluble lead concentrations (using the waste extraction test [WET]) exceeded the soluble threshold limit concentration (STLC) of 5.0 milligrams per liter (mg/l) in the corresponding initial samples. Soil analytical results and the lead statistical evaluation of the initial borings indicated the following.

- Shallow soil at the western and eastern portions of the project area would not be classified as a California hazardous waste because the 90% upper confidence limit (UCL) predicted soluble WET lead concentration is less than the lead STLC of 5.0 mg/l.

- The top one foot of soil excavated from the central portion of the area investigated should be either (1) managed and disposed of as a California (but not an RCRA—i.e., Federal) hazardous waste or (2) stockpiled and re-sampled to confirm waste classification in accordance with specific disposal facility acceptance criteria, if applicable. Underlying soil would not be classified as hazardous waste based on lead content. Based on the results of the step-out borings, the ADL impacts at hazardous-waste levels do not appear to extend further than 12 feet from the edge of pavement (EOP).

- Analytical results of the step-out boring soil samples did not report soluble WET lead at concentrations above the STLC of 5.0 mg/l. Therefore, soil excavated from areas greater than approximately 12 feet from the EOP (approximately ten feet from the initial borings) and generated for offsite disposal should not be classified as a California hazardous waste based on lead content.

**Environmental Data Resources Database Search**

Environmental Data Resources (EDR) performed a search of federal, state, and local databases for the project footprint and the surrounding area (Appendix E in the 2008 ISA). The following sections provide additional information regarding properties with potential hazardous materials located within approximately 0.25 mile of the project footprint.

**Emergency Response Notification System**

The Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances. Two ERNS sites are within the search area for the proposed project.

- Emergency Response Notification System (ERNS) listing for Eastbound I-80 and I-680 overpass—In December 1988, approximately 100 gallons of gasoline spilled from an overturned tanker truck into Green Valley Creek.

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LUST and Spills, Leaks, Investigation, and Cleanup Listings
Review of the EDR search report in the ISA indicates that 5 facilities of concern in the vicinity of the project area are referenced on the LUST and/or Spills, Leaks, Investigation, and Cleanup (SLIC) listings. Two sites appear to be associated with property to be potentially acquired by the Department as part of the proposed improvement project, and include the following:

- **The Valine property at 4000 Russell Road in Fairfield (Map ID No. 23).** Based on subsequent soil and groundwater sample results, the Solano County Department of Resource Management granted case closure on June 11, 2008.

- **The 76 station (formerly Unocal) at 119 Red Top Road in Fairfield (Map ID No. 2).** The County Department of Resource Management granted UST case closure on August 25, 1997.

Table 3.2.5-2 provides a summary of LUST and SLIC cases within the project vicinity that are currently open.

### Table 3.2.5-2. LUST and SLIC Properties

<table>
<thead>
<tr>
<th>Map ID No.</th>
<th>Name</th>
<th>Address</th>
<th>Substance</th>
<th>Affected Media</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>PrimeSource Inc./Sequoia Supply</td>
<td>250 Dittmer Road</td>
<td>Gasoline, MTBE</td>
<td>Soil and Groundwater (Drinking water aquifer)</td>
<td>Verification Monitoring</td>
</tr>
<tr>
<td>33</td>
<td>Canova Moving and Storage</td>
<td>1336 Woolner Avenue</td>
<td>Gasoline, MTBE, BTEX</td>
<td>Soil and Groundwater, possible utility migration</td>
<td>Remediation</td>
</tr>
<tr>
<td>36</td>
<td>Sheldon Oil Co.</td>
<td>526 School Street</td>
<td>Not Reported</td>
<td>Soil and Groundwater</td>
<td>Open LUST and SLIC case; Remediation</td>
</tr>
</tbody>
</table>


UST/AST Listings
The EDR search report indicates that 12 facilities at and in the vicinity of the project study area contain registered USTs or ASTs. Many of these facilities are also included in the LUST listings. A review of the listings indicates that two of the registered UST facilities are located at properties proposed for full or partial Department acquisition as part of the proposed improvement project: the 76 Station at 119 Red Top Road in Fairfield (UST case closed), and Super Store #70567 Industries at 199 Red Top Road in Fairfield (no pending actions or violations).

RCRA SQG, FINDS and HAZNET Listings
There are 18 facilities at or in the vicinity of the project study area that are referenced on the RCRA Small and Large Quantity Generator (SQG and LQG) listings as generating between 100 and 1,000 kilograms and greater than 1,000 kilograms, respectively, of hazardous waste per month. There are 18 facilities listed in the Facility Index System (FINDS) from cross reference to other regulatory listings relating to chemical use, storage, and disposal, and 23 facilities at or in the vicinity of the project study area are referenced in the HAZNET listing for filing hazardous waste manifests.

The EDR Orphan Summary identifies properties that have incomplete address information and could not be specifically plotted. A total of 49 properties were listed in the Orphan Summary. Approximately four of the properties listed on the Orphan Summary are located within the project study area and have been incorporated in the prior regulatory listing summaries. None of
these properties, however, are properties proposed for acquisition (copies of the EDR Orphan Summary and individual EDR Site Reports for the listed facilities are presented in Appendix B in the ISA Update).

**ISA Conclusions**

Table 3.2.5-1 lists sites that were identified during the initial site assessment. The ISA identified a total of eight “moderate impact” areas of concern in addition to areas identified during site reconnaissance within the ROW such as the UPRR Bridge and crossing (listed at the end of Table 3.2.5-1). It should be noted that some sites are listed in multiple databases. Therefore, the total number of hazardous listings is greater than the total number of sites.

**Site Investigation Report**

A physical site investigation for this project has not been completed, however, the *Private Property Investigation Report, I-80 Eastbound Cordelia Truck Scale Relocation Project, Fairfield, California* reported finding chemicals of concern in the surface soil.

Dieldrin, an insecticide, was reported in composite soil samples collected at the eastbound I-80 truck-scale project site at concentrations that exceeding the residential and commercial/industrial land use environmental screening levels established by the San Francisco Bay Regional Water Quality Control Board.

The pesticide 4,4’ DDE was reported in composite soil samples at concentrations that equaled or exceeded California’s hazardous-waste threshold limit.

Arsenic concentrations in site soil samples collected at the eastbound I-80 truck-scale project site were between <1.0 mg/kg and 40 mg/kg, exceeding the residential land use environmental screening level of 0.39 mg/kg and the commercial/industrial land use environmental screening level of 1.6 mg/kg for shallow soil.

The chemicals of concern found on agricultural land required to build the eastbound I-80 truck-scale project might also be present on agricultural land required to construct this project.

**Environmental Consequences**

The ISA and site investigation reports identified the following potential hazardous materials/waste conditions.

- Contamination associated with nearby agricultural uses:
  - Soil impacts associated with pesticides, herbicides, petroleum hydrocarbons, and metals from agricultural use. Pesticides are present in surface soil in the central and eastern portions of the proposed project area and the Suisun Creek Bridge area.

- Other soil contamination:
  - Contaminated soil associated with leaking storage tanks and sanitary sewer pipelines.
  - Groundwater in the eastern portion of the proposed project area and the Suisun Creek Bridge area appears to be affected by pesticides. Potential impacts may be associated with construction of bridge pilings greater than ten feet deep.
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- Contamination associated with traffic or roadway maintenance:
  - ADL at levels exceeding hazardous waste criteria have been identified within the unpaved shoulders and median within existing I-80 right-of-way in the central and eastern portions of the project area.
  - Lead-containing paint (LCP) associated with removal of existing yellow pavement striping.

- Potential contamination associated with the removal or modification of facilities or structures:
  - Sulfur from bridge rail posts may be encountered during demolition;
  - LCP associated with steel structures may be encountered during demolition;
  - Treated-wood waste may be encountered during demolition;
  - Asbestos-containing pipe may be encountered during demolition.

- Contamination associated with identified potential hazardous waste facilities:
  - Past residual petroleum hydrocarbon releases may require additional UST removal and soil and groundwater remediation.

The following environmental consequences may result from construction and operation of the project.

**Exposure of Humans and the Environment to Groundwater Contamination as a Result of Construction Activities**

As previously discussed, Table 3.2.5-1 identifies potential hazardous waste facilities along with their respective Map ID numbers and potential impact to right-of-way acquisition and build alternatives selection. Eight facilities located within the project area are considered moderate-risk. Five of these have documented groundwater contamination and as such, are considered high-risk facilities. All eight of the medium/high risk sites are located within or adjacent to the footprints of both alternatives and therefore would not influence the selection of one alternative over another. Although some of these cases are considered closed, testing for contaminants should be conducted in order to determine the extent and nature of possible contamination. During construction of the project, the potential for human exposure (i.e., construction workers) to existing contaminated groundwater would occur mainly during dewatering activities such as the installation of bridge piers.

Under the No-Build Alternative, there would be no construction and therefore, no potential to expose workers or nearby land uses to hazardous materials as a result of construction activities.

**Potential for Exposure of Construction Workers or Nearby Sensitive Land Uses to Previously Unknown Hazardous Materials as a Result of 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.
Under the No-Build Alternative, there would be no construction and therefore, no potential to expose workers or nearby land uses to hazardous materials as a result of construction activities.

**Potential for Exposure of Known Hazardous Materials to Humans or the Environment as a Result of Construction Activities**

The project area generally has the potential for hazardous materials in the form of heavy metals, such as chromium and lead in yellow pavement striping; soils contaminated with pesticides, herbicides, and metals; treated-wood waste; bridge rail post sulfur; asbestos-containing materials in various bridge components; and petroleum hydrocarbons that could be released during construction of any of the build alternatives unless measures are taken to avoid that release. In addition, a nearby ADL investigation confirmed the presence of lead-contaminated soil next to the freeway. 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.

The ISA identified 8 areas of moderate concern that would be affected by the project (See Table 3.2.5.-1); the Private Property Investigation Report identified an additional potential area of concern. During the development of alternatives, feasible alternative geometrics were not identified that would avoid the listed properties. These properties are:

- The 76 Station (Map ID No 2) – affected by the extension of Red Top Road under Alternatives B and C and C, Phase 1.
- The Former Terminal Stations, Inc. (Map ID No. 15) site – affected by the construction of the Suisun Valley Road interchange under Alternatives B and C.
- The 76 Station (Map ID No. 19) – affected by the Suisun Valley Road Interchange under Alternatives B and C.
- The Former Old Fruit Bowl Mobile Station site (Map ID No. 23) – affected by the westbound truck scales under Alternatives B and C.
- Moore Tractor Company (map ID No. 25) – affected by I-80/SR 12E Interchange improvements under Alternatives B and C.
- Concrete Pipe Distributors (Map ID No. 26) – affected by I-80/SR 12E Interchange improvements under Alternatives B and C.
- Former Sheldon Oil Company site (Map ID No. 35) – affected by SR 12E overpass into Suisun City under Alternatives B and C.
- Former Sheldon Oil Company site (Map ID No. 36) – affected by SR 12E overpass into Suisun City under Alternatives B and C.

Excavation and construction in these areas may disturb contaminated soil or groundwater. Other potential sources of contamination include aerially applied chemicals during agricultural use of adjacent parcels that could present a respiratory irritant to construction workers. Construction may require the movement or disposal of soils or materials containing some or all of these hazardous materials.
Under the No-Build Alternative, no construction would occur and therefore, there would be no potential to expose any known hazardous materials during construction.

**Potential for Exposure of Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials as a Result of Construction Activities**

Construction would involve the use of heavy equipment, 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. In addition, sanitary sewer pipelines may cross or exist within the planned roadway construction alignment. If pre-existing leaks are encountered, or if pipelines are ruptured during construction, construction workers or nearby land uses could be exposed to biological contamination. These hazards are applicable to any of the build alternatives.

Under the No-Build Alternative, no construction would occur and therefore, there would be no potential for an accidental release of hazardous materials as a result of construction activities.

**Avoidance, Minimization, and/or Mitigation Measures**

**Perform Groundwater Contamination Testing**

Five sites identified in Table 3.2.5-1 have documented groundwater contamination issues and as such, are considered high-risk facilities. Although some of these cases are considered closed, testing for contaminants should be conducted in order to determine the extent and nature of possible contamination. Testing at these five sites will verify whether groundwater contamination is present at environmentally significant concentrations. If contaminated groundwater will be encountered during construction then mitigation measures such as filtering the water will be used to ensure contaminated water is not discharged into storm drains.

Therefore, prior to the beginning of construction activities, testing will be performed on the five sites that are affected by Alternative C, Phase 1 (Map ID Nos. 15, 19, 23, 25, and 26).

**Develop and Implement Plans to Address Worker Health and Safety**

As necessary, plans such as a health and safety plan, best management practices, and/or an injury and illness prevention plan will be prepared and implemented to address worker safety when working with potentially hazardous materials, including biological contaminants, potential LCPs, soils potentially containing ADL, and other construction-related materials within the right-of-way for any soil disturbance.

**Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadways**

As required by the Department’s Standard Special Provision Section 14-11.07, the contractor will sample and test yellow pavement striping scheduled for removal to determine whether lead is present. All aspects of the proposed project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and
Safety Code. Disposal of the stripes will be at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the Department and the contractor. This measure will minimize effects from known hazardous materials.

**Dispose of Soils Contaminated with ADL, Arsenic, Pesticides, and Herbicides in Accordance with Appropriate Regulations**

Based on the results of the 2008 ADL investigation report summarized in the 2009 ISA, soils in the central and eastern portions of the project area would likely be classified as hazardous waste upon excavation. Additionally, 8 sites of moderate concern are located within the project footprint, and testing at these sites may reveal contaminated soils. This soil will be handled or disposed of in accordance with the California Health and Safety Code DTSC requirements. Lead-contaminated soil that is eligible for reuse on site under the provisions of the DTSC-approved variance will be used to construct new embankments. The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for Solano County. The Solano County CUPA provides regulatory oversight for hazardous materials. Consultation and a permit from the Solano County CUPA will be obtained before reusing any contaminated soil, as necessary. The CUPA will consult with the DTSC regarding any further requirements.

Based on the elevated arsenic, lead, and pesticides concentrations reported in soil samples from the upper 2.5 feet of soil at the private property parcels adjacent to the project area (reported in site specific reports for the I-80 Eastbound Truck Scales project), the top 2.5 feet of excavated soil may be reused within the project limits by placing the soil beneath a minimum of one foot of clean fill or beneath a pavement structure. If reuse conditions are not met, material will be categorized for disposal and any hazardous waste will be transported to the Class 1 disposal site at Kettleman City. This measure would minimize effects from known hazardous materials.

**Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals**

The Department will ensure that the contractor coordinates the timing of construction activities with individual growers on parcels within or adjacent to the project area to avoid any aerially applied chemical impacts on workers during construction.

**Sampling, Testing, and Treatment of Groundwater**

Groundwater sampling within the Suisun Creek Bridge vicinity of the project area should be performed to further evaluate potential contamination. Sampling and testing for contamination will be conducted during construction activities that require excavation deeper than four feet. Groundwater containing contaminants will be treated to reduce sediment load and metal content prior to discharge to surface water bodies or publicly owned treatment facilities, as required to meet the discharge requirements specified by the RWQCB. This process will avoid or minimize impacts to groundwater.
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### Table 3.2.5-1. Summary of Identified Potential Hazardous Waste Facilities and Recommendations

<table>
<thead>
<tr>
<th>Map ID No.</th>
<th>Facility</th>
<th>Address</th>
<th>API</th>
<th>Impact to ROW and Acquisitions</th>
<th>Information Source(s)</th>
<th>Environmental Impacts/Chemical of Concern</th>
<th>Regulatory Status</th>
<th>Potential Impact to I-80/680/SR-12 Improvement Project and Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tower Mart</td>
<td>4720 Gold Hill Road</td>
<td>Low Impact AB and C ESA</td>
<td>EDR Report LUST</td>
<td>Active service station located west of the project ESA. Based on information presented in the EIR report, this facility was listed in the LUST database for petroleum hydrocarbon impacts to soil only. The facility is listed with a case closed status from the SCBDM. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>76 Station</td>
<td>119 Red Top Road</td>
<td>Moderate Impact AB and C ESA</td>
<td>LUST SCBDM Files</td>
<td>Active service station located within the project ESA. USTs were removed in 1995. A leak in a waste oil UST was discovered and petroleum impacted soil excavated. Confirmation soil samples did not contain detectable levels of contaminants. Low levels of BTEX reported to be present at a depth of 4.5 feet along the former paper piping trenches. Groundwater not encountered in the excavation and the SCBDM indicates impacts to soil only. Replacement USTs reportedly subsequently installed at the facility. This facility was granted UST case closed status from the SCBDM in August 1997. This facility presents a moderate risk of impacting the I-80/680/SR-12 West Alternatives B and C based on proposed construction area boundaries. A partial or full parcel take may require UST removals, and additional soil and groundwater characterization and remediation from past petroleum hydrocarbon releases. Exploratory borings should be performed for any planned construction excavations on and adjacent to this facility to evaluate worker health &amp; safety and soil disposal options.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Sunnyside Farms</td>
<td>199 Red Top Road</td>
<td>Low Impact AB and C ESA</td>
<td>LUST SCBDM Files</td>
<td>The facility is currently a food distribution facility within the project ESA. Three USTs are not in place in 1999. Confirmation sample results were not included in SCBDM files. Three direct USTs reported to the facility. A fourth diesel UST and fuel dispenser removed in 2004 under SCBDM supervision. Contaminants not detected in confirmation soil samples. Groundwater was not encountered during boring activities. No pending regulatory action or active violations were noted in SCBDM files for this facility. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Jack-in-the-box (Former Red Top Mini Market)</td>
<td>107 Red Top Road (formerly 111 Red Top Road)</td>
<td>Low Impact AB and C ESA</td>
<td>LUST SCBDM Files 1990 Aerial</td>
<td>Currently a fast-food restaurant (formerly a service station) within the project ESA. One UST failed a leak test in 1996, and three USTs removed in 1997. Petroleum impacts to soil and a limited amount of soil was excavated during the UST removal. A 1996 site characterization found TPH and low levels of BTEX in 2 of the 3 soil samples collected at 10 feet. Soil samples at the 25 feet depth from the same borings did not contain detectable levels. Water samples collected from borings within the former UST excavation contained low levels of TPH and BTEX. Additional impacted soil and groundwater were removed from the property for offsite disposal. Contaminants were not detected in confirmation soil samples. This facility was granted a case closed status from the SCBDM in November 1996. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>United Parcel Service</td>
<td>500 West Cordelia Road</td>
<td>Low Impact AB CESA</td>
<td>LUST UST</td>
<td>Active UPS parcel distribution facility within the project ESA. The UPS facility was listed in the EIR report in the EIR report to the UST database for operation of one UST at the facility. No case files of the SCBDM for this property and no violations indicated in the EIR report. No pending regulatory action or active violations are noted for this facility. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternative C based on proposed construction area boundaries.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Prime Source</td>
<td>230 Ditmers Road</td>
<td>Low Impact AB CESA</td>
<td>LUST GC/Therm</td>
<td>The facility is an active automotive retroliner. One UST removed in 1998. Petroleum impacted soil was encountered in the tank pit. A replacement diesel UST was installed at the location later that year. In 1997, a motor oil UST was abandoned in place under the supervision of SCBDM. In 2005, both USTs removed. Impacted soil and groundwater identified and the area over-encaptured. Contaminants were not detected in confirmatory soil samples, though trace in groundwater. Additional borings and monitoring wells installed and soil excavated. Low levels of TPH remain in onsite groundwater. SCBDM is evaluating characterization request for No Further Action status for the facility. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternative C based on proposed construction area boundaries.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Anime Station</td>
<td>193 Lopes Road</td>
<td>Moderate Impact AB and C ESA</td>
<td>LUST UST</td>
<td>Active gas station with no reported releases or violations. The facility was observed in the field during the site reconnaissance and was not included in the EIR Report. No pending regulatory action or active violations are noted for this facility. This facility presents a low risk of impacting the I-80/680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
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</tr>
</tbody>
</table>
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### TABLE 1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Map ID No.</th>
<th>Facility Name</th>
<th>Address</th>
<th>APN</th>
<th>Impact to ROW and Acquisitions</th>
<th>Information Source(s)</th>
<th>Environmental Impacts/Chemical of Concern</th>
<th>Regulatory Status</th>
<th>Potential Impact to I-80/I-680/SR-12 Improvement Project and Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Napa Valley Beverage Company</td>
<td>497 Edison Court</td>
<td>Low Impact Alt B and C ESA</td>
<td>Recon SCDRM Files LUST</td>
<td>Two USTs removed in 1989. Low levels of contaminants encountered in soil from the tank pit. SCDRM required installation of monitoring wells. Crude soil remediation conducted in 1990. In August 1994, a groundwater sample from near the former UST excavation contained low levels of TPH.</td>
<td>This facility was granted a case closed status from the SCDRM in August 1995.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Hudson Beverage Company</td>
<td>237 Lopes Road</td>
<td>Low Impact Alt B and C ESA</td>
<td>Recon SCDRM Files LUST</td>
<td>The facility is a commercial business. Two USTs removed 1997. Impacts to soil and groundwater were encountered and over-excavation and removal of soil and groundwater conducted. Confirmation soil and groundwater samples showed residual petroleum impacts. In 2000, two USTs closed in place. In October 2000, sampling defined the extent of impact to a localized area near the former UST pit.</td>
<td>This facility was granted a case closed status from the SCDRM in March 2001.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Sierra Truck and Van (Formerly Trail Wagon)</td>
<td>225 Lopes Road</td>
<td>Low Impact Alt B and C ESA</td>
<td>SCDRM Files LUST</td>
<td>The facility is a commercial business. Two USTs removed in August 1993. Confirmation soil samples contained low levels of contaminants. The tank pit was over-excavated and final confirmation soil samples contained no contamination.</td>
<td>This facility was granted a case closed status from the SCDRM in October 1995.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
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<tr>
<td>11</td>
<td>Saturn of Fairfield</td>
<td>4850 Auto Plaza Court</td>
<td>Low Impact Alt B and C ESA</td>
<td>Recon</td>
<td>The property is an auto dealership located north of the project ESA. The facility was not listed in the EDR report, on the GeoTracker website, or in SCDRM case files.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
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<tr>
<td>12</td>
<td>Costco Gas Station</td>
<td>5011 Business Center Drive</td>
<td>Low Impact Alt B and C ESA</td>
<td>Recon EDR</td>
<td>The property is an active gas station located north of the project ESA. The facility had no reported releases and was listed in the EDR report. The property is in the UST, RCRA SQI, and FINDS databases. The EDR report identified three good USTs in use at the facility. The facility was not listed in the GeoTracker database or in SCDRM case files.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Crest Valley Cleaners</td>
<td>5053 Business Center Drive</td>
<td>Low Impact Alt B and C ESA</td>
<td>Recon EDR</td>
<td>The property is an active dry cleaner located north of the project ESA. The facility was listed in the EDR report in the Drycleaners and HAZNET databases. Regulatory information for the facility was not on the GeoTracker website or available in SCDRM case files.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Former Campbells Carpets</td>
<td>4731 Central Way</td>
<td>Low Impact Alt B and C ESA</td>
<td>SCDRM Files LUST</td>
<td>The property is a vacant portion of a commercial building. One UST was removed in 1989 without SCDRM permit. In August 1997, SCDRM requested soil and groundwater sampling to evaluate impacts. Soil and groundwater samples contained petroleum hydrocarbons and BTEX. Groundwater flow direction at that time was estimated to be to the east toward the southeast. A 1998 soil gas survey indicated low risk to building occupants.</td>
<td>This facility was granted a case closed status from the SCDRM in September 1998.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Hazardous Waste/Materials

### Table 1: Summary of Identified Potential Hazardous Waste Facilities and Recommendations

<table>
<thead>
<tr>
<th>Map ID No.</th>
<th>Facility Name</th>
<th>Address</th>
<th>APN</th>
<th>Impact to ROW and Acquisitions</th>
<th>Information Source(s)</th>
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<th>Potential Impact to I-80/I-680/SR-12 Improvement Project and Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Former Terminal Stations, Inc.</td>
<td>100 Suisun Valley Road</td>
<td>Moderate Impact</td>
<td>AH B and C ESA</td>
<td>SCIDRM Files</td>
<td>LUST</td>
<td>Currently vacant land, formerly occupied by a truck refueling facility located immediately west of I-80 and north of the I-80/I-680 interchange. In 1984, a waste oil disposal facility existed on the property. In 1987, USTs were removed and a soil and groundwater monitoring well was installed. Groundwater monitoring wells were installed and operated through 1997.</td>
<td>Based on the decreasing contaminant concentration trends in groundwater, use of the property, and lack of sensitive receptors within 1,000 feet, the SCIDRM concluded that the facility met the requirements for low-risk case closure. The SCIDRM granted UST case closure on May 3, 2001.</td>
</tr>
<tr>
<td>16</td>
<td>Vacant land (former Arco Station)</td>
<td>4510 Central Way</td>
<td>Low Impact</td>
<td>AH B and C ESA</td>
<td>SCIDRM Files</td>
<td>LUST</td>
<td>Currently vacant land (formerly occupied by an Arco service station prior to 1987) located east of the project ESA. In 1990, soil and groundwater samples contained petroleum hydrocarbons. Groundwater flow direction in 1990 was toward the southeast.</td>
<td>The SCIDRM granted UST case closure in July 2001.</td>
</tr>
<tr>
<td>17</td>
<td>Chevron Station</td>
<td>4-80 Central Way</td>
<td>Low Impact</td>
<td>AH B and C ESA</td>
<td>Recent SCIDRM Files</td>
<td>LUST</td>
<td>An active service station located east of the ESA. USTs removed in 1987.</td>
<td>SCIDRM granted low risk UST case closure for the project USTs in 1997 and additional case closures in March 2001 and April 2004.</td>
</tr>
<tr>
<td>18</td>
<td>Shell Station</td>
<td>4-408 Central Way</td>
<td>Low Impact</td>
<td>AH B and C ESA</td>
<td>Recent SCIDRM Files</td>
<td>LUST</td>
<td>Active service station located east of the project ESA. USTs removed in 1986.</td>
<td>SCIDRM granted UST case closure in April 1996.</td>
</tr>
</tbody>
</table>
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TABLE 1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS
I-80/I-680/SR-12 IMPROVEMENT PROJECT

<table>
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<tr>
<th>No.</th>
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<tbody>
<tr>
<td>19</td>
<td>76 Station</td>
<td>134 Pittman Road</td>
<td>Moderate Impact Alt B and C EZA</td>
<td>Recent SCDRM Files LUST</td>
<td>Active service station located at the northeast corner of the Pittman Road Station Valley Road entrance ramp to eastbound I-80. USTs removed in 1993 and impacted soil and groundwater over-encapsulated and over-pumped for offsite disposal. Groundwater wells installed and monitored through 2001. Groundwater impacts indicated decreasing trends. Groundwater flow direction in 2001 was toward the west-southwest. Impacted groundwater has approached the property boundary at Pittman Road, south of the eastbound I-80 entrance ramp.</td>
<td>SCDRM granted low risk UST case closure on July 27, 2001.</td>
<td>This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed in the Caltrans ROW at the Pittman Road/F-30 area prior to construction to evaluate soil and groundwater conditions, worker health &amp; safety, and soil disposal and groundwater treatment options due to potential impacts from petroleum hydrocarbon release at the adjacent property.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Valero Station</td>
<td>4444 Central Place</td>
<td>Low Impact Alt B and C EZA</td>
<td>Recent UST SCDRM Files</td>
<td>An active service station located east of the project EIA. Gasoline and diesel USTs were installed at the facility in 2001 when the station was built. No violations or unauthorized releases were noted in the SCDRM files.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Anco Station</td>
<td>4449 Central Place</td>
<td>Low Impact Alt B and C EZA</td>
<td>Recent SCDRM Files LUST</td>
<td>An active service station located east of the project EIA. USTs upgraded at the facility in 1998. Petroleum impacted soil identified at the time was excavated and removed. SCDRM requested additional soil and groundwater sampling to further define impacted areas. In 1999, additional soil and groundwater samples indicated low petroleum impacts.</td>
<td>SCDRM granted UST case closure on June 11, 1999.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Scandia Family Center</td>
<td>4300 Central Place</td>
<td>Low Impact Alt B and C EZA</td>
<td>Recent EDR</td>
<td>The facility is a miniature golf and miniature entertainment park located south of the project EIA. The EDR report listed a UST closed at the property on January 25, 2010. The facility was listed on the GeoTrader website as a registered UST facility, though not as a release site.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Former Old Fruit Bowl Mobile Station (Valleym Ranch Property)</td>
<td>4000 Russell Road</td>
<td>Moderate Impact Alt B and C EZA</td>
<td>SCDRM Files LUST</td>
<td>The property is a former service station (operated from 1956 to 1972) located west of and adjacent to I-80 within the project EIA on land proposed for Caltrans acquisition. Five UTSs removed in 2000 under observation by SCDRM. Oils petroleum impacts to soil and groundwater identified. Impacted soil over-encapsulated for onsite remediation and groundwater over-pumped for offsite disposal. Residual petroleum impacted soil and groundwater remains onsite.</td>
<td>SCDRM granted case closure on June 11, 2008.</td>
<td>This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate potential impacts to soil and groundwater conditions, worker health &amp; safety, and soil disposal and groundwater treatment options due to impacts from residual petroleum hydrocarbons release at the property.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Pacific Gas &amp; Electric Substation</td>
<td>South of the I-80/SR-12 East interchange</td>
<td>Low Impact Alt B and C and Option 1 and 2 EZA</td>
<td>Recent</td>
<td>Active PG&amp;E electrical substation with fluid-cooled pad-mounted transformers. Possible polychlorinated biphenyl (PCB) compound impacts to soil at the facility.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Moore Tractor Company</td>
<td>4088 Russell Road</td>
<td>Moderate Impact Alt B and C EZA</td>
<td>Recent Prior Phase I SCDRM Files</td>
<td>Currently a tractor sales and service facility located southwest of the I-80/SR-12 East interchange and within the project EIA on land proposed for Caltrans acquisition. SCDRM inspections indicated bulk automotive fluids stored at the property including diesel fuel (500 gallon ASTM), engine oil, and waste oil. A cement tank associated with a wash rack was also noted. Past SCDRM violations have included overfilling, on-site automotive fluid spill, and improper drum storage.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to past use of petroleum hydrocarbons and past operations at the property.</td>
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### Table 1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS

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<tr>
<td>26</td>
<td>Concrete Pipe Distributors</td>
<td>2974 Abberath Road</td>
<td>0027-518-070</td>
<td>Moderate Impact AH 10 and C ESA</td>
<td>Recon Phase</td>
<td>Currently a concrete pipe distributor located southwest of the I-80/I-680/SR-12 East interchange. A UST was reportedly removed in approximately 1985. No SCDRM information regarding the removal, 55-gallon drums from the adjacent Vogue Tractor Co. were observed stored at the facility in 1994.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a moderate risk of impacting the I-80-I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>27</td>
<td>Ford of Fairfield</td>
<td>3650 Auto Mall Court</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>28</td>
<td>Chrysler dealer</td>
<td>2955 Auto Mall Parkway</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>29</td>
<td>Dodge dealer</td>
<td>2901 Auto Mall Parkway</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>30</td>
<td>Volvo dealer</td>
<td>2855 Auto Mall Parkway</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>31</td>
<td>Hyundai dealer</td>
<td>2775 Auto Mall Parkway</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>32</td>
<td>Toyota dealer</td>
<td>2305 Auto Mall Parkway</td>
<td></td>
<td>Low Impact AH B and C and Options 1 and 2 ESA</td>
<td>Recon Phase</td>
<td>Active automobile dealership with no reported releases.</td>
<td>No pending regulatory action or active violations are noted for this facility.</td>
<td>This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B1 and C based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>33</td>
<td>Council Moving and Storage</td>
<td>1336 Woolner Avenue</td>
<td></td>
<td>Low Impact Options 1 and 2 ESA</td>
<td>LUST Geotradar</td>
<td>Currently an active moving and storage company located northwest of the project area. One UST removed in 1989 and petroleum impacts and groundwater identified. Groundwater wells installed and impacted groundwater monitored. Groundwater concentrations decreased during the 1990s. Additional investigations have defined control areas as soil and groundwater impacts. Groundwater flows to the southeast, though impacted groundwater does not extend south beyond Woolner Avenue.</td>
<td>Continuous groundwater monitoring required by SCDRM.</td>
<td>This facility presents a low risk of impacting the SR-12 East Options 1 and 2 based on proposed construction area boundaries.</td>
</tr>
<tr>
<td>34</td>
<td>Siskin Fire District</td>
<td>445 Jackson Street</td>
<td></td>
<td>Low Impact Options 1 and 2 ESA</td>
<td>LUST SCDRM Files</td>
<td>An active fire station located north of the project area. One UST removed in 1992. The tank pit was excavated and soil samples contained low petroleum impacts. Groundwater wells were installed and monitored. Final sampling showed no petroleum impacts to groundwater.</td>
<td>SCDRM granted UST case closure on July 18, 1997.</td>
<td>This facility presents a low risk of impacting the SR-12 East Options 1 and 2 based on proposed construction area boundaries.</td>
</tr>
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### Table 1: Summary of Identified Potential Hazardous Waste Facilities and Recommendations

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<tbody>
<tr>
<td>35</td>
<td>Former Sheldon Oil Co.</td>
<td>426 Main Street</td>
<td>Moderate Impact Option 1 ESA</td>
<td>LUST Sanborn Maps SCDRM Files</td>
<td>A former bulk petroleum storage facility located at the north end of the Suisun Channel, northeast of a portion of the project ESA (Option 1 SR-12 East Concept). The property has been redeveloped to support a commercial office building (One Harbor Plaza), associated parking lot, and harbor waterfront walkway. The former Sheldon Oil Company was depicted in 1985 and 1994 Sanborn Maps. The facility stored bulk quantities of diesel fuel, No. 2, asphalt emulsion, heating fuel Nos. 4, 5, 6, and used motor oil. Onsite soil impacted by petroleum hydrocarbons to a minimum depth of 9 ft. Onsite groundwater also impacted. Impacted areas extend to the Suisun Channel. Additional information regarding investigations and clean-up at the property was not available in SCDRM files.</td>
<td>SCDRM granted case closure to the facility on October 18, 1995.</td>
<td>This facility presents a moderate risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries. Exploatory boring should be performed prior to roadway construction in areas near Main Street in Suisun City to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to residual impacts related to former UST operations and other onsite chemical handling operations.</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Former Sheldon Oil Co.</td>
<td>526 School Street</td>
<td>Moderate Impact Option 1 ESA</td>
<td>LUST SCDRM Files</td>
<td>Currently a vacant lot (formerly used by the Sheldon Oil Co. as a truck washing/cleaning facility from the mid-1940s to 1991) located west of the Suisun Channel, at or adjacent to a portion of the project ESA (Option 1 SR-12 East Concept). Operations at the facility included the use of trichloroethylene (TCE) to clean truck tanks. Onsite TCE discharges reported, and onsite soil and subsurface groundwater impacted by petroleum hydrocarbons and VOCs identified. VOC-impacted groundwater has migrated offsite to the northeast. Impacted soil excavated and groundwater over-pumped for offsite disposal in 2006. Groundwater monitoring ongoing.</td>
<td>On-going groundwater monitoring required by SCDRM.</td>
<td>This facility presents a moderate risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries. Exploatory boring should be performed if partial or full parcel take is contemplated or if road construction is planned near the property to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to former onsite chemical handling operations.</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Former Tesaco Station</td>
<td>522 Main Street</td>
<td>Low Impact Option 1 ESA</td>
<td>SCDRM Files</td>
<td>Currently a municipal parking lot (formerly occupied by a service station) located east of the project ESA (Option 1 SR-12 East Concept). USTs removed prior to 1991. Petroleum-impacted soil and groundwater identified and impacted soil excavated for offsite disposal. Following excavation, soil and groundwater impacts had decreased.</td>
<td>SCDRM granted closure UST case closure on April 14, 1997.</td>
<td>This facility presents a low risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Union Pacific Railroad (705 West Street)</td>
<td>765 West Street</td>
<td>Low Impact Option 1 ESA</td>
<td>SCDRM Files</td>
<td>Currently a commercial facility located southeast of the project ESA (Option 1 SR-12 East Concept). Two USTs removed in 1998. Soil and groundwater petroleum impacts identified. Shallow groundwater at the property was designated as backfield and tidally influenced and not of domestic beneficial use. Due to these conditions, additional groundwater monitoring was not required.</td>
<td>SCDRM granted closure UST case closure on July 15, 1999.</td>
<td>This facility presents a low risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries.</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>Kinder Morgan Petrol Chemical Pipelines</td>
<td>Adjacent to I-80 (Fairfield) and Union Pacific Railroad tracks (Suisun City)</td>
<td>NA</td>
<td>Existing 180/I-680 SR-12 West and East ROW</td>
<td>Recon</td>
<td>Plumed excavation and grading in the vicinity of existing petroleum pipelines. Potential petroleum hydrocarbons resulting from pipeline operations.</td>
<td>NA</td>
<td>Perform soil and groundwater sampling for petroleum hydrocarbons based on proposed construction practices along the I-80 corridor in Fairfield and LPRK truck crossing in Suisun City to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to petroleum pipeline operations.</td>
</tr>
<tr>
<td>NA</td>
<td>180/I-680/SR-12 East West and East Bridge Structures</td>
<td>Various Locations</td>
<td>NA</td>
<td>Existing 180/I-680 SR-12 West and East ROW</td>
<td>Recon</td>
<td>Existing bridge structures to be removed, or removed.</td>
<td>NA</td>
<td>Abutments and headwalling joint surveys should be conducted at the bridge structures prior to any proposed construction or demolition to evaluate worker health &amp; safety, abatement and waste disposal options and comply with applicable regulations, including Bay Area Air Quality Management District requirements.</td>
</tr>
<tr>
<td>NA</td>
<td>180/I-680/SR-12 West and East</td>
<td>ROW Acquisition</td>
<td>NA</td>
<td>New ROW</td>
<td>Recon</td>
<td>Properties with current or historical agricultural land use may contain residual agricultural chemicals in shallow soil.</td>
<td>NA</td>
<td>Conduct soil investigations for pesticides, herbicides, and metals as applicable on land proposed for full or partial acquisition based on past agricultural land usage to evaluate soil reuse or disposal options.</td>
</tr>
</tbody>
</table>
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### TABLE 1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS

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<tbody>
<tr>
<td>NA</td>
<td>1-801-680/SR-12 West and East</td>
<td>ROW Acquisition</td>
<td>NA</td>
<td>New ROW</td>
<td>Recon</td>
<td>Existing structures within the project ESA and on parcel takes requiring demolition.</td>
<td>NA</td>
<td>Asbestos and lead-containing paint surveys should be conducted prior to any planned renovation or demolition of buildings either within the Caltrans ROW or on properties proposed for full or partial takes to evaluate worker health &amp; safety, abatement and waste disposal options and comply with applicable regulations, including Bay Area Air Quality Management District requirements.</td>
</tr>
<tr>
<td>NA</td>
<td>1-801-680/SR-12 West and East</td>
<td>Union Pacific Railroad Bridge and Crossing</td>
<td>NA</td>
<td>Existing 1-801-680/SR-12 West and East ROW</td>
<td>Recon</td>
<td>Planned excavation and grading within existing ROW and potential railroad crossing in SR-12 East Option 1. Potential metals, herbicides, petroleum hydrocarbons, and PAHs as applicable based on proposed construction practices at UP RR Bridge near 1-801/SR-12 West interchange and UP RR track crossing in Suisun City to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to past railroad operations.</td>
<td>NA</td>
<td>Perform soil and groundwater sampling for metals, herbicides, petroleum hydrocarbons, and PAHs as applicable based on proposed construction practices at UP RR Bridge near 1-801/SR-12 West interchange and UP RR track crossing in Suisun City to evaluate potential impacts to soil and groundwater, worker health &amp; safety, and soil disposal and groundwater treatment options related to past railroad operations.</td>
</tr>
<tr>
<td>NA</td>
<td>1-801-680/SR-12 West and East</td>
<td>Existing Corridors</td>
<td>NA</td>
<td>Existing 1-801-680/SR-12 West and East ROW</td>
<td>Recon Prior Nearby ADL Study</td>
<td>Planned excavation and grading within existing ROW</td>
<td>NA</td>
<td>Perform shallow soil sampling to evaluate potential ADL in soil for worker health &amp; safety and soil disposal options related to historical automobile exhaust emissions.</td>
</tr>
<tr>
<td>NA</td>
<td>1-801-680/SR-12 West and East</td>
<td>Existing Corridors</td>
<td>NA</td>
<td>Existing 1-801-680/SR-12 West and East ROW</td>
<td>Recon</td>
<td>Planned excavation and pavement work within existing ROW</td>
<td>NA</td>
<td>Further evaluate potential hazardous waste issues or provide construction special provisions for thermoplastic traffic paint, asbestos pipe, bridge rail post, asphalt and proper abandonment of wells, septic systems, and encountered unidentified UXs.</td>
</tr>
</tbody>
</table>

**Notes/ESA** – Environmental Study Area

USTR – Underground Storage Tank

AST – Aboveground Storage Tank

UBP – Union Pacific Rail Road

PAPs – Polynuclear Aromatic Hydrocarbons

DTEN – Diene, Toluene, Ethylbenzene, and Total Xylenes

GLD – Gold

PAHs – Polynuclear Aromatic Hydrocarbons

TPHg – Total Petroleum Hydrocarbons as Gasoline

TPHd – Total Petroleum Hydrocarbons as Diesel

---

**Visit:** Final Environmental Impact Report/Environmental Impact Statement

Interstate 80/Interstate 680/State Route 12 Interchange Project

**Date:** 3.2.5-25
Figure 3.2.5-1
Potential Hazardous Facility Locations

LEGEND:

--- Approximate ISA Study Area Boundary
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Figure 3.2.5-3
Potential Hazardous Facility Locations


LEGEND:
- - - - Approximate Environmental Study Area Boundary

2 76 Station, 119 Red Top Road
3 Sunnyside Farms, 199 Red Top Road
4 Jack-in-The-Box, 107 Red Top Road
   (Former Red Top Mini Market at 151 Red Top Rd.)

0 500

Figure 3.2.5-1
Potential Hazardous Facility Locations


02166.02 Haz Mat (10-09)
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Figure 3.2.5-4
Potential Hazardous Facility Locations


Legend:
- Approximate Environmental Study Area Boundary

1. UPS, 5000 W. Cordelia Road
2. PrimeSource, 250 Dittmer Road
3. ARCO Station, 105 Lopes Road
4. Napa Valley Beverage Co., 497 Edison Court
5. Hudson Beverage Co., 237 Lopes Road
6. Sierra Truck & Van, 225 Lopes Road
   (Former Trail Wagons)
7. Saturn of Fairfield, 4850 Auto Plaza Court
8. Costco Gas Station, 5101 Business Center Drive
9. Green Valley Cleaners, 5055 Business Center Dr.
Figure 3.2.5-5
Potential Hazardous Facility Locations

LEGEND:
- Approximate Environmental Study Area Boundary

14 Former Campbells Carpets, 4731 Central Way
15 Former Terminal Station, 100 Suisun Valley Road
16 Vacant Land (Former ARCO Station), 4510 Central Way
17 Chevron Station, 4490 Central Way
18 Shell Station, 4450 Central Way
19 76 Station, 134 Pittman Road
20 Valero Station, 4444 Central Place
21 ARCO Station, 4449 Central Place
22 Scandia Family Center, 4300 Central Place
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Figure 3.2.5-6
Potential Hazardous Facility Locations

LEGEND:
- •••••• Approximate Environmental Study Area Boundary

• Former Old Fruit Bowl Mobil Station,
  4000 Russell Road (Valine Ranch Property)
• PG&E Substation

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Figure 3.2.5-7
Potential Hazardous Facility Locations

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Figure 3.2.5-8
Potential Hazardous Facility Locations


LEGEND:
- - - - Approximate Environmental Study Area Boundary
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LEGEND:
- Approximate Environmental Study Area Boundary

33 Canova Moving & Storage, 1336 Woolner Avenue
34 Suisun Fire District, 445 Jackson Street
35 Former Sheldon Oil Company, 426 Main Street
36 Former Sheldon Oil Company, 526 School Street
37 Former Texaco, 522 Main Street
38 UPRR, 705 West Street
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3.2.6 Air Quality

Regulatory Setting
The Federal Clean Air Act (FCAA) as amended in 1990 is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the quantity of pollutants that can be 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. The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO$_2$), ozone (O$_3$), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller – PM$_{10}$ and particles of 2.5 micrometers and smaller – PM$_{2.5}$), lead (Pb), and sulfur dioxide (SO$_2$). In addition, State standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H$_2$S), and vinyl chloride. The NAAQS and State standards are set at a level that protects 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 within their general definition.

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

FCAA Section 176(c) prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that are not first found to conform to State Implementation Plan (SIP) for achieving the goals of Clean Air Act requirements related to the NAAQS. “Transportation Conformity” Act takes place on two levels: the regional, or planning and programming, level, and the project level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 CFR 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO$_2$), ozone (O$_3$), and particulate matter (PM$_{10}$ and PM$_{2.5}$), and in some areas sulfur dioxide (SO$_2$). California is nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO$_2$, and also has a nonattainment area for lead. However, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all of the 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 is based on use of travel demand and air quality models to determine whether or not implementation of those projects would conform to emission budgets or other tests showing that...
requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO) and the Federal Highway Administration (FHWA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or the 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 is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter (PM10 and PM2.5). A region is “nonattainment” if one or more monitoring stations in the region measures violation of the relevant standard, and U.S. EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by the U.S. EPA, and are then called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot spot analysis. In general, projects must not cause the “hot-spot”-related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

**Affected Environment**


Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes the relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

The project alternatives lie within the Carquinez Strait region of the San Francisco Bay Area Air Basin (SFBAAB). The Carquinez Strait is the only sea-level gap between the San Francisco Bay and the Central Valley. Within the region, the prevailing winds are from the west. During the summer and fall months, high offshore pressure systems and low pressure in the Central Valley force marine air to flow eastward through the Carquinez Strait. Figure 3.2.6-1 indicates the predominant wind direction in the region based on meteorological data from Travis Air Force Base (California Air Resources Board 2009). However, atmospheric conditions occasionally cause the winds to shift direction and flow from the east. These easterly winds usually contain more pollutants from the Sacramento and San Joaquin Valleys in the east than the cleaner marine air from the west. During summer and fall months, this condition can result in elevated pollutant levels as pollutants move through the strait into the central Bay Area from surrounding areas.
The high-pressure periods during the summer and fall months often are accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall. During the summer, mean maximum temperatures reach about 32.2°C (90°F), while mean minimum temperatures in the winter are typically 1.6°–4.4°C (35°–40°F). In distant areas like Fairfield, where the region is sheltered from the moderating effects of the strait, temperature extremes are especially pronounced.

**Attainment Status**

The EPA has classified the portion of Solano County within the San Francisco Bay Area Air Basin as being a marginal nonattainment area for 8-hour ozone NAAQS. For CO NAAQS, the EPA has classified urban areas of the county as a moderate maintenance area (≤ 12.7 ppm) and the rest of the county as an unclassified/attainment area (U.S. Environmental Protection Agency 2012a). For PM10 NAAQS the EPA has designated the county as an unclassified/attainment area. This information is presented in Table 3.2.6-1.

The 24-hour PM2.5 standard was lowered from 65 µg/m³ to 35 µg/m³ in 2006, and the EPA issued their final attainment status designations for the 35 µg/m³ standard on October 8, 2009. The county is now designated as a non-attainment area for 24-hour PM2.5 NAAQS (U.S. Environmental Protection Agency 2012a).

For ozone CAAQS, CARB has classified the county as being a serious nonattainment area, and for CO CAAQS CARB has classified the county as an attainment area. For PM10 and PM2.5 CAAQS, CARB has classified the county as a nonattainment area (California Air Resources Board 2012a). Solano County’s attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 3.2.6-1.
Table 3.2.6-1. Federal and State Ambient Air Quality Standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Symbol</th>
<th>Average Time</th>
<th>Standard (parts per million)</th>
<th>Standard (micrograms per cubic meter)</th>
<th>Violation Criteria</th>
<th>Attainment Status of Solano County</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>California</td>
<td>National</td>
<td>California</td>
<td>National</td>
</tr>
<tr>
<td>Ozone</td>
<td>O₃</td>
<td>1 hour</td>
<td>0.09</td>
<td>N/A</td>
<td>If exceeded</td>
<td>Serious non-attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 hours</td>
<td>0.070</td>
<td>0.075</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>180</td>
<td>137</td>
<td>If exceeded</td>
<td>Non-attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>147</td>
<td>147</td>
<td>If exceeded on more than 1 day per year</td>
<td>Marginal non-attainment</td>
</tr>
<tr>
<td>Carbon monoxide (Lake Tahoe only)</td>
<td>CO</td>
<td>8 hours</td>
<td>9.0</td>
<td>9</td>
<td>If exceeded</td>
<td>Atainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10,000</td>
<td>10,000</td>
<td>If exceeded on more than 1 day per year</td>
<td>Moderate (≤ 12.7 ppm) maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>20</td>
<td>35</td>
<td>If exceeded</td>
<td>Atainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23,000</td>
<td>40,000</td>
<td>If exceeded</td>
<td>Unclassified/attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 hours</td>
<td>6</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7,000</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>NO₂</td>
<td>Annual arithmetic mean</td>
<td>0.030</td>
<td>0.053</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>57</td>
<td>100</td>
<td>If exceeded on more than 1 day per year</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>0.18</td>
<td>0.100</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>339</td>
<td>N/A</td>
<td>If exceeded</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>SO₂</td>
<td>Annual arithmetic mean</td>
<td>NA</td>
<td>0.030</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>80</td>
<td>If exceeded</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 hours</td>
<td>0.04</td>
<td>0.14</td>
<td>If exceeded</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>105</td>
<td>365</td>
<td>If exceeded on more than 1 day per year</td>
<td>Atainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>0.25</td>
<td>0.075</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>655</td>
<td>196</td>
<td>If exceeded</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual mean</td>
<td>N/A</td>
<td>0.030</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>If exceeded</td>
<td>Attainment</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>H₂S</td>
<td>1 hour</td>
<td>0.03</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>42</td>
<td>N/A</td>
<td>N/A</td>
<td>Unclassified/attainment</td>
</tr>
<tr>
<td>Vinyl chloride</td>
<td>C₂H₅Cl</td>
<td>24 hours</td>
<td>0.01</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>N/A</td>
<td>N/A</td>
<td>No designation</td>
</tr>
<tr>
<td>Inhalable particulate matter</td>
<td>PM10</td>
<td>Annual arithmetic mean</td>
<td>N/A</td>
<td>N/A</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>N/A</td>
<td>If exceeded at each monitor within area</td>
<td>Non-attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 hours</td>
<td>N/A</td>
<td>50</td>
<td>If exceeded</td>
<td>Non-attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150</td>
<td>150</td>
<td>If exceeded on more than 1 day per year</td>
<td>Unattainment/attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual arithmetic mean</td>
<td>N/A</td>
<td>N/A</td>
<td>If exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>15</td>
<td>If exceeded</td>
<td>Non-attainment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 hours</td>
<td>N/A</td>
<td>N/A</td>
<td>If 3-year average from single or multiple community-oriented monitors is exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35</td>
<td>N/A</td>
<td>If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded</td>
<td>Non-attainment</td>
</tr>
<tr>
<td>Sulfate particles</td>
<td>SO₄</td>
<td>24 hours</td>
<td>N/A</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>N/A</td>
<td>NA</td>
<td>Unclassified/attainment</td>
</tr>
<tr>
<td>Lead particles</td>
<td>Pb</td>
<td>Calendar quarter</td>
<td>N/A</td>
<td>N/A</td>
<td>If exceeded no more than 1 day per year</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-day average</td>
<td>N/A</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rolling 3-month average</td>
<td>N/A</td>
<td>N/A</td>
<td>If equaled or exceeded</td>
<td>Averaged over a rolling 3-month period</td>
</tr>
</tbody>
</table>

Source: California Air Resources Board 2012a and 2012b; U.S. Environmental Protection Agency 2012a.

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; N/A = not applicable.
**Sensitive Receptors**
The Bay Area Air Quality Management District (BAAQMD) generally defines a sensitive receptor as a facility or land use that houses or attracts members of the population, such as children, the elderly, and people with illnesses, who are particularly sensitive to the effects of air pollutants.

Sensitive receptors normally refer to land uses with heightened sensitivity to localized rather than regional pollutants. Examples include emissions of criteria or toxic air pollutants (PM10 and PM2.5) that have health effects and, to a lesser extent, odors or odorous compounds such as ammonia and sulfur dioxide. Sensitive receptors would not be directly affected by emissions of regional pollutants such as ozone precursors (ROG and NOX). Various sensitive receptors are located in the vicinity of the project area (Figure 3.2.6-2) and may include: residences, schools, playgrounds, child care facilities, athletic facilities, health care facilities, convalescent centers, or rehabilitation centers. 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.

Figure 3.2.6-2 summarizes the general locations of sensitive receptors in the project area. Figure 3.2.6-2 does not include the locations of scattered or individual sensitive receptors. 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.

**Existing Air Quality Conditions**
Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 3.2.6-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or µg/m³. The nearest air quality monitoring station in the vicinity of the project area is located in Fairfield at Chadbourne Road; this station monitors for ozone. The closest monitoring station that monitors for carbon monoxide and particulate matter is located in the City of Vallejo at Tuolumne Street. Table 3.2.6-2 summarizes air quality monitoring data from the Fairfield and Vallejo monitoring stations during the last five years for which complete data are available (2007–2011).

Table 3.2.6-2 indicates that the Fairfield monitoring station has exceeded the state 1-hour ozone standard during three of the five reported years and the state and national 8-hour standards during all but one of the reported years. The Vallejo monitoring station has experienced similar conditions, exceeding the state 1-hour ozone standard during three of the five reported years and the state 8-hour standard during three years, while the national 8-hour ozone standard was only exceeded once in 2010. The Vallejo station has exceeded the state PM10 standard and federal PM2.5 standard during the 5-year monitoring period, while no violations of the state or federal CO standards has occurred at these monitoring stations during this 5-year monitoring period. In general, the number of NAAQS and CAAQS violations at both air quality monitoring stations has remained relatively constant or declined over the reporting period. This is consistent with long-term trends presented in the Environmental Impact Report for the 2035 RTP, which
demonstrate that the number of days the region experiences unhealthy air quality conditions is falling due to ARB and BAAQMD regulations.

**Carbon Monoxide**

The project alternatives are located in a moderate (≤ 12.7 ppm) maintenance area with regards to the federal CO standard. Consequently, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on the CO Protocol developed for the Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997). This CO protocol details a qualitative step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for CO.

**Particulate Matter**

As previously indicated, Solano County was designated by the EPA as an unclassified/attainment area for 24-hour PM2.5 NAAQS. However, the 24-hour PM2.5 standard was lowered from 65µg/m³ to 35 µg/m³ in 2006, and the EPA designated the Bay Area as a nonattainment area. While the county is currently designated as a nonattainment area for 24-hour PM2.5 NAAQS, the county is designated as an attainment area for annual PM2.5 NAAQS. While conformity does not yet apply for PM2.5 (the effective date is December 14, 2010), a preliminary PM2.5 hot spot analysis in accordance with the EPA’s 2006 guidance has been conducted to show that the proposed project would conform when the conformity requirements apply.

On March 10, 2006, the EPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM2.5 and PM10 nonattainment and maintenance areas. The final rule requires PM hot spot analyses to be performed for Projects of Air Quality Concern (POAQC) or any other project identified by the PM10 and/or PM2.5 SIP(s) as a localized air quality concern. In March 2006, the FHWA and EPA issued a guidance document titled *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006). The PM10 hot spot analysis is not required for project-level conformity because the area is in attainment or unclassified for the national PM10 standards. For the assessment of PM10 hot spots, the final rule is that a hot spot analysis is to be performed only for POAQCs. POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern.

For projects identified as not being a POAQC, qualitative PM2.5 and PM10 (for regions without an approved conformity SIP) hot spot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that CAA and 40 CFR 93.116 requirements were met without a hot spot analysis because such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1). Because this analysis assumes the area is classified as a nonattainment area for the federal PM2.5 standard, a determination must be made as to whether it would result in a PM2.5 hot spot.
### Table 3.2.6-2. Ambient Air Quality Monitoring Data Measured at the Fairfield at Chadbourne Road and of Vallejo at Tuolumne Street Monitoring Stations

<table>
<thead>
<tr>
<th>Pollutant Standards</th>
<th>Fairfield</th>
<th>Vallejo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Hour Ozone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>0.089</td>
<td>0.116</td>
</tr>
<tr>
<td>1-hour California designation value</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>1-hour expected peak day concentration</td>
<td>0.100</td>
<td>0.103</td>
</tr>
<tr>
<td>Number of days standard exceeded&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAQS 1-hour (&gt;0.09 ppm)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>8-Hour Ozone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National maximum 8-hour concentration (ppm)</td>
<td>0.067</td>
<td>0.090</td>
</tr>
<tr>
<td>National second-highest 8-hour concentration (ppm)</td>
<td>0.067</td>
<td>0.071</td>
</tr>
<tr>
<td>State maximum 8-hour concentration (ppm)</td>
<td>0.068</td>
<td>0.090</td>
</tr>
<tr>
<td>State second-highest 8-hour concentration (ppm)</td>
<td>0.067</td>
<td>0.071</td>
</tr>
<tr>
<td>8-hour national designation value</td>
<td>0.066</td>
<td>0.068</td>
</tr>
<tr>
<td>8-hour California designation value</td>
<td>0.077</td>
<td>0.077</td>
</tr>
<tr>
<td>8-hour expected peak day concentration</td>
<td>0.080</td>
<td>0.083</td>
</tr>
<tr>
<td>Number of days standard exceeded&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAAQS 8-hour (&gt;0.075 ppm)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CAAQS 8-hour (&gt;0.070 ppm)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National&lt;sup&gt;b&lt;/sup&gt; maximum 8-hour concentration (ppm)</td>
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<td>CAAQS 1-hour (&gt;20 ppm)</td>
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### Chapter 3. Affected Environment: Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Air Quality

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<tr>
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<tr>
<td>National annual designation value (µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
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<td>NAAQS 24-hour (&gt;35 µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
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</tbody>
</table>

**Sources:** California Air Resources Board 2012c; U.S. Environmental Protection Agency 2012b.

**Notes:**
- CAAQS = California ambient air quality standards.
- NAAQS = national ambient air quality standards.
- = insufficient data available to determine the value.
-<sup>a</sup> An exceedance is not necessarily a violation.
-<sup>b</sup> National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
-<sup>c</sup> 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.
-<sup>d</sup> Measurements usually are collected every 6 days.
-<sup>e</sup> State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
-<sup>f</sup> Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.
Mobile-Source Air Toxics

The CAAA made controlling air toxic emissions a national priority, by which Congress mandated that the EPA regulate 188 air toxics. These substances are also known as hazardous air pollutants (HAPs). In the EPA’s latest rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (Federal Registry, Vol. 72, No. 37, page 8430, February 2007) it identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). The IRIS is a comprehensive database of specific substances known to cause human health effects. In addition, the EPA identified the following seven compounds as priority MSATs:

- Acrolein.
- Benzene.
- 1,3-Butadiene.
- Diesel particulate matter/diesel exhaust organic gases.
- Formaldehyde.
- Naphthalene.
- Polycyclic organic matter.

While the FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future rules.

To address emissions of MSATs, the EPA has issued a number of regulations, including the 2007 rule mentioned above, that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if VMT increases by 145% as assumed, a combined reduction of 72% in the total annual emission rate for priority MSATs is projected from 1999 to 2050, as shown in the Figure 3.2.6-3.

In light of recent developments regarding MSAT’s, the FHWA has issued interim guidance for the assessment of MSAT’s in NEPA documents for highways projects. The *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* uses a tiered approach to addressing MSAT emissions from highway projects in NEPA documents (Federal Highway Administration 2009a). Depending on the specific project circumstances, the FHWA has identified the following three levels of analysis:

1. No analysis for exempt projects or projects with no potential for meaningful MSAT effects.
2. Qualitative analysis for projects with low potential MSAT effects.
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

**Projects with Higher Potential MSAT Effects**

Projects included in this category have the potential for meaningful differences among project alternatives. The FHWA expects only a limited number of projects to meet this two-pronged test. To fall into this category, projects must:
• Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location.

or

• Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000\(^1\), or greater, by the design year. In addition, to fall into this category, projects must also be proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts, and the FHWA should be contacted for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis to forecast local-specific emission trends of the priority MSATs (benzene, acrolein, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel exhaust) for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions, mitigation options should be identified and considered.

**Applicable Project MSAT Category Assessment**

The FTOR prepared by the project traffic engineers does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made using a peak-hour–to–daily conversion multiplier of 4.5 (according to Joel Rabinovitz, a transportation engineer in Walnut Creek, California, in a January 29, 2009 telephone conversation). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA’s MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA’s 2009 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions is required (Federal Highway Administration 2009a). Therefore, an evaluation of MSAT emissions was performed using traffic data provided by Fehr & Peers, and the CT-EMFAC model.

**Unavailable Information for Project-Specific MSAT Impact Analysis**

This text is taken from the Federal Highway Administration’s *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*, Appendix C (Federal Highway Administration 2009a).

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

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\(^1\) Using EPA’s MOBILE 6.2 emissions model, FHWA technical staff determined that this range of AADT would be roughly equivalent to the CAA definition of a major HAP source (i.e., 25 tons per year for all HAPs or 10 tons per year for any single HAP). Significant variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Air Quality

genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

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

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA’s Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA’s MOBILE6.2 model, the California EPA’s Emfac2007 model, and the EPA’s DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA’s guideline CAL3QHC model was conducted in an NCHRP study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country – three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.
There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

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

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

**Environmental Consequences**

The project alternatives would generate construction-related and operational emissions. The method used to evaluate construction and operational effects is described below. See the Air Quality Study Report for more detailed methodology.

Discussions with the project traffic engineers indicated that traffic volumes would not change between the build alternatives. Therefore, existing year (2004), interim year (2015) with and without project, and design-year (2035) with and without project conditions were evaluated.

**Conformity of the Regional Transportation Plan with the State Implementation Plan**

The evaluation of transportation conformity with regards to criteria pollutants was done by evaluating the inclusion of the proposed project in the most recent RTP as discussed above and in the Air Quality Study Report.
The fundable first phase of either alternative of the proposed project is fully funded in the financially constrained 2009 Regional Transportation Plan (RTP) for the San Francisco Bay Area: Change in Motion (RTP) (Appendix 1, page 126). The Federal Highway Administration (FHWA) and Federal Transportation Administration (FTA) found the 2009 RTP to be in conformity with the SIP on May 29, 2009. The project is also included in the MTC’s financially constrained 2011 Transportation Improvement Program as TIP ID SOL070020. The MTC adopted the 2011 TIP on October 27, 2010, and the FHWA and FTA adopted the 2011 TIP on December 14, 2010. The design concept and scope of either alternative is consistent with the project description in the 2009 RTP and the 2011 TIP, and the assumptions in the Metropolitan Transportation Commission’s regional emissions analysis.

Alternative C has been selected as the preferred alternative. Alternative C, Phase 1 is listed in the 2035 RTP and 2011 TIP. The design concept and scope of Alternative C, Phase 1 is consistent with the project description in the most recent 2035 RTP and the 2011 TIP. The design concept and scope of the proposed project are consistent with the project listings in the 2035 RTP and 2011 TIP and would not interfere with timely implementation of TCMs.

Under the No-Build Alternative, there would be no changes to the current conditions and no effect.

**Potential Violations of Carbon Monoxide NAAQS or CAAQS**

The effects of localized CO hot spot emissions were evaluated through CO dispersion modeling using the *Transportation Project-Level Carbon Monoxide Protocol* developed for the Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. As previously discussed, emissions of CO concentrations are estimated for roadway intersections within the project area, as well as mainline I-80, I-680, and SR 12 segments. These roadway intersections and segments were modeled because they represent the roadway intersections and segments in the vicinity of the project area with the highest traffic volumes and worst levels of congestion/delay. Table 3.2.6-3 and Table 3.2.6-4 summarize the results of the intersection and segment CO modeling, respectively, and indicate that CO concentrations are not anticipated to exceed the 1- or 8-hour NAAQS and CAAQS under any of the build alternatives or the No-Build Alternative.

**Potential Violations of PM2.5 or PM10 NAAQS or CAAQS**

The effects of localized PM were evaluated using the EPA and FHWA’s guidance manual, *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration, and U.S. Environmental Protection Agency 2006).
The EPA’s transportation conformity rules stipulate that transportation projects considered POAQC’s, or any other project that is identified by the PM10 and/or PM2.5 SIP(s) as a localized air quality concern, must be analyzed for local air quality impacts (i.e., hot spot) in PM2.5 and PM10 nonattainment and maintenance areas. As previously indicated, the County is designated by the EPA as a nonattainment area for the lower PM2.5 standard. A PM2.5 hot spot analysis in accordance with the EPA’s 2006 guidance was therefore conducted to show that the proposed project would conform when the conformity requirements apply. Because the area is in attainment or unclassified for the national PM10 standards, a hot-spot analysis for PM10 is not required to satisfy federal transportation conformity.

As previously indicated, the FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. An approximate estimate of AADT may be made based on the peak-hour traffic volumes on these roadways (according to Joel Rabinovitz, in the conversation cited earlier), and it is estimated that mainline AADT on I-80 would be in excess of the FHWA and EPA’s POAQC threshold of 125,000 AADT. In addition, based on traffic count data collected by the Department, it is anticipated that diesel trucks would represent 3.49% of the total traffic volumes in the area (California Department of Transportation 2008).

Although truck traffic will not exceed more than 8% of the traffic volumes, ADT on I-80 would be in excess of 125,000. The proposed project is therefore considered a POAQC per the EPA’s 2006 Transportation Conformity Rule. A qualitative PM2.5-hot spot analysis was conducted to demonstrate the project would not result in new violations of the federal PM2.5 air quality standards. Confirmation of this determination was made by the appropriate state and local agencies, including MTC and Caltrans, during interagency consultation (IAC) on December 8, 2010.

Although an analysis of PM10 hotspots is not required by the EPA’s transportation conformity rule, it is important to note that the project is likewise not expected to result in new violations of the federal or state PM10 standards. Project-related PM10 and PM2.5 emissions follow similar trends and are relatively proportional in transportation analyses (with PM2.5 representing a fraction of PM10). This statement is substantiated by project-specific modeling (see Table 3.2.6-8 below), which demonstrates almost identical mass emissions rates for PM10 and PM2.5 under all project conditions. Based on the relationship between PM10 and PM2.5, the findings and results from the qualitative analysis performed for PM2.5, and trends in PM10 emissions, the project is not expected to result PM10 hot-spots or new violations the PM10 NAAQS or CAAQS.

There would be no effect under the No-Build Alternative.
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Source: ICF Jones & Stolkes 2009

- Receptors are located 100 feet from the center of each intersection diagonal, 71 feet from the roadway centerline, and at the boundary of the mixing zone.
- Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.
- The federal and state 1-hour standards are 35 and 20 ppm, respectively.
- The federal and state 8-hour standards are 9 and 0.5 ppm, respectively.
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### Table 3.2.6-4. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area (Segments)

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<th>Alternative C Phase 1</th>
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<th>Alternative C Phase 1</th>
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<th>Full Build Alternative C</th>
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<td>8-hr</td>
<td>Max</td>
<td>1-hr</td>
<td>8-hr</td>
<td>Max</td>
<td>1-hr</td>
<td>8-hr</td>
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<tr>
<td>I-68 between Gold Hill and Red Top</td>
<td>Max Receptor</td>
<td>2.9  3.9</td>
<td>6.6  4.9</td>
<td>7.0  5.5</td>
<td>4.2  3.5</td>
<td>5.1  3.9</td>
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<td>3.9  3.7</td>
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<tr>
<td>I-68 between I-680 and Green Valley Rd</td>
<td>Max Receptor</td>
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<td>6.9  6.9</td>
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<td>6.9  6.8</td>
<td>8.8  6.7</td>
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<td>I-80 between Pittman/Susie Valley and Trask Scales</td>
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<td>5.2  3.9</td>
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<td>I-80 between Truck Scales and Almenard/SR12 East</td>
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<td>7.1  7.1</td>
<td>7.1  7.1</td>
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<tr>
<td>I-80 between Green Valley Road and Pittman Rd</td>
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<td>7.2  7.2</td>
<td>7.2  7.2</td>
<td>7.2  7.2</td>
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<td>I-80 between Back Ave and Travis Blvd</td>
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<td>5.6  3.7</td>
<td>5.6  3.7</td>
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<td>I-680 between Red Top and Central Ave/680 interchange</td>
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</table>

Source: ICF Jones & Stokes 2009.

- Receptors are located 10, 35, 50, and 100 feet from the edge of the freeway segment on either side of the roadway segment.
- Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.
- The federal and state 1-hour standards are 35 and 20 ppm, respectively.
- The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.
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Table 3.2.6-5. Criteria Pollutant, MSAT, and CO₂ Modeling Peak Period Traffic Data Inputs

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<th>2015 Alt C No Project</th>
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<th>2035 Alt C Phase 1</th>
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<td>VMT %</td>
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*Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).*
### Table 3.2.6-6. Criteria Pollutant, MSAT, and CO₂ Modeling Non-Peak Period Traffic Data Inputs

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<td>%</td>
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<td>%</td>
<td>VMT</td>
<td>%</td>
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<td><strong>3,255,980</strong></td>
<td><strong>100.0</strong></td>
<td><strong>3,439,548</strong></td>
<td><strong>100.0</strong></td>
<td><strong>3,375,186</strong></td>
<td><strong>100.0</strong></td>
<td><strong>3,334,118</strong></td>
<td><strong>100.0</strong></td>
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</table>

*Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).*
Table 3.2.6-7. I-80/I-680/SR 12 MSAT Emissions (pounds per day)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Acrolein</th>
<th>Acetaldehyde</th>
<th>Benzene</th>
<th>1, 3-Butadiene</th>
<th>Diesel Particulate Matter</th>
<th>Formaldehyde</th>
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<tr>
<td>Existing (2004)</td>
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<td>71.34</td>
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<td>14.29</td>
<td>32.95</td>
<td>6.25</td>
<td>71.95</td>
<td>38.05</td>
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<td>33.13</td>
<td>6.46</td>
<td>74.36</td>
<td>37.61</td>
</tr>
<tr>
<td>2015 Alt C, Phase 1</td>
<td>1.40</td>
<td>13.88</td>
<td>32.67</td>
<td>6.29</td>
<td>72.62</td>
<td>37.30</td>
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<td>7.17</td>
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<td>3.52</td>
<td>25.86</td>
<td>19.62</td>
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<tr>
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<td>7.40</td>
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<td>20.89</td>
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<td>2035 Alt B</td>
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<td>4.62</td>
<td>32.81</td>
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<td>2035 Alt C</td>
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<td>4.27</td>
<td>31.85</td>
<td>21.55</td>
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</table>

Comparison of Alternatives to Existing

<table>
<thead>
<tr>
<th></th>
<th>Acrolein</th>
<th>Acetaldehyde</th>
<th>Benzene</th>
<th>1, 3-Butadiene</th>
<th>Diesel Particulate Matter</th>
<th>Formaldehyde</th>
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</thead>
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<tr>
<td>2015 Alt B, Phase 1 to Existing</td>
<td>-1.80</td>
<td>-10.77</td>
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<td>-33.73</td>
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<td>-10.33</td>
<td>-81.17</td>
<td>-50.45</td>
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<td>-18.08</td>
<td>-52.55</td>
<td>-10.59</td>
<td>-83.71</td>
<td>-52.44</td>
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<td>-78.10</td>
<td>-48.89</td>
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<td>-10.11</td>
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Comparison of Alternatives to No Project

<table>
<thead>
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<th></th>
<th>Acrolein</th>
<th>Acetaldehyde</th>
<th>Benzene</th>
<th>1, 3-Butadiene</th>
<th>Diesel Particulate Matter</th>
<th>Formaldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 Alt B, Phase 1 to 2015 No Project</td>
<td>0.05</td>
<td>-0.37</td>
<td>0.19</td>
<td>0.21</td>
<td>2.41</td>
<td>-0.44</td>
</tr>
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<td>2015 Alt C, Phase 1 to 2015 No Project</td>
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<td>0.67</td>
<td>-0.76</td>
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<td>2035 Alt B to 2035 No Project</td>
<td>0.25</td>
<td>0.59</td>
<td>4.17</td>
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<td>6.95</td>
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<td>0.17</td>
<td>0.40</td>
<td>2.90</td>
<td>0.75</td>
<td>5.98</td>
<td>1.92</td>
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</tbody>
</table>

Source: Air Quality Study Report

Potential for Generation of MSAT Emissions

MSAT emissions were evaluated using the Federal Highway Administration’s *Interim Guidance Update on Air Toxic Analysis in NEPA* (Federal Highway Administration 2009a).

The area of air toxics analysis is a new and emerging field and is a continuing area of research. Currently, limited tools and techniques are available for assessing project-specific health impacts from MSATs, as there are no established criteria for determining when MSAT emissions should be considered a significant issue in the NEPA context.

To comply with Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information, Appendix C of the Air Quality Study Report contains discussion regarding how air toxics analysis is an emerging field and current scientific...
techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), Appendix C of the Air Quality Study Report contains a summary of current studies regarding the health impacts of MSATs.

The FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made (according to Joel Rabinovitz, in the conversation cited earlier). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA’s MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA’s 2006 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions was conducted using the CT-EMFAC program and traffic data presented in Table 3.2.6-5 and Table 3.2.6-6. Table 3.2.6-7 and Figure 3.2.6-4 through Figure 3.2.6-9 present modeled MSAT emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Table 3.2.6-7, which presents the project-level emissions for all alternatives, indicates that implementation of Alternative B; Alternative B, Phase 1; or Alternative C would result in minor increases in all MSAT emissions for 2035 conditions, while Alternative C, Phase 1 would result in minor increases in all MSATS except for acetaldehyde and formaldehyde, for 2035 conditions. Under 2015 condition, all alternatives would result in decreases in all MSAT emissions. The No-Build Alternative would result in lower MSAT emissions under 2015 conditions and 2035 conditions than all build alternatives except Alternative C, Phase 1. Emission would be reduced under all build alternatives compared to existing levels.

To the extent that it is applicable or feasible for the project alternatives and through coordination with the project development team, implementation of measures to reduce MSAT and criteria pollutant emissions, as described in Avoidance, Minimization, and/or Mitigation Measures, would be implemented to reduce this effect for all build alternatives.

**Potential for Generation of Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter**

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 ROG, NOX, CO, PM10, PM2.5, and CO2 for existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were evaluated through modeling conducted using the Department’s CT-EMFAC model and vehicle activity data provided in the FTOR.

Table 3.2.6-8 summarizes the modeled yearly emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives. Vehicular emission rates are anticipated to lessen in
future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles. The one exception to this trend is PM, which compared to other pollutants, is not expected to experience as dramatic of reductions over time. This is because PM emission factors are comprised of PM emitted directly from vehicle tailpipes, as well as from normal break and tire wear. While more stringent emissions standards will reduce direct PM emissions, they will not affect emissions from break and tire wear, which are anticipated to remain relatively unchanged.

Table 3.2.6-8. I-80/I-680/SR 12 Project-Related Emissions (pounds per day)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>PM10</th>
<th>PM2.5</th>
<th>CO2a</th>
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<td>1,330</td>
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<td>182</td>
<td>169</td>
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Comparison of Alternatives to Existing

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<tr>
<th>Scenario</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>PM10</th>
<th>PM2.5</th>
<th>CO2a</th>
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Comparison of Alternatives to No Project

<table>
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<tr>
<th>Scenario</th>
<th>ROG</th>
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<th>CO</th>
<th>PM10</th>
<th>PM2.5</th>
<th>CO2a</th>
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</thead>
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<tr>
<td>2015 Alt B, Phase 1 to 2015 No Project</td>
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<td>2,053</td>
<td>13</td>
<td>11</td>
<td>139,159</td>
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</tbody>
</table>

Source: Air Quality Study Report

a CO2 presented in metric tons per year.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Because the Department has statewide jurisdiction, and the setting for projects varies so extensively across the state, the Department has not and has no intention to develop thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation down from a federal or state agency with regulatory authority over the Department, the Department is not required to adopt those thresholds in their documents. Nevertheless, project-level operational emissions are presented in Table 3.2.6-8. In 2035, Alternatives B, Phase 1; Alternative B; and Alternative C would result in increases in all pollutants, while Alternative C, Phase 1 would
result in increases in NO\textsubscript{X} and CO emissions and decreases in ROG, PM10, and PM2.5 emissions. In 2015, both Alternative B, Phase 1 and Alternative C, Phase 1 would result in increases in NO\textsubscript{X} and CO emissions and decreases in ROG, PM10, and PM2.5 emissions.

**Potential for Temporary Increase in Ozone Precursors (ROG and NO\textsubscript{X}), CO, and PM10 Emissions during Grading and Construction Activities**

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceeding state air quality standards for ozone, CO, PM10, and PM2.5). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and roadway construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the build alternatives would likely be caused by construction traffic on temporary areas.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include CO, nitrogen oxides (NO\textsubscript{X}), volatile organic compounds (VOCs), directly emitted particulate matter (PM10 and PM 2.5), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NO\textsubscript{X} and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM10, PM2.5, and small amounts of CO, SO\textsubscript{2}, NO\textsubscript{X}, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM10 emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM10 emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

The EPA estimates that construction activities for large development projects add 1.09 tonne (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50%. The Department’s Standard Specifications (Section 14) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM10 emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO\textsubscript{2}, NO\textsubscript{X}, VOCs and some soot particulate (PM10 and PM2.5) in exhaust emissions. If construction activities were to increase traffic...
congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO$_2$ is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting Federal standards can contain up to 5,000 parts per million of sulfur, whereas on-road diesel is restricted to less than 15 parts per million of sulfur. However, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so SO$_2$-related issues due to diesel exhaust will be minimal. Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the sites increases.

Implementation of all build alternatives would result in the construction of widened roads, overcrossings, and embankments, as well as intersection improvements. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade construction, and paving activities 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 6.3.1) was used to estimate construction-related ozone precursors ROG and NO$_X$, CO, PM10, PM2.5, and CO$_2$ emissions from construction activities. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive dust (PM10 and PM2.5), and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. While exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to major dust-generating activities, which include grubbing/land clearing and grading/excavation. In addition, dust estimates do not account for control measures required by BAAQMD.

Construction of the fundable first phase is expected to begin in 2012. It was assumed that construction activities would occur for eight hours per day. There are no projected dates for later phases of construction. The total project length was assumed to be 13 miles, and total area of disturbed ground is 192.5 acres for Alternative B and 220.2 acres for Alternative C. To represent a worst-case scenario, the total area of disturbed ground associated with Alternative C was evaluated, with an assumed maximum of 55.1 acres disturbed per day (based on a default assumption that the maximum amount of acreage disturbed in any given day would be 0.25 of the overall assumed project acreage). It was also assumed that no soil would be imported or exported. Construction activities were divided into separate phases and analyzed separately. Construction emission estimates represent the maximum emissions for each phase of construction. Total emissions per day represents the potential maximum daily emissions, while the total emissions provides an estimate of total maximum emissions associated with construction of the proposed project. The results of modeling for construction activities for the worst case alternative, Alternative C, are summarized in Table 3.2.6-9.
Table 3.2.6-9. Worst-Case Construction Emission Estimates (pounds per day)

<table>
<thead>
<tr>
<th>Construction Phase</th>
<th>ROG</th>
<th>NOₓ</th>
<th>CO</th>
<th>PM10</th>
<th>PM2.5</th>
<th>CO₂^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grubbing/land clearing</td>
<td>64.7</td>
<td>547.3</td>
<td>287.9</td>
<td>574.7</td>
<td>135.9</td>
<td>7,019.0</td>
</tr>
<tr>
<td>Grading/excavation</td>
<td>56.5</td>
<td>440.6</td>
<td>271.4</td>
<td>573.5</td>
<td>134.8</td>
<td>6,659.8</td>
</tr>
<tr>
<td>Drainage/utilities/sub-grade</td>
<td>32.7</td>
<td>215.1</td>
<td>135.0</td>
<td>563.3</td>
<td>125.8</td>
<td>3,153.4</td>
</tr>
<tr>
<td>Paving</td>
<td>33.4</td>
<td>180.4</td>
<td>136.8</td>
<td>15.1</td>
<td>13.8</td>
<td>2,320.5</td>
</tr>
<tr>
<td>Total</td>
<td>187.3</td>
<td>1,383.3</td>
<td>831.1</td>
<td>1,726.5</td>
<td>410.3</td>
<td>19,152.7</td>
</tr>
</tbody>
</table>

Source: Air Quality Study Report

*Note:* Emissions calculations based on Road Construction Emissions Model (Version 6.3.1).

^a CO₂ presented in metric tons per year.

Construction activities are subject to requirements found in the Standard Specifications for Construction of Local Streets and Roads (California Department of Transportation 2006). Standard Specification Section 14 stipulates that construction activities must comply with all rules, regulations, ordinances, and statutes of the local air pollution control district; addresses dust control requirements; and addresses dust palliatives.

Implementation of the Department’s standard specification and measures to control dust and exhaust emissions during construction would help to minimize air quality impacts from construction activities.

There would be no effect under the No-Build Alternative because there would be no construction.

**Naturally Occurring Asbestos**

According to the California Department of Conservation’s 2000 publication, *A General Location Guide for Ultramafic Rock in California*, there are no geologic features normally associated with NOA (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 NOA emissions during construction activities. However, construction activities that involve the demolition of any building or structure containing asbestos would be subject to EPAs National Emissions Standards for Hazardous Air Pollutants (NESHAP) and CARB’s Airborne Toxic Control Measures (ATCMs).

**Climate Change**

Climate change is analyzed in Chapter 4. Neither the United States Environmental Protection Agency (U.S. EPA) nor the Federal Highway Administration (FHWA) has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the FHWA’s climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.
Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the California Environmental Quality Act chapter of this environmental document and may be used to inform the National Environmental Policy Act decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

**Avoidance, Minimization, and/or Mitigation Measures**

**Amend the Transportation Improvement Program to Include Additional Alternatives**

STA will submit a TIP amendment for the selected alternative if Alternative C, Phase 1 is not selected as the Preferred Alternative.

**Implement Measures to Reduce MSAT and Criteria Pollutant Emissions**

The project applicant shall implement measures to reduce MSAT emissions where feasible. The U.S. Department of Transportation Federal Highway Administration presents mitigation strategies to reduce emissions of MSATs (Federal Highway Administration 2006). Operational and long-term MSAT emissions are much more difficult to control than short-term construction MSAT emissions because variables such as daily traffic and vehicle fleet mix are elusive and beyond the Department’s control. To the extent that it is applicable or feasible for the proposed project and through coordination with the project development team, the Department will consider the following MSAT emission reduction measures:

- Implement operational strategies that focus on speed limit enforcement and traffic management.
- Implement active Intelligent Transportation System programs, such as traffic management centers or incident management systems.
- Implement anti-idling strategies, such as truck-stop electrification.
- Establish buffer zones between new and expanded highway alignments and areas of vulnerable populations.
- Modify local zoning and develop guidelines that are more protective to separate emissions from sensitive receptors.

Most of the construction impacts on air quality are short term in duration and, therefore, will not result in adverse or long-term conditions. The Department’s Standard Specifications pertaining to dust control and dust palliative requirement is a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of the Department’s Standard Specifications, Section 14 “Environmental Stewardship” “requires the contractor to comply with rules, ordinances, regulations, and statutes.

Implementation of the following measures would minimize air quality impacts from construction activities.
Implement California Department of Transportation Standard Specification Section 14

To control the generation of construction-related PM10 emissions, the project proponent will follow Standard Specification Section 14, “Environmental Stewardship,” which addresses the contractor’s responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; and convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Section 14-9.02 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 14.9-01.

- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right-of-way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in 17 CCR 93114.
- A dust control plan will be developed to address sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts on existing communities.
- Equipment and materials storage sites will be located as far away as practical from residential and park uses. Construction areas will be kept clean and orderly.
- To the extent feasible, ESAs will be established for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Track-out reduction measures such as gravel pads at project access points, will be used to minimize dust and mud deposits on roads affected by construction traffic.
- Transported loads of soils and wet materials will be coved prior to transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to reduce PM10 and deposition of particulate during transportation.
- Dust and mud deposited on paved, public roads due to construction activity and traffic will be removed to decrease particulate matter.
- To the extent feasible, construction traffic will be routed and scheduled to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Vegetation will be planted or mulched as soon as practical after grading to reduce windblown particulate in the area.
Implement Additional Control Measures for Construction Emissions of Fugitive Dust

Additional measures to control dust shall be borrowed from the BAAQMD (see Table 3.2.6-10) and implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of the Department’s Standard Specifications, Special Provisions, 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.

Table 3.2.6-10. Feasible Control Measures for Construction Emissions of PM10

<table>
<thead>
<tr>
<th>Basic Control Measures (The following controls should be implemented at all construction sites.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water all active construction areas at least twice daily.</td>
</tr>
<tr>
<td>• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 0.6 meters (2 feet) of freeboard.</td>
</tr>
<tr>
<td>• Pave; apply water three times daily; or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.</td>
</tr>
<tr>
<td>• Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.</td>
</tr>
<tr>
<td>• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enhanced Control Measures (The following additional measures should be implemented at construction sites greater than four acres in area.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hydrosed or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more).</td>
</tr>
<tr>
<td>• Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand).</td>
</tr>
<tr>
<td>• Limit traffic speeds on unpaved roads to 24.1 kilometers per hour (15 miles per hour).</td>
</tr>
<tr>
<td>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</td>
</tr>
<tr>
<td>• Replant vegetation in disturbed areas as quickly as possible.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optional Control Measures (The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or for any other reason may warrant additional emissions reductions, but the project applicant is not required to implement them.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site.</td>
</tr>
<tr>
<td>• Install windbreaks or plant trees or vegetative wind breaks at windward sides of construction areas.</td>
</tr>
<tr>
<td>• Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.</td>
</tr>
<tr>
<td>• Limit the area subject to excavation, grading, and other construction activity at any one time.</td>
</tr>
</tbody>
</table>

*Source: Bay Area Air Quality Management District 1999.*

Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment

The construction contractor will be required to implement measures to reduce construction-related exhaust emissions. Such measures could include, but are not limited to maintaining properly tuned engines; minimizing the idling time of diesel powered construction equipment to two minutes; using alternative powered construction equipment (i.e., compressed natural gas, biodiesel, electric); using add-on mitigation devices such as diesel oxidation catalysts or particulate filters; using equipment that meets CARB’s most recent certification standard for off-road heavy-duty diesel engines; phasing project construction; and limiting the operating hours of heavy-duty equipment.
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Figure 3.2.6-1
Predominant Wind Direction at Travis Air Force Base
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Figure 3.2.6-2
Project Area Map and General Locations of Sensitive Receptors

Legend

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I680/I80/SR12 Interchange</td>
<td>Proposed Project Area</td>
</tr>
</tbody>
</table>
| Segment Lines | General Location of Sensitive Receptors in Vicinity of Project Area *
| * | Does not include locations of scattered sensitive receptors in the project area.

1 inch equals 3,000 feet

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The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Figure 1.

Note: (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050. (2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.
Figure 3.2.6-4
Summary of Project Level Acrolein Emissions (pounds per day)
Figure 3.2.6-5
Summary of Project Level Acetaldehyde Emissions (pounds per day)
Figure 3.2.6-6
Summary of Project Level Benzene Emissions (pounds per day)
Figure 3.2.6-7
Summary of Project Level 1,3-Butadiene Emissions (pounds per day)
Figure 3.2.6-8

Summary of Project Level Diesel Particulate Matter Emissions (pounds per day)
Figure 3.2.6-9
Summary of Project Level Formaldehyde Emissions (pounds per day)
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3.2.7 Noise

Regulatory Setting
The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act
CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis; please see Chapter 4 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772
For highway transportation projects with FHWA (and the Department, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 3.2.7-1 lists the noise abatement criteria for use in the 23 CFR 772 analysis.

Table 3.2.7-1. Activity Categories and Noise Abatement Criteria

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>NAC, Hourly A-Weighted Noise Level, dBA, $L_{eq}(h)$</th>
<th>Description of Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>57 exterior</td>
<td>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</td>
</tr>
<tr>
<td>B</td>
<td>67 exterior</td>
<td>Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.</td>
</tr>
<tr>
<td>C</td>
<td>72 exterior</td>
<td>Developed lands, properties, or activities not included in Categories A or B above</td>
</tr>
<tr>
<td>D</td>
<td>Not applicable</td>
<td>Undeveloped lands.</td>
</tr>
<tr>
<td>E</td>
<td>52 interior</td>
<td>Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums</td>
</tr>
</tbody>
</table>

Note: dBA $L_{eq}(h)$ = one-hour A-weighted equivalent sound level.
Table 3.2.7-2 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.

### Table 3.2.7-2. Typical A-Weighted Noise Levels

<table>
<thead>
<tr>
<th>Common Outdoor Activities</th>
<th>Noise Level (dBA)</th>
<th>Common Indoor Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Fly-over at 300m (1000 ft)</td>
<td>110</td>
<td>Rock Band</td>
</tr>
<tr>
<td>Gas Lawn Mower at 1 m (3 ft)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Diesel Truck at 15 m (50 ft), at 80 km (50 mph)</td>
<td>90</td>
<td>Food Blender at 1 m (3 ft)</td>
</tr>
<tr>
<td>Noisy Urban Area, Daytime</td>
<td>80</td>
<td>Garbage Disposal at 1 m (3 ft)</td>
</tr>
<tr>
<td>Gas Lawn Mower, 30 m (100 ft)</td>
<td>70</td>
<td>Vacuum Cleaner at 3 m (10 ft)</td>
</tr>
<tr>
<td>Commercial Area</td>
<td>60</td>
<td>Normal Speech at 1 m (3 ft)</td>
</tr>
<tr>
<td>Heavy Traffic at 90 m (300 ft)</td>
<td>50</td>
<td>Large Business Office</td>
</tr>
<tr>
<td>Quiet Urban Daytime</td>
<td>40</td>
<td>Dishwasher Next Room</td>
</tr>
<tr>
<td>Quiet Urban Nighttime</td>
<td>30</td>
<td>Theater, Large Conference Room (Background)</td>
</tr>
<tr>
<td>Quiet Suburban Nighttime</td>
<td>20</td>
<td>Library</td>
</tr>
<tr>
<td>Quiet Rural Nighttime</td>
<td>10</td>
<td>Bedroom at Night, Concert Hall (Background)</td>
</tr>
<tr>
<td>Lowest Threshold of Human Hearing</td>
<td>0</td>
<td>Broadcast/Recording Studio</td>
</tr>
</tbody>
</table>

In accordance with the Department’s *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (California Department of Transportation 2006), a noise impact occurs when the future noise level with the project results in a substantial increase in the noise level (defined as an increase of 12 dB or more) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as a noise level within 1 dB of the NAC.

If it is determined that the project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that likely would be incorporated into the project.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Noise

The Department’s Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. The feasibility of noise abatement is basically an engineering concern. A minimum 5 dB reduction in the future noise level must be achieved for an abatement measure to be considered feasible from an acoustical perspective. Other considerations affecting feasibility of noise abatement include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978 and the cost per benefited residence.

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3-dB increase in sound level. However, subjective perception of a doubling of loudness may be different than what is measured. In noisy environments, changes in noise of 1 to 2 dB are generally not detectable. However, it is widely accepted that the normal human ear begins to perceive a sound level increase of 3 dB in typical noisy environments. A 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. A 3-dB increase is considered a perceptible increase in noise level.

Affected Environment

The Noise Study Technical Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project (Noise Study) was prepared in 2010. The technical report discusses potential noise impacts and related noise abatement measures associated with the construction and operation of mainline and interchange improvements on I-80, I-680, and SR 12 and the construction and operation of a truck scale facility on I-80 in Solano County. The report was prepared to comply with 23 CFR 772, “Procedures for Abatement of Highway Traffic Noise,” and the Department’s noise analysis policies as described in the Traffic Noise Analysis Protocol.

The project area consists of a mix of residential, commercial, and industrial land uses (Activity Categories B and C). For the purposes of this analysis, land uses in the project area are grouped into a series of lettered regions as described below. Figures 3.2.7-1 through 3.2.7-16 in Volume 2 of this document identify the locations of these lettered regions. Figures 3.2.7-1 through 3.2.7-8 show the project area under Alternative B (and the fundable first phase). Figures 3.2.7-9 through 3.2.7-16 show the project area under Alternative C (and the fundable first phase).
Area A: Area A is located on the west side of I-680, north of Gold Hill Road, and is a dense single-family residential neighborhood (Activity Category B) adjacent to Lopes Road, extending north to Silver Creek Road. A sound barrier with a nominal height of six feet is located between I-680 and residences in Area A (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area A1: Area A1 is located on the west side of I-680, adjacent to Lopes Road and south of Gold Hill Road. This is a neighborhood densely populated with single-family residences (Activity Category B). A sound barrier with a nominal height of six feet is located between I-680 and residences in Area A1 (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area B: Area B is located on the west side of I-680, between Silver Creek Road and Rolling Hills Park. This area consists of residential townhouse units (Activity Category B) surrounded by a sound barrier with a nominal height of six feet (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12). This area also includes a walking trail that leads into Rolling Hills Park (Activity Category B).

Area C: Area C is located on the west side of I-680, north of Rolling Hills Park, extending along Lopes Road north to Red Top Road. This is a neighborhood densely populated with single-family residences (Activity Category B). Sound barriers with a nominal height of six feet are located between I-80 and residential receivers in this area (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area D: Area D is located on the west side of I-680, north of Cordelia Road. This area consists of two single-family residences on small lots adjacent to Lopes Road (Activity Category B), in the northwest quadrant of the Cordelia Road/Lopes Road intersection; and commercial land uses (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-3 and 3.2.7-11).

Area E: Area E is located on the east side of I-680 on both sides of Cordelia Road. This area consists of scattered single-family homes (Activity Category B), and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-3 and 3.2.7-11).

Area F: Area F is located north of Business Center Drive, which will connect to the North Connector in the future under both Alternatives B and C. A single-family residential subdivision (Activity Category B) is located in this area. The area consists mostly of retail and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-1 and 3.2.7-9).

Area G: Area G is located on the south side of SR 12E east of I-80. This area consists of the baseball diamond and park area adjacent to Busch Drive and west of Chadbourne Road (Activity Category B). The area consists mostly of retail and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

Area H: Area H is located on the north side of SR 12E east of I-80. This area is a single-family residential neighborhood (Activity Category B) that extends from east of Abernathy Road to
Beck Avenue. Two sound barriers in this area extend along SR 12; one extends along Marquette Way and has a nominal height of eight feet, and the other extends along Burgundy Way and has a nominal height of ten feet (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

**Area I:** Area I is located on the north side of SR 12E and consists of single-family residences (Activity Category B) along Diamond Way and Diamond Court. A sound barrier with a nominal height of eight feet is located between SR 12 and the residential area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

**Area J:** Area J is located on the north side of SR 12E and consists of single-family residences (Activity Category B) along Ontario Street and Ontario Court. A sound barrier with a nominal height of eight feet is located between SR 12 and the residential area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

**Area K:** Area K is located on the north side of SR 12E and consists of single-family residences (Activity Category B) and the Fairfield Vista apartment buildings along James Street and west of Pennsylvania Avenue. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

**Area L:** Area L is located on the north side of SR 12E and consists of single-family residences and apartments (Activity Category B) along Illinois Street and Ohio Street. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

**Area M:** Area M is located on the south side of SR 12E and consists of single-family residences and apartments (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) along Sacramento Street and Solano Street. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

**Area N:** Area N is located along Chadbourne Road on the north side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C). There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

**Area O:** Area O is located on the south side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) near Hale Ranch Road. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-6 and 3.2.7-14).

**Area P:** Area P is located on the south side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) near Cordelia Road. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-6 and 3.2.7-14).

**Area Q:** Area Q is located in an area on the north side of I-80 bound by Dan Wilson Creek and Suisun Creek. This area is planned for mixed commercial and residential development (Activity Categories B and C) under the Fairfield Corporate Commons project (City of Fairfield 2005). Locations of residential use within the development are based on the configuration studied in the
Fairfield Corporate Commons Draft EIR. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-5, 3.2.7-6, 3.2.7-13, and 3.2.7-14).

**Area R:** Area R is located in the southeastern quadrant of the I-80/Pittman Road interchange. This area consists of hotels with outdoor swimming pools (Activity Category B), a family outdoor recreation area, and commercial use (Activity Category C). There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-5 and 3.2.7-13).

**Environmental Consequences**

**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 Tuesday, October 9, and Wednesday, October 10, 2007. 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 measurement positions are identified in Figures 3.2.7-1 through 3.2.7-16 in Volume 2. Table 3.2.7-3 summarizes the results of the short-term noise monitoring conducted in the project area.

**Table 3.2.7-3. Summary of Short-Term Noise Monitoring**

<table>
<thead>
<tr>
<th>Measurement Location</th>
<th>Description</th>
<th>Area</th>
<th>Start Time</th>
<th>Duration (min.)</th>
<th>Existing Wall Height</th>
<th>Measured $L_{eq}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-1</td>
<td>Ramsey Road, End of Smith Lane</td>
<td>E</td>
<td>4:20 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>70.9</td>
</tr>
<tr>
<td>ST-2</td>
<td>First-row residence on Bridgeport Avenue</td>
<td>E</td>
<td>4:20 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>62.8</td>
</tr>
<tr>
<td>ST-3</td>
<td>Second-row residence on Bridgeport Avenue</td>
<td>E</td>
<td>4:20 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>63.1</td>
</tr>
<tr>
<td>ST-4</td>
<td>First-row residence on Silverado Drive</td>
<td>C</td>
<td>3:29 p.m.</td>
<td>15</td>
<td>6 feet</td>
<td>58.9</td>
</tr>
<tr>
<td>ST-5</td>
<td>Rolling Hills Park</td>
<td>B</td>
<td>3:29 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>59.1</td>
</tr>
<tr>
<td>ST-6A</td>
<td>Trail, Rolling Hills Park</td>
<td>B</td>
<td>11:57 a.m.</td>
<td>15</td>
<td>N/A</td>
<td>63.9</td>
</tr>
<tr>
<td>ST-6B</td>
<td>Trail, Rolling Hills Park</td>
<td>B</td>
<td>3:29 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>64.8</td>
</tr>
<tr>
<td>ST-7</td>
<td>First-row residence on Ridgecrest Court</td>
<td>A</td>
<td>11:57 a.m.</td>
<td>15</td>
<td>6 feet</td>
<td>56.2</td>
</tr>
<tr>
<td>ST-8</td>
<td>Second-row residence on Ridgecrest Court</td>
<td>A</td>
<td>11:57 a.m.</td>
<td>15</td>
<td>6 feet</td>
<td>47.2</td>
</tr>
<tr>
<td>ST-9</td>
<td>First-row residence on Northwood Drive</td>
<td>A</td>
<td>1:02 p.m.</td>
<td>15</td>
<td>6 feet</td>
<td>50.7</td>
</tr>
<tr>
<td>ST-10</td>
<td>Second-row residence on Northwood Drive</td>
<td>A</td>
<td>1:02 p.m.</td>
<td>15</td>
<td>6 feet</td>
<td>48.0</td>
</tr>
<tr>
<td>ST-11</td>
<td>Trail, Northwood Drive</td>
<td>A</td>
<td>1:02 p.m.</td>
<td>15</td>
<td>6 feet</td>
<td>68.3</td>
</tr>
<tr>
<td>ST-12</td>
<td>Fairfield Vista Apartments, Pennsylvania Avenue</td>
<td>K</td>
<td>12:32 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>52.5</td>
</tr>
<tr>
<td>ST-13</td>
<td>First-row residence, James Street</td>
<td>K</td>
<td>12:32 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>48.2</td>
</tr>
<tr>
<td>ST-14</td>
<td>First-row residence, James Street</td>
<td>K</td>
<td>12:32 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>48.9</td>
</tr>
<tr>
<td>ST-15</td>
<td>First-row residence, Ontario Court</td>
<td>J</td>
<td>3:56 p.m.</td>
<td>15</td>
<td>8 feet</td>
<td>59.5</td>
</tr>
<tr>
<td>ST-16</td>
<td>First-row residence, Burgundy Way</td>
<td>H</td>
<td>2:52 p.m.</td>
<td>15</td>
<td>8 feet</td>
<td>54.2</td>
</tr>
<tr>
<td>ST-17</td>
<td>First-row residence, Burgundy Way</td>
<td>H</td>
<td>2:52 p.m.</td>
<td>15</td>
<td>8 feet</td>
<td>54.6</td>
</tr>
<tr>
<td>ST-18</td>
<td>First-row residence, Marquette Way</td>
<td>H</td>
<td>3:56 p.m.</td>
<td>15</td>
<td>8 feet</td>
<td>59.6</td>
</tr>
<tr>
<td>ST-19</td>
<td>First-row residence, Marquette Way</td>
<td>H</td>
<td>3:56 p.m.</td>
<td>15</td>
<td>8 feet</td>
<td>59.0</td>
</tr>
<tr>
<td>I-80-ST-1</td>
<td>Cordelia Road</td>
<td>I-80</td>
<td>1:00 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>60.4</td>
</tr>
<tr>
<td>I-80-ST-6</td>
<td>Hamilton Avenue</td>
<td>I-80</td>
<td>3:00 p.m.</td>
<td>15</td>
<td>N/A</td>
<td>54.2</td>
</tr>
<tr>
<td>I-80-ST-13</td>
<td>Lozano Lane</td>
<td>I-80</td>
<td>11:00 a.m.</td>
<td>15</td>
<td>N/A</td>
<td>71.1</td>
</tr>
</tbody>
</table>

*Note: N/A = not applicable.*
Short-term monitoring was conducted at 23 positions within the project area. The maximum level measured was 71.1 dBA $L_{eq}$. The median level was 47.2 dBA $L_{eq}$.

Long-term monitoring position LT-1 was conducted at one position, next to Suisun Creek on the south side of I-80, approximately 200 feet from the edge of pavement (shown in Figures 3.2.7-5 and 3.2.7-13). The long-term sound level data was collected over five consecutive 24-hour periods, beginning on Thursday, January 19, 2006, and ending on Wednesday, January 25, 2006. The average loudest-hour sound level measured was 68.4 dBA $L_{eq1h}$, during the 7 a.m. hour.

**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 the STA. 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 and design-year (2035) conditions were provided in the FTOR for the proposed project. Table 3.2.7-4 summarizes the traffic noise modeling results under existing and design-year conditions.

**Exposure of Noise Sensitive Land Uses to Increased Traffic Noise**

Modeling results in Table 3.2.7-4 indicate that predicted traffic noise levels for the design-year with-project conditions would approach or exceed the NAC of 67 dBA, $L_{eq}(h)$, for Activity Category B land uses within the project area.

Noise impacts resulting from a substantial increase over existing noise levels (12 dB) are not predicted to occur under the proposed project. As such, the increase in noise levels as a result of project operations would not be considered a significant adverse effect. However, because noise levels in the project area would approach or exceed the NAC thresholds, noise abatement must be considered.

Modeling results also indicate that predicted traffic noise levels for the design-year with-project conditions approach or exceed the NAC of 72 dBA, $L_{eq}(h)$, for Activity Category C land uses within the project area. However, none of these Category C areas have exterior frequent human use that would benefit from lowered noise levels. Accordingly, no noise abatement is considered for any Category C uses in the project area.

Modeling results for Rodriguez High School (C15), an activity Category B land use, indicate that predicted noise levels do not approach or exceed the NAC of 67 dBA, $L_{eq}(h)$, for school uses (Activity Category B).

Under Alternative B, Phase 1, noise impacts are predicted to occur in areas D, E (just south of the I-80/680 interchange), and R (just east of Suisun Valley Road). The affected units include 13 residences, an outdoor swimming pool (at the Days Inn) and an outdoor recreation area (Scandia Family Center). Under Alternative B, 28 residences along SR 12 and I-80 would be affected in addition to the noise impacts under Alternative B, Phase 1, resulting in a total of 49 affected units (Table 3.2.7-5).
Under Alternative C, Phase 1, one residence adjacent to I-680 would be exposed to high noise levels, resulting in a total of one unit affected (refer to Table 3.2.7-6). Under Alternative C, residences along I-80 and SR 12 are included in the project area, resulting in a total of 37 affected units, as shown in Table 3.2.7-6. The units affected include 29 residences, an outdoor swimming pool (at the Days Inn) and an outdoor recreation area (Scandia Family Center).

As indicated in Table 3.2.7-4, design year with-project traffic noise levels are predicted to be more than 3 dB greater than design year no-project traffic noise levels. This increase is more than the threshold of a perceptible change (3 dB).

Under Alternative B, noise levels would increase at Venus Drive (Area F), Busch Drive (Area G), Marquette Way (Area H) and Burgundy Way (Area H). Noise levels would exceed the NAC at the Marquette Way. Under Alternative B, Phase 1, noise levels would increase at Burgundy Way (Area H) only, and would not approach or exceed the NAC. Under Alternative C, noise levels would increase at James Street (Area K), Sacramento Street (Area M), and Marquette Way (Area H), but would only approach or exceed the NAC at Marquette Way. No exposure of sensitive land uses to traffic noise is expected to occur under Alternative C, Phase 1. Under the No-Build Alternative, noise levels associated with traffic would increase in the future as traffic congestion associated with growth increases (Table 2.3.7-4).

None of the receptors within the project boundaries would be exposed to a substantial increase over existing noise levels under any of the project alternatives. Therefore, no adverse effects related to increased traffic noise are expected.
Table 3.2.7-4. Traffic Noise Impact Evaluation, I-80, I-680, and SR 12

<table>
<thead>
<tr>
<th>Position</th>
<th>Location</th>
<th>Area</th>
<th>Existing Traffic Noise Level dBA, L_{eq}(h)</th>
<th>Design-Year No-Project Traffic Noise Level dBA, L_{eq}(h)</th>
<th>Design-Year With Project, Alternative B Phase 1</th>
<th>Traffic Noise Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>A06</td>
<td>Bindiare Circle</td>
<td>A</td>
<td>61</td>
<td>63</td>
<td>64 + 3 + 1 + 1</td>
<td>M01</td>
</tr>
<tr>
<td>A11</td>
<td>Stoneridge Circle</td>
<td>A</td>
<td>62</td>
<td>64</td>
<td>65 + 3 + 1 + 1</td>
<td>X04</td>
</tr>
<tr>
<td>A13</td>
<td>Stoneridge Circle</td>
<td>A</td>
<td>62</td>
<td>64</td>
<td>65 + 3 + 1 + 1</td>
<td>X01</td>
</tr>
<tr>
<td>B01</td>
<td>Smith Lake</td>
<td>B</td>
<td>61</td>
<td>63</td>
<td>64 + 3 + 1 + 1</td>
<td>X04</td>
</tr>
<tr>
<td>B04</td>
<td>Rolling Hills Park</td>
<td>B</td>
<td>67</td>
<td>68</td>
<td>69 + 2 + 1 + 1</td>
<td>C01</td>
</tr>
<tr>
<td>C01</td>
<td>Silverado Drive</td>
<td>C</td>
<td>61</td>
<td>63</td>
<td>63 + 2 + 1 + 1</td>
<td>C04</td>
</tr>
<tr>
<td>C04</td>
<td>Silverado Drive</td>
<td>C</td>
<td>60</td>
<td>62</td>
<td>63 + 2 + 1 + 1</td>
<td>C05</td>
</tr>
<tr>
<td>C15</td>
<td>Rodriguez High School</td>
<td>C</td>
<td>53</td>
<td>57</td>
<td>57 + 4 + 2 + 2</td>
<td>D01</td>
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<tr>
<td>D01</td>
<td>Lapos Road</td>
<td>D</td>
<td>70</td>
<td>71</td>
<td>71 + 1 + 0</td>
<td>E05</td>
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<tr>
<td>E05</td>
<td>Cordelia Avenue</td>
<td>E</td>
<td>67</td>
<td>68</td>
<td>69 + 2 + 0</td>
<td>E10</td>
</tr>
<tr>
<td>E10</td>
<td>Riche Road</td>
<td>E</td>
<td>63</td>
<td>63</td>
<td>63 + 2 + 0</td>
<td>E11</td>
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<tr>
<td>E11</td>
<td>Ramsey Road</td>
<td>E</td>
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<td>68</td>
<td>69 + 3 + 1</td>
<td>E12</td>
</tr>
<tr>
<td>F01</td>
<td>Venus Drive</td>
<td>F</td>
<td>53</td>
<td>55</td>
<td>59 + 6 + 4</td>
<td>G01</td>
</tr>
<tr>
<td>G01</td>
<td>Busch Drive</td>
<td>G</td>
<td>60</td>
<td>62</td>
<td>65 + 5 + 3</td>
<td>H01</td>
</tr>
<tr>
<td>H01</td>
<td>Marqueta Way</td>
<td>H</td>
<td>64</td>
<td>66</td>
<td>65 + 4 + 2</td>
<td>H05</td>
</tr>
<tr>
<td>H05</td>
<td>Marqueta Way</td>
<td>H</td>
<td>64</td>
<td>66</td>
<td>65 + 5 + 3</td>
<td>H09</td>
</tr>
<tr>
<td>H09</td>
<td>Marqueta Way</td>
<td>H</td>
<td>62</td>
<td>64</td>
<td>68 + 6 + 4</td>
<td>H11</td>
</tr>
<tr>
<td>H11</td>
<td>Marqueta Way</td>
<td>H</td>
<td>61</td>
<td>63</td>
<td>66 + 5 + 3</td>
<td>H12</td>
</tr>
<tr>
<td>H12</td>
<td>Marqueta Way</td>
<td>H</td>
<td>59</td>
<td>61</td>
<td>65 + 3 + 1</td>
<td>H21</td>
</tr>
<tr>
<td>H21</td>
<td>Burgundy Way</td>
<td>H</td>
<td>59</td>
<td>61</td>
<td>64 + 5 + 3</td>
<td>I01</td>
</tr>
<tr>
<td>I01</td>
<td>Diamond Way</td>
<td>I</td>
<td>59</td>
<td>61</td>
<td>65 + 3 + 1</td>
<td>J01</td>
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<tr>
<td>J01</td>
<td>Ontario Street</td>
<td>J</td>
<td>59</td>
<td>61</td>
<td>65 + 3 + 1</td>
<td>K01</td>
</tr>
<tr>
<td>K01</td>
<td>James Street</td>
<td>K</td>
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<td>61</td>
<td>65 + 3 + 1</td>
<td>L04</td>
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<td>61</td>
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<td>Sacramento Street</td>
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<td>N01</td>
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<tr>
<td>N01</td>
<td>Chula Vista Road</td>
<td>N</td>
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<td>64</td>
<td>59 + 2 + 1</td>
<td>O01</td>
</tr>
<tr>
<td>O01</td>
<td>Haste Ranch Road</td>
<td>O</td>
<td>70</td>
<td>72</td>
<td>73 + 3 + 1</td>
<td>P01</td>
</tr>
<tr>
<td>P01</td>
<td>Cordelia Road</td>
<td>P</td>
<td>65</td>
<td>65</td>
<td>56 + 3 + 1</td>
<td>Q03</td>
</tr>
<tr>
<td>Q03</td>
<td>Fairfield Commons (future)</td>
<td>Q</td>
<td>54</td>
<td>55</td>
<td>54 + 2 + 1</td>
<td>Q04</td>
</tr>
<tr>
<td>Q04</td>
<td>end of Russell Road</td>
<td>Q</td>
<td>71</td>
<td>72</td>
<td>76 + 2 + 1</td>
<td>R01</td>
</tr>
<tr>
<td>R01</td>
<td>Days Inn Pool (RT)</td>
<td>R</td>
<td>74</td>
<td>75</td>
<td>76 + 2 + 1</td>
<td>R02</td>
</tr>
<tr>
<td>R02</td>
<td>standards</td>
<td></td>
<td>80</td>
<td>80</td>
<td>80 + 2 + 1</td>
<td>A/E All sites</td>
</tr>
</tbody>
</table>

* A/E indicates that traffic noise levels approach or exceed the NAC for the corresponding Activity Categories in the area.

* This property is taken under future project alternatives.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Noise

3.2.7

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### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Noise

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**Table 3.2.7-5. Counts of Affected Residences, Alternative B, and Alternative B, Phase 1**

<table>
<thead>
<tr>
<th>Area</th>
<th>Primary Source of Traffic Noise</th>
<th>Alternative B, Phase 1</th>
<th>Alternative B</th>
<th>Phase 1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Approach or Exceed NAC</td>
<td>Substantial Increase over Existing Noise Levels</td>
<td>Approach or Exceed NAC</td>
</tr>
<tr>
<td>A</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>I-680</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>I-680</td>
<td>11</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>F</td>
<td>North Connector</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>H</td>
<td>SR 12</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>I</td>
<td>SR 12</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>J</td>
<td>SR 12</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>K</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>L</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>M</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>O</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>I-80</td>
<td>8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0</td>
<td>8&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Q</td>
<td>I-80</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R</td>
<td>I-80</td>
<td>8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0</td>
<td>8&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Units Affected</td>
<td>21</td>
<td>49</td>
</tr>
</tbody>
</table>

**Note:** N/A = not applicable.

<sup>a</sup> Impact count for nonresidential outdoor use is based on one unit per 100 linear feet of highway frontage.

---

**Table 3.2.7-6. Counts of Affected Residences, Alternative C and Alternative C, Phase 1**

<table>
<thead>
<tr>
<th>Area</th>
<th>Primary Source of Traffic Noise</th>
<th>Alternative C, Phase 1</th>
<th>Alternative C</th>
<th>Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Approach or Exceed NAC</td>
<td>Substantial Increase over Existing Noise Levels</td>
<td>Approach or Exceed NAC</td>
</tr>
<tr>
<td>A</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>I-680</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>I-680</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>I-680</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>North Connector</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>H</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>25</td>
</tr>
<tr>
<td>I</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>J</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>K</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>L</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>M</td>
<td>SR 12</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>O</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>P</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Q</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>R</td>
<td>I-80</td>
<td>N/A</td>
<td>N/A</td>
<td>8&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Units Affected</td>
<td>1</td>
<td>37</td>
</tr>
</tbody>
</table>

**Note:** N/A = not applicable.

<sup>a</sup> Impact count for nonresidential outdoor use is based on one unit per 100 linear feet of highway frontage.
Exposure of Noise-Sensitive Land Uses to Construction Noise

Construction noise is regulated by the Department’s 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 3.2.7-7 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 70 to 90 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Maximum Noise Level (dBA at 50 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrapers</td>
<td>89</td>
</tr>
<tr>
<td>Bulldozers</td>
<td>85</td>
</tr>
<tr>
<td>Heavy trucks</td>
<td>88</td>
</tr>
<tr>
<td>Backhoe</td>
<td>80</td>
</tr>
<tr>
<td>Pneumatic tools</td>
<td>85</td>
</tr>
<tr>
<td>Concrete pump</td>
<td>82</td>
</tr>
</tbody>
</table>


No adverse noise effects from construction are anticipated, because construction would be conducted in accordance with the Department’s Standard Specifications Section 14-8 and applicable local noise standards. Construction noise would be short-term, intermittent, and masked by local traffic noise. Under the No-Build Alternative, no new noise effects associated with project construction would occur.

Avoidance, Minimization, and/or Mitigation

Noise Abatement Evaluation under 23 CFR 772

None of the receptors within the project boundaries would be exposed to a substantial increase (greater than 12 dB) in future predicted noise levels under any of the project alternatives. Consequently, no adverse effects under NEPA were identified. However, several receptors within the project area would experience high noise levels that approach or exceed the NAC thresholds. Under the requirements of 23 CFR 772 noise abatement in the form of noise barriers was considered for the following areas that are predicted to experience high noise levels:

- Area E (All Project Alternatives).
- Area H (Project Alternatives B and C).
- Area O (Project Alternatives B and C).
- Area R (Project Alternatives B and C, Alternative B, Phase 1).
Potential noise abatement measures include the following:

- Avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project.
- Constructing noise barriers.
- Acquiring property to serve as a buffer zone.
- Using traffic management measures to regulate types of vehicles and speeds.
- Acoustically insulating public-use or nonprofit institutional structures.

Because of the configuration and location of the proposed project, noise barriers are the only form of noise abatement evaluated in this report. Each noise barrier has been evaluated for feasibility based on achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated. The Department’s 2009 base cost-per-residence allowance is $31,000. Additional allowance dollars are added to the base allowance based on absolute noise levels, the increase in noise levels resulting from the proposed project, achievable noise reduction, and the date of building construction in the area. Worksheets in Appendix B of the Noise Study summarize the reasonable cost allowance calculations, based on the procedure outlined in the Protocol.

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 presented in this report is preliminary only and has been conducted at a level appropriate for environmental review but not for final design of the proposed project.

Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during the final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of the noise abatement will be made upon completion of the project design.

**Area D (Alternatives B and Alternative B, Phase 1)**

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at residences in Area D will be in the range of 70–71 dBA-$L_{eq}[h]$. Traffic noise impacts are predicted to occur at two residences in this area under Alternative B. Receivers in Area D lie outside of the project area under Alternative C, so they are not considered for noise abatement under Alternative C.

Noise Barrier D was designed for the edge of southbound I-680, and was analyzed for feasibility to benefit receivers in Area D. Detailed modeling analysis of Barrier D indicates that a barrier with a height of up to 16 feet would provide a maximum noise reduction of less than 5 dB at noise-sensitive receiver locations. Barrier D is therefore not considered to be feasible.
A noise barrier along the western edge of Lopes Road would not be feasible because the affected residences require access to Lopes Road, and an acoustically effective barrier would block driveway access. Therefore, noise barriers are not considered a feasible noise abatement option for Area D.

Area E

Table 3.2.7-4 indicates that traffic noise levels at residences in Area E will be in the range of 63–74 dBA-$L_{eq}[h]$. Traffic noise impacts are predicted to occur at 11 residences in this area.

Noise Barrier E-1 was designed for the northbound edge of I-680, and was analyzed for feasibility to benefit receivers adjacent to Cordelia Road and Bridgeport Avenue. Traffic noise from local roadways such as Cordelia Road contributes significantly to sound levels, decreasing the potential for a noise barrier along I-680 to benefit receivers adjacent to Cordelia Road. Detailed modeling analysis of Barrier E-1 indicates that a barrier with a height of 16 feet would provide a maximum noise reduction of less than 5 dB at noise-sensitive first-row receiver locations. Barrier E-1 is therefore not considered to be feasible.

Construction of noise barriers along local roads such as Cordelia Road would not be feasible because the affected residences require access to the local roads, and an acoustically effective barrier would block those access points.

Noise Barrier E-2 was designed to benefit a single ranch property south of Bridgeport Avenue, and was evaluated for wall heights in the range of 6–16 feet. Barrier E-2 would extend approximately 1,160 linear feet within Caltrans right-of-way between I-680 northbound and Ramsey Road. Detailed modeling analysis of Barrier E-2 indicates that construction of this barrier at a height of ten to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier E-2 is therefore considered feasible from an acoustical perspective. Barrier E-2 would meet the Department’s line-of-sight requirement at a barrier height of 12 feet. Table 3.2.7-8 summarizes the calculated reasonable allowances for Noise Barrier E-2. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier E-2 is shown in Figure 3.2.7-17.

Table 3.2.7-8. Summary of Reasonableness Determination Data—Barrier E-2, Ramsey Road

<table>
<thead>
<tr>
<th>Barrier I.D.: E-2, Ramsey Road</th>
<th>Predicted Sound Level without Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design-year noise level, dBA-$L_{eq}[h]$</td>
</tr>
<tr>
<td></td>
<td>Design-year noise level minus existing noise level, dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design Year with Barrier</th>
<th>Height: 6 feet</th>
<th>Height: 8 feet</th>
<th>Height: 10 feet</th>
<th>Height: 12 feet</th>
<th>Height: 14 feet</th>
<th>Height: 16 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier noise reduction, dB</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Number of benefited residences</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>New highway or more than 50% of residences predate 1978</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable allowance per benefited residence</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
</tr>
<tr>
<td>Total reasonable allowance</td>
<td>N/A</td>
<td>N/A</td>
<td>$45,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
</tr>
</tbody>
</table>

Note: N/A = not applicable.
Noise Barrier E-3 was analyzed for feasibility to benefit a single ranch property east of Red Top Road. Barrier E-3 would extend approximately 750 linear feet within Caltrans right-of-way between I-680 northbound and Ramsey Road. Barrier E-3 was evaluated for wall heights in the range of 6–16 feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. Detailed modeling analysis of Barrier E-3 indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier E-3 is therefore considered feasible from an acoustical perspective. Table 3.2.7-9 summarizes the calculated reasonable allowances for Barrier E-3. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier E-3 is shown in Figure 3.2.7-17.

<table>
<thead>
<tr>
<th>Barrier I.D.: E-3, Ramsey Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Sound Level without Barrier</td>
</tr>
<tr>
<td>Design-year noise level, dBA-(L_{eq}[h])</td>
</tr>
<tr>
<td>Design-year noise level minus existing noise level, dB</td>
</tr>
</tbody>
</table>

Table 3.2.7-9. Summary of Reasonableness Determination Data—Barrier E-3, Ramsey Road

<table>
<thead>
<tr>
<th>Design Year with Barrier</th>
<th>Height: 6 feet</th>
<th>Height: 8 feet</th>
<th>Height: 10 feet</th>
<th>Height: 12 feet</th>
<th>Height: 14 feet</th>
<th>Height: 16 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier noise reduction, dB</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Number of benefited residences</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>New highway or more than 50% of residences predate 1978</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable allowance per benefited residence</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
</tr>
<tr>
<td>Total reasonable allowance</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$47,000</td>
</tr>
</tbody>
</table>

Note: N/A = not applicable.

Area H (Project Alternatives B and C)
The traffic noise modeling results in Table 3.2.7-4 indicate traffic noise levels residences in Area H will be in the range of 62–69 dBA-\(L_{eq}[h]\). Traffic noise impacts are predicted to occur at 25 residences in this area. There are two existing noise barriers within Area H. The first noise barrier (Barrier H-1) has a nominal height of eight feet and extends along the SR 12E right-of-way parallel to Columbus Drive to the Chadbourne Road exit ramp. All 25 affected receivers are first-row residences located behind Barrier H-1. The second barrier (Barrier H-2) has a nominal height of ten feet and extends along the SR 12E right-of-way from Beck Avenue to the end of Burgundy Way.

Barrier H-1 would extend approximately 2,250 linear feet within SR 12 right-of-way and perpendicular to SR 12 along the existing noise barrier footings on both sides of the neighborhood enclosing Marquette Way (see Figure 3.2.7-18). Detailed modeling analysis of Barrier H-1 indicates that increasing the height of the existing barrier to at least 14 feet would provide a noise reduction of 5 dB or more at first-row residences. Increasing the height of existing Barrier H-1 is therefore considered feasible from an acoustical perspective.

Increasing the height of Barrier H-1 to 14 feet would meet the Department’s line-of-sight requirement. Table 3.2.7-10 summarizes the calculated reasonable allowances for wall heights from ten to 16 feet. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier H-1 is shown in Figure 3.2.7-18 in Volume 2.
Segments of Noise Barrier H-1 lie outside of Caltrans right-of-way, so would need to meet additional requirements before approval for construction. First, all affected property owners would need to approve construction of the segments of the Barrier H-1 which lie outside Caltrans right-of-way. Second, each affected property owner must enter into a contract agreement with Caltrans to specify responsibilities related to construction and maintenance of noise barriers.

### Table 3.2.7-10. Summary of Reasonableness Determination Data—Barrier H-1, Marquette Way

<table>
<thead>
<tr>
<th>Barrier I.D.: H-1, Marquette Way</th>
<th>Predicted Sound Level without Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design-year noise level, dBA-(L_{eq})[h]</td>
</tr>
<tr>
<td></td>
<td>Design-year noise level minus existing noise level, dB</td>
</tr>
<tr>
<td><strong>Design Year with Barrier</strong></td>
<td><strong>Height: 6 feet</strong></td>
</tr>
<tr>
<td>Barrier noise reduction, dB</td>
<td>0</td>
</tr>
<tr>
<td>Number of benefited residences</td>
<td>0</td>
</tr>
<tr>
<td>New highway or more than 50% of residences predate 1978</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable allowance per benefited residence</td>
<td>$45,000</td>
</tr>
<tr>
<td>Total reasonable allowance</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Note: N/A = not applicable.*

Detailed modeling analysis of Noise Barrier H-2 indicates that increasing the height of the barrier to 16 feet would result in a maximum noise reduction of less than 5 dB at noise-sensitive first-row receiver locations. No receivers would benefit from increasing the height of Barrier H-2. Increasing the height of Barrier H-2 is therefore not considered to be feasible.

**Area O (Project Alternatives B and C)**

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at single-family residences will be up to 73 dBA-\(L_{eq}\)[h]. Traffic noise impacts are predicted to occur at three residences in this area. No noise barriers are currently located in this area. Barrier O (also Barrier SB4 in the I-80 Eastbound Cordelia Truck Scales Relocation Project) consists of two barriers that would provide shielding for traffic noise from both I-80 and the SR 12E flyover transition ramp. Barrier O would have a total length of approximately 4,800 linear feet within Caltrans right-of-way adjacent to I-80 eastbound to SR 12 transition ramps. Barrier O was evaluated for wall heights in the range of 6–16 feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. Detailed modeling analysis of Barrier O indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier O is therefore considered feasible from an acoustical perspective.

Table 3.2.7-11 summarizes the calculated reasonable allowances for the two barriers at equal heights. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier O is shown in Figure 3.2.7-19 in Volume 2.
Table 3.2.7-11. Summary of Reasonableness Determination Data—Barrier O, Hale Ranch Road

<table>
<thead>
<tr>
<th>Barrier I.D.: O (SB4), Hale Ranch Road</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predicted Sound Level without Barrier</strong></td>
<td></td>
</tr>
<tr>
<td>Design-year noise level, dBA-(L_{eq[h]})</td>
<td>73</td>
</tr>
<tr>
<td>Design-year noise level minus existing noise level, dB</td>
<td>4</td>
</tr>
<tr>
<td><strong>Design Year with Barrier</strong></td>
<td>Height: 6 feet</td>
</tr>
<tr>
<td>Barrier noise reduction, dB</td>
<td>3</td>
</tr>
<tr>
<td>Number of benefited residences</td>
<td>Yes</td>
</tr>
<tr>
<td>New highway or more than 50% of residences predate 1978</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable allowance per benefited residence</td>
<td>$47,000</td>
</tr>
<tr>
<td>Total reasonable allowance</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Note: N/A = not applicable.*

**Area Q—Fairfield Corporate Commons**

The Fairfield Corporate Commons project is currently under construction. The project is a mixed-use development that includes office buildings, single- and multi-family residential units, and a hotel. The Fairfield Corporate Commons Draft EIR included a noise study, which assessed noise impacts predicted to result from construction activities and operations from the long-term buildout of the project. The noise analysis was done to determine the project’s conformity to local land use compatibility standards. The study determined that potentially significant impacts would occur at exterior areas of frequent human use associated with the planned residential use.

Based on the preliminary configuration of land use studied in the report, abatement in the form of noise barriers was required to reduce impacts at exterior locations. However, David Feinstein of the City of Fairfield Planning Department confirmed in a September 25, 2009, telephone conversation with ICF Jones & Stokes personnel that residential outdoor use areas would be located behind continuous building structures, which would function as shielding elements from traffic noise on the North Connector and I-80.

The traffic noise modeling results in Table 3.2.7-4 indicate traffic noise levels at planned residential use areas associated with the future Fairfield Corporate Commons project would be up to 57 dBA-\(L_{eq[h]}\). No traffic noise impacts are predicted to occur within the Fairfield Corporate Commons project.

In addition, an existing residence in Area Q is expected to be removed due to construction of a truck scales facility on westbound I-80 as part of the project. Therefore, no noise abatement was considered for Area Q.

**Area R (Project Alternatives B and C, Alternative B, Phase 1)**

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at Scandia Family Center and the outdoor pool area of the Days Inn will be up to 80 dBA-\(L_{eq[h]}\). Traffic noise impacts are therefore predicted to occur in this area. No noise barriers are currently located in this area. The two-barrier system identified as Barrier R in Figure 3.2.7-20 in Volume 2 (Barrier NR for the I-80 HOV Lanes Project) was evaluated for wall heights in the range of 6–16
feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. The Barrier R two-barrier system would have a total length of approximately 1,400 linear feet within eastbound I-80 right-of-way. Detailed modeling analysis of Barrier R indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier R is therefore considered feasible from an acoustical perspective.

Table 3.2.7-12 summarizes the calculated reasonable allowances for this wall. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study.

**Table 3.2.7-12. Summary of Reasonableness Determination Data—Barrier R, Pittman Road**

<table>
<thead>
<tr>
<th>Barrier I.D.: R (NR), Pittman Road</th>
<th>Predicted Sound Level without Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design-year noise level, dBA L_{eq[h]}</td>
<td>80</td>
</tr>
<tr>
<td>Design-year noise level minus existing noise level, dB</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design Year with Barrier</th>
<th>Height: 6 feet</th>
<th>Height: 8 feet</th>
<th>Height: 10 feet</th>
<th>Height: 12 feet</th>
<th>Height: 14 feet</th>
<th>Height: 16 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier noise reduction, dB</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Number of benefited residences</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>New highway or more than 50% of residences predate 1978</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable allowance per benefited residence</td>
<td>$49,000</td>
<td>$51,000</td>
<td>$51,000</td>
<td>$53,000</td>
<td>$53,000</td>
<td>$53,000</td>
</tr>
<tr>
<td>Total reasonable allowance</td>
<td>$343,000</td>
<td>$357,000</td>
<td>$408,000</td>
<td>$424,000</td>
<td>$424,000</td>
<td>$424,000</td>
</tr>
</tbody>
</table>

*Note: N/A = not applicable.*

Under with-project design-year conditions, receiver R02 (Volume 2, Figure 3.2.7-20) is predicted to be exposed to a noise level of 80 dBA L_{eq}. This location is therefore predicted to be exposed to a severe traffic noise impact as defined in the Protocol. Noise abatement that is not reasonable and feasible as defined in the Protocol may be considered for severe traffic noise impacts on a case-by-case basis. This type of abatement is called extraordinary abatement. Barrier R would provide at least 5 dB of noise reduction and would reduce noise to less than 74 dBA L_{eq} at this location at a height of eight feet (as shown in Appendix C of the Noise Study). In the event that this barrier is not determined to be reasonable and feasible, it may be considered for extraordinary abatement.

**Noise Abatement Decision Report**

A Noise Abatement Decision Report (NADR) was prepared to include noise abatement construction cost estimates that have been prepared by the project engineer based on site-specific conditions. These cost estimates are then compared to the total reasonableness allowances as shown in Table 3.2.7-13.
Table 3.2.7-13. Summary of Reasonableness Allowances and Cost Estimates for Evaluated Noise Barrier Designs

<table>
<thead>
<tr>
<th>Height (ft)</th>
<th>Receivers Benefited</th>
<th>Barrier Length (linear feet)</th>
<th>Barrier Area (square feet)</th>
<th>Department Cost Allowance per Residence ($)</th>
<th>Department Reasonableness Allowance ($)</th>
<th>Estimated Construction Cost ($)</th>
<th>Cost-Reasonable?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barrier H-1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>25</td>
<td>2,250</td>
<td>31,500</td>
<td>$47,000</td>
<td>$1,175,000</td>
<td>$1,560,000</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>25</td>
<td>2,250</td>
<td>36,000</td>
<td>$47,000</td>
<td>$1,175,000</td>
<td>$1,700,000</td>
<td>No</td>
</tr>
<tr>
<td><strong>Barrier E-2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>1,160</td>
<td>11,600</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$440,000</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>1,160</td>
<td>13,920</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$500,000</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>1,160</td>
<td>16,240</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$560,000</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>1,160</td>
<td>18,560</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$600,000</td>
<td>No</td>
</tr>
<tr>
<td><strong>Barrier E-3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>750</td>
<td>4,500</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$200,000</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>750</td>
<td>6,000</td>
<td>$45,000</td>
<td>$45,000</td>
<td>$280,000</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>750</td>
<td>7,500</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$280,000</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>750</td>
<td>9,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$330,000</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>750</td>
<td>10,500</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$370,000</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>750</td>
<td>12,000</td>
<td>$47,000</td>
<td>$47,000</td>
<td>$390,000</td>
<td>No</td>
</tr>
<tr>
<td><strong>Barrier O</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>4,800</td>
<td>48,000</td>
<td>$49,000</td>
<td>$49,000</td>
<td>$2,530,000</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>4,800</td>
<td>57,600</td>
<td>$49,000</td>
<td>$147,000</td>
<td>$2,800,000</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>4,800</td>
<td>67,200</td>
<td>$51,000</td>
<td>$153,000</td>
<td>$3,030,000</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>4,800</td>
<td>76,800</td>
<td>$51,000</td>
<td>$153,000</td>
<td>$3,250,000</td>
<td>No</td>
</tr>
<tr>
<td><strong>Barrier R</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>1,400</td>
<td>8,400</td>
<td>$49,000</td>
<td>$343,000</td>
<td>$500,000</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>1,400</td>
<td>11,200</td>
<td>$51,000</td>
<td>$357,000</td>
<td>$570,000</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1,400</td>
<td>14,000</td>
<td>$51,000</td>
<td>$408,000</td>
<td>$650,000</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>1,400</td>
<td>16,800</td>
<td>$53,000</td>
<td>$424,000</td>
<td>$730,000</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>1,400</td>
<td>19,600</td>
<td>$53,000</td>
<td>$424,000</td>
<td>$790,000</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>1,400</td>
<td>22,400</td>
<td>$53,000</td>
<td>$424,000</td>
<td>$850,000</td>
<td>No</td>
</tr>
</tbody>
</table>

As shown in Table 3.2.7-13, the estimated construction costs exceed the reasonableness allowance in all cases. Accordingly, the barrier designs studied in this analysis are not considered reasonable from a cost perspective. The public input process has been completed and the final determination is that none of the barriers evaluated are reasonable from a cost perspective.

**Minimize Construction Noise**

The Department’s Standard Specification Section 14-8.02 will be implemented to minimize noise effects from construction. In addition, the following measures may be implemented to further minimize noise effects from construction:

- Use of equipment with sound-control devices that are no less effective than those provided on the original equipment.
- Prohibition of the use of any equipment with an unmuffled exhaust.
- Changing the location of stationary construction equipment to maximize the distance to noise sensitive uses.
• Turning off idling equipment.
• Rescheduling construction activity to non-sensitive hours of the day.
• Notifying adjacent residents in advance of construction work.
• Installing acoustic barriers around stationary construction noise sources.
3.2.8 Energy

Regulatory Setting
The California Environmental Quality Act (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.

The National Environmental Policy Act (NEPA) (42 USC Part 4332) requires the identification of all potentially significant impacts on the environment, including energy impacts.

California’s Energy Action Plan (updated in 2008) describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California’s energy resources are adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first-priority actions to address California’s increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy demand and transmission capacity needs, clean and efficient fossil-fuel–fired generation is supported.

Affected Environment
This discussion is based primarily on the Interstate 80/Interstate 680/State Route 12 Energy Technical Report (Energy Report) prepared in 2010. The affected environment includes the physical boundaries of the roadway construction site as well as the total vehicle flow passing through the completed roadway. Traffic flow passing through the project area at build-out is intrinsically connected to traffic patterns throughout the region, underpinned by socioeconomic and regulatory factors throughout the state and nation. Thus the affected environment can best be thought of as the regional energy budget. For reasons discussed in detail below, a comprehensive analysis of the regional energy budget is beyond the scope of this report. This analysis therefore is restricted to direct energy consumption and indirect energy consumption as defined below.

Direct Energy Use
Direct energy use is the energy used in the actual propulsion of a vehicle using the facility. It can be measured in terms of the thermal value of the fuel (usually measured in British thermal units [BTUs]), the cost of the fuel, or the quantity of electricity used in the engine or motor.

Indirect Energy Use
Indirect energy is defined as all the remaining energy used to run a transportation system, including construction energy, maintenance energy, and any substantial impacts on energy expenditures related to project-induced land use changes and mode shifts, and any substantial changes in energy associated with vehicle operation, manufacturing or maintenance due to increased automobile use.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Physical Environment, Energy

**Determination of Adverse Effects**

There are no thresholds of significance for energy consumption. Instead, the Department and the Federal Highway Administration (FHWA) require a discussion of the potential energy effects of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

A qualitative comparison of the project alternatives was employed in this analysis. Direct energy consumption was relatively assessed across the project alternatives through a comparison of peak vehicle miles traveled (VMT) (a.m. and p.m.), total VMT, and delay hours. To assess indirect energy consumption, the construction parameters of the project alternatives were compared. The qualitative analysis was determined to be the simplest way of comparing the project alternatives. This approach limits the need for assumptions and avoids significant limitations in standard, but outdated methodologies.

Historically, transportation energy studies quantified direct and indirect energy expenditures. Quantitative analyses of direct energy consumption were a summation of the peak and non-peak energy for vehicle movement for the analysis period, which was typically the period from the completion of project construction to 20 years following the completion of project construction. In assessing the direct energy impact, assumptions are made when considering various factors, including vehicle fleet mix, annual VMT, fuel economy, and variation of fuel consumption rates over time and by vehicle type. Additional assumptions were made, including:

- New-model fleet fuel efficiency would always be improving.
- Vehicle fuel usage in rural settings would differ from vehicle fuel usage in urban settings.
- Multiple occupant vehicles could use high occupancy vehicle lanes.
- Pavement would be maintained in fair to reasonable condition.

Quantification analyses of indirect energy were the summation of energy required to construct, operate, and maintain the transportation network, as well as to manufacture and maintain on-road vehicles and transit vehicles. This approach relied on factors (construction equipment operation energy factors and maintenance energy factors) that have remained unchanged for 30 years. The methodology to estimate construction energy expenditures using project construction cost requires adjusting future construction costs to the 1977 highway construction price index, which is almost always overlooked.

Today we can no longer make these same assumptions. The on-the-road vehicle fleet mix can vary in type and age with the economy. The on-the-road vehicle fleet fuel usage rates will depend on the on-the-road vehicle fleet mix and can be propelled by gasoline or diesel fuels as well as by other means, including gasoline-electric hybrids, plug-in electricity, fuel cells, and compressed natural gas. New-model vehicle fleet fuel usage rates are known, but we do not know how the rates may change as vehicles age. There may be new or improved technologies during the analysis period that constitute significant leaps in vehicle fuel conservation rates and efficiency. With fuel injection technology, the commonly used assumptions about cold starts are outdated and are not deemed appropriate for this analysis. Vehicle fleet fuel efficiency doesn’t always increase over time; vehicle fleet fuel efficiency actually decreased in the 1990s with the proliferation of sport utility vehicles. There may be no differences in vehicle fuel usage between
rural and urban settings with urban expansion. Express (toll) lanes may replace high-occupancy vehicle lanes in the near future. Pavement condition may become worse over time if funding for maintenance improvements remains scarce. Construction equipment and techniques have improved in the last 30 years, so construction equipment operation energy factors require updating.

The project alternatives in and of themselves cannot influence the vehicle fleet, future fuel economy, or development patterns that steer regional driving patterns. All project alternatives would be equally affected by these uncertain future scenarios. However, at the writing of this document, both the regulatory environment and the market are responding to climate change concerns, and a transformation of American driving patterns and technologies seems likely within a generation. The practice of assuming present-day fuel economy and fleet conditions is commonly implemented as a worst-case scenario for energy analyses, but at this time the likelihood of large-scale changes in this sector would render that assumption grossly incorrect. This analysis has therefore relied on a comparison of the raw traffic numbers as well as converting them to BTUs.

In addition, numerous contributors to the energy balance within a project area require complicated and rigorous economic analysis. The decision of where people buy homes, how far they regularly commute, the choice of personal vehicle and the fuel price at which consumers begin to alter their transportation patterns are just a few examples of large-scale patterns that ultimately affect the number of vehicles in the project area. Traditional energy analyses for roadway projects have ignored these components, and consequently attributed increases in VMT uniquely to the implementation of the project—a gross oversimplification of the regional energy budget.

With so many unknowns and a multitude of future energy scenarios, a quantitative analysis has a high risk of being inaccurate and meaningless. Consequently, a qualitative analysis would provide more useful information upon which to judge a proposed project and its alternatives. The qualitative approach employed is described in detail in the “Methods” section.

**Methods**

The energy analysis addresses both direct and indirect energy. The direct energy analysis includes the potential for increased energy consumed by fossil-fuel–powered vehicles using the interchange. A discussion of motor vehicle traffic (VMT and average travel speeds) through the interchange is a component of the direct energy analysis because VMT and speeds can infer direct energy consumption. These VMT values were converted to BTUs based on anticipate future fuel economies (U.S. Department of Energy 2012; California Air Resources Board 2012).

The indirect energy analysis addresses the energy associated with construction and maintenance of the interchange and other roadway infrastructures. This approach compares the amounts of various construction materials required for each alternative. Construction-related energy consumption and energy consumption embodied in materials production is assumed to be directly proportional to roadway elevation, length, area and volume needed. By comparing the raw materials employed, the need to use speculative or outdated factors relating energy consumption to cost are avoided. The cost of acquiring individual materials may vary.
dramatically in response to global demand and availability. A lump cost estimate masks the effects of these fluctuations and is only very indirectly related to the true energy consumed.

**Direct Energy Consumption**

This analysis compares the estimated VMT, delay, fuel consumption (gallons and BTU), and average network speed on the I-80/I-680/SR 12 interchange system-wide measure of effectiveness network (i.e., the portion of the network included in the traffic study) that would result under implementation of the project alternatives. The analysis parallels the *Air Quality Study Report* of the EIR by presenting direct energy (fuel consumption through VMT) calculations associated with estimated vehicle speeds from the traffic study.

A comparison of traffic metrics in the project area in 2015 and 2035 are shown in Tables 3.2.8-1 and 3.2.8-2. It is assumed that societal, economic, or regulatory changes affecting fuel economy are equally reflected in the VMTs for each project alternative. Thus assumed fuel economy is not required to convert VMT to energy consumption in order to compare alternatives.

**Table 3.2.8-1. Traffic Flow during Operations in Year 2015 and Ranking of Alternatives**

<table>
<thead>
<tr>
<th>Vehicless</th>
<th>No-Build</th>
<th>Alternative B Phase 1</th>
<th>Alternative C Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project distance (miles)</td>
<td>–</td>
<td>6.23</td>
<td>10.17</td>
</tr>
<tr>
<td>VMT/hour</td>
<td>a.m.</td>
<td>449,870 (0)</td>
<td>451,325 (1)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>480,410 (0)</td>
<td>531,935 (1)</td>
</tr>
<tr>
<td>Vehicle hours of delay/hour</td>
<td>a.m.</td>
<td>1,075 (0)</td>
<td>840 (0)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>5,100 (1)</td>
<td>2,150 (0)</td>
</tr>
<tr>
<td>Average network speed (miles per hour)</td>
<td>a.m.</td>
<td>51.2 (1)</td>
<td>52.6 (1)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>36.2 (1)</td>
<td>47.6 (0)</td>
</tr>
<tr>
<td>Daily VMT</td>
<td></td>
<td>4,186,260 (0)</td>
<td>4,424,670 (1)</td>
</tr>
<tr>
<td>Off-peak VMT</td>
<td></td>
<td>3,255,980 (0)</td>
<td>3,441,410 (1)</td>
</tr>
<tr>
<td>Diesel Consumption (gal) a</td>
<td>33,079 (0)</td>
<td>34,963 (1)</td>
<td>34,309 (0)</td>
</tr>
<tr>
<td>Gasoline Consumption (gal) b</td>
<td>210,631 (0)</td>
<td>222,626 (1)</td>
<td>218,459 (0)</td>
</tr>
<tr>
<td>Total BTU c</td>
<td></td>
<td>1.92 (0)</td>
<td>2.03 (1)</td>
</tr>
<tr>
<td>Total score</td>
<td></td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Notes:**

a. Fuel economy based on EMFAC2011 model run for diesel trucks in Solano County in 2015 (7.8 miles per gallon) (California Air Resources Board 2012). Values do not account for vehicle delay or speed.

b. Fuel economy based on future projections for passenger vehicles assuming implementation of future CAFÉ standards (34.1 miles per gallon) (U.S. Department of Energy 2012). Values do not account for vehicle delay or speed.

c. Assumes the BTU content of diesel fuel is 138,690 and the BTU content of gasoline fuel is 125,000

### Table 3.2.8-2. Traffic Flow during Operations in Year 2035 and Ranking of Alternatives (score in parentheses)

<table>
<thead>
<tr>
<th>Peak Hour Vehicles</th>
<th>No-Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Alt B, Ph 1</th>
<th>Alt C, Ph 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project distance (miles)</td>
<td>–</td>
<td>21.17</td>
<td>22.95</td>
<td>6.23</td>
<td>10.17</td>
</tr>
<tr>
<td>VMT/hour</td>
<td>a.m.</td>
<td>539,445 (0)</td>
<td>575,300 (0)</td>
<td>577,480 (1)</td>
<td>564,605 (1)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>413,160 (0)</td>
<td>660,290 (0)</td>
<td>660,555 (1)</td>
<td>575,815 (1)</td>
</tr>
<tr>
<td>Vehicle hours of delay/hour</td>
<td>a.m.</td>
<td>3,695 (1)</td>
<td>1,335 (0)</td>
<td>1,260 (0)</td>
<td>1,845 (0)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>19,065 (1)</td>
<td>5,420 (0)</td>
<td>5,995 (0)</td>
<td>10,155 (0)</td>
</tr>
<tr>
<td>Average network speed (miles per hour)</td>
<td>a.m.</td>
<td>41.8 (1)</td>
<td>52.4 (0)</td>
<td>52.7 (0)</td>
<td>48.9 (0)</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>15.9 (1)</td>
<td>40.1 (0)</td>
<td>38.5 (0)</td>
<td>28.9 (0)</td>
</tr>
<tr>
<td>Daily VMT</td>
<td>–</td>
<td>4,286,723 (0)</td>
<td>5,560,155 (0)</td>
<td>5,571,158 (1)</td>
<td>5,131,890 (1)</td>
</tr>
<tr>
<td>Off-peak VMT</td>
<td>–</td>
<td>3,334,118 (0)</td>
<td>4,324,565 (0)</td>
<td>4,333,123 (1)</td>
<td>3,991,470 (1)</td>
</tr>
<tr>
<td>Diesel Consumption (gal)</td>
<td>a</td>
<td>32,686 (0)</td>
<td>42,395 (0)</td>
<td>42,479 (1)</td>
<td>39,130 (0)</td>
</tr>
<tr>
<td>Gasoline Consumption (gal)</td>
<td>b</td>
<td>148,284 (0)</td>
<td>192,334 (0)</td>
<td>192,714 (1)</td>
<td>177,519 (0)</td>
</tr>
<tr>
<td>Total BTU</td>
<td>c</td>
<td>1.42 (0)</td>
<td>1.84 (0)</td>
<td>1.85 (1)</td>
<td>1.70 (0)</td>
</tr>
<tr>
<td>Total points</td>
<td>–</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

**Source:** Final Traffic Operations Report.

a Fuel economy based on EMFAC2011 model run for diesel trucks in Solano County in 2035 (8.1 miles per gallon) (California Air Resources Board 2012). Values do not account for vehicle delay or speed.

b Fuel economy based on future projections for passenger vehicles assuming implementation of future CAFÉ standards (49.6 miles per gallon) (U.S. Department of Energy 2012). Values do not account for vehicle delay or speed.

c Assumes the BTU content of diesel fuel is 138,690 and the BTU content of gasoline fuel is 125,000.

Tables 3.2.8-1 and 3.2.8-2 utilize a point system to compare No-Build Alternative with the various full-build alternatives (Alternative B and Alternative C) based on the various traffic flow metrics. One point was assigned to the alternative with the larger value for a particular traffic metric, presumably resulting in higher energy consumption relative to the other alternatives. The build and no-build alternatives are compared to estimate which would result in greater energy consumption, and a point is given if the alternative would potentially increase energy relative to the other alternatives. The higher the total points for each alternative, the greater the assumed direct energy consumption.

When comparing the fundable first phases of the alternatives to the no-build conditions, Alternative B, Phase 1 would result in increase in peak hourly, daily, and off-peak VMT, while decreasing hours of delay when compared to both Alternative C, Phase 1, and the No-Build Alternative. The fundable first phases of both alternatives would increase VMT, reduce hours of delay, increase average network speeds, and increase fuel consumption over 2035 no-build conditions. In general, energy consumption is minimized under traffic conditions that minimize delay hours, maintain speeds between 45 and 55 mph, and limit the need for vehicles to exit the freeway onto surface streets in order to avoid heavy traffic conditions. The relative scoring system shown in Table 3.2.8-1 indicates that at 2015, Alternative C, Phase 1 is the better performing build alternative for the specific metrics listed. However, neither fundable first phase would result in wasteful or excessive use of direct energy.

When comparing the two full build alternatives to no-build conditions, Alternative C would increase peak hourly VMT, daily VMT, and off-peak VMT compared to both Alternative B and the No-Build Alternative. Average network speed would improve for both build alternatives, but the resulting difference in fuel consumption between the two is considered negligible. Alternative C would result in a greater increase in VMT relative to the No-Build Alternative and
would decrease a.m. hours of delay and a.m. network speed. Alternative B would improve p.m. hours of delay and network speed. Total VMT is directly proportional to fuel consumed while average network speed is inversely proportional, through a certain range. The relative scoring system shown in Table 3.2.8-2 indicates that at 2035, Alternative B is the better performing full-build alternative for the specific metrics listed. However, neither full-build alternative would result wasteful or excessive use of direct energy.

This analysis does not take into account vehicles leaving the freeway in response to traffic conditions. The fuel consumption analysis is also based on assumptions about the future vehicle fleet and fuel economy. The analysis also does not account for changes in fuel consumption related to vehicle speeds and/or increased delay. Neglecting these activities likely introduces greatest error into the No-Build scenario because hours of delay are highest for this Alternative. A rigorous analysis accounting for these factors would allow more clear differentiation of Alternatives B and C, although it is expected that direct energy consumption is similar. Based on the data presented in Tables 3.2.8-1 and 3.2.8-2, Alternatives B and C should be considered comparable in 2035 for direct energy consumption, with Alternative B as a slightly better alternative.

**Indirect Energy Consumption**

This analysis compares the quantities of material for structures construction and numbers of structure types for the No-Build Alternative, Alternative B, and Alternative C. An additional metric used is lane-miles of roadway requiring maintenance after construction is complete. The total amount of energy required is inferred from these metrics and no assumptions regarding cost were made. Because many of the alternatives included in the proposed project are at conceptual planning stages and detailed construction information, such as the number of equipment, materials, and labor hours are not available, no detailed quantitative assessment of construction and maintenance impacts is possible. Were this information available, materials-specific energy factors and equipment-specific fuel economy could be employed to calculate construction-related energy consumption.

The qualitative comparison analysis presented here assumes that larger amounts of materials equates with more energy use due to increased labor hours, increased hauling of materials, and increased embodied energy consumption in materials manufacture. Construction- and maintenance-related metrics are presented for comparison in Table 3.2.8-3. An identical scoring system to that used for the direct energy evaluation was applied here.
Table 3.2.8-3. Materials Consumption for Construction and Maintenance and Ranking of Alternatives (score in parentheses)

<table>
<thead>
<tr>
<th>Indirect Energy</th>
<th>No-Build</th>
<th>Alternative B</th>
<th>Alternative C</th>
<th>Alt B, Phase 1</th>
<th>Alt C, Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway excavation (cubic yard [cy])</td>
<td>–</td>
<td>2,800,000 (1)</td>
<td>2,523,000 (0)</td>
<td>750,000 (0)</td>
<td>2,187,000 (1)</td>
</tr>
<tr>
<td>Imported borrow (cy)</td>
<td>–</td>
<td>1,120,000 (0)</td>
<td>2,129,000 (1)</td>
<td>75,000 (0)</td>
<td>607,400 (1)</td>
</tr>
<tr>
<td>Portland cement concrete (PCC) pavement roadway (cy)</td>
<td>–</td>
<td>220,000 (1)</td>
<td>126,852 (0)</td>
<td>64,000 (0)</td>
<td>137,611 (1)</td>
</tr>
<tr>
<td>Asphalt concrete (AC) Pavement (cy)</td>
<td>–</td>
<td>280,000 (0)</td>
<td>302,333 (1)</td>
<td>60,000 (1)</td>
<td>19,393 (0)</td>
</tr>
<tr>
<td>Bridge structures PCC (cy)</td>
<td>–</td>
<td>106,000 (0)</td>
<td>115,050 (1)</td>
<td>54,000 (0)</td>
<td>80,470 (1)</td>
</tr>
<tr>
<td>Bridge structures rebar (pounds)</td>
<td>–</td>
<td>22,000,000 (0)</td>
<td>23,895,000 (1)</td>
<td>11,000,000 (0)</td>
<td>16,713,000 (1)</td>
</tr>
<tr>
<td>Lighting (units)</td>
<td>–</td>
<td>305 (1)</td>
<td>206 (0)</td>
<td>130 (1)</td>
<td>108 (0)</td>
</tr>
<tr>
<td>Traffic signals (units)</td>
<td>–</td>
<td>22 (1)</td>
<td>16 (0)</td>
<td>8 (1)</td>
<td>7 (0)</td>
</tr>
<tr>
<td>Overhead sign structures (units)</td>
<td>–</td>
<td>20 (0)</td>
<td>20 (0)</td>
<td>10 (0)</td>
<td>10 (0)</td>
</tr>
<tr>
<td>Ramp meters (units)</td>
<td>–</td>
<td>19 (1)</td>
<td>17 (0)</td>
<td>5 (0)</td>
<td>6 (1)</td>
</tr>
<tr>
<td>Striping (feet)</td>
<td>–</td>
<td>1,788,000 (1)</td>
<td>1,566,000</td>
<td>710,000 (1)</td>
<td>693,800 (0)</td>
</tr>
<tr>
<td>Retaining walls (square feet)</td>
<td>–</td>
<td>475,000 (1)</td>
<td>407,700 (0)</td>
<td>388,300 (1)</td>
<td>325,100 (0)</td>
</tr>
<tr>
<td>Noise barriers (square feet)</td>
<td>–</td>
<td>25,000 (0)</td>
<td>25,000 (0)</td>
<td>33,000 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Barriers and guardrails (feet)</td>
<td>–</td>
<td>108,000 (0)</td>
<td>110,400 (1)</td>
<td>32,300 (0)</td>
<td>34,800 (1)</td>
</tr>
<tr>
<td>Sidewalk, curb, and gutter (square feet)</td>
<td>–</td>
<td>243,500 (1)</td>
<td>117,800 (0)</td>
<td>120,700 (0)</td>
<td>143,880 (1)</td>
</tr>
<tr>
<td>Temporary MSE walls (square feet)</td>
<td>–</td>
<td>50,000 (0)</td>
<td>50,000 (0)</td>
<td>38,000 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Total for all structures (square feet)</td>
<td>–</td>
<td>806,704 (0)</td>
<td>1,050,281 (1)</td>
<td>398,195 (0)</td>
<td>619,000 (1)</td>
</tr>
<tr>
<td>PCC lane-miles</td>
<td>75.83 (0)</td>
<td>86.34 (0)</td>
<td>89.75 (1)</td>
<td>29.34 (0)</td>
<td>48.13 (1)</td>
</tr>
<tr>
<td>AC lane-miles</td>
<td>17.76 (0)</td>
<td>20.57 (0)</td>
<td>25.36 (1)</td>
<td>0.98 (0)</td>
<td>9.03 (1)</td>
</tr>
</tbody>
</table>

**Total Points**: 0 8 8 6 11

**Source**: John Thomson, personal communication, 2009.

**Note**: Construction cost estimate sheets are located in Appendix A of the Interstate 80/Interstate 680/State Route 12 Energy Technical Report.

Table 3.2.8-3 indicates that construction of Alternative B will require a larger volume of excavated roadway and a larger area of asphalt concrete (AC). Additionally, Alternative B requires more material associated with edge drains, median islands, sidewalk, curbs and gutters as compared to Alternative C. Conversely, construction of Alternative C will require a larger area to be covered with Portland cement concrete (PCC) pavement and more barriers and guardrails. The total square footage of structures as defined by the client is larger in Alternative C. The total lane miles of roadway requiring maintenance would be higher for Alternative C. Without a more rigorous assessment of the energy associated with each of the unique construction activities listed in Table 3.2.8-3, it is impossible to quantify the total energy consumed for the aggregate of construction tasks. Some construction activities may be inherently more energy intensive than others, and thus apparent energy benefits in one metric could be negated in another. In general, Alternative B has larger values in more construction categories than Alternative C.
The estimated number of lane-miles for Alternative B, Alternative C, Alternative B Phase 1, and Alternative C, Phase 1 (Table 3.2.8-3) served as an estimate for maintenance energy usage. Based on the information from the Draft Interchange Pavement and Interchange Configuration Data (Nolte Associates 2009), the total estimated PCC and AC lane-miles for Alternative B and Alternative C are estimated to be approximately 86 to 90 lane-miles for PCC pavements and 20 to 25 lane-miles for AC pavements. According to Table C-14 in Appendix C of the Caltrans 1983 report, the estimated amount of energy factor required to maintain the roadway is approximately 16.3 and 17.8 billion BTUs per lane-mile for PCC and AC pavements, respectively.

According to the project description, Alternative C will have considerably more PCC and AC pavement to maintain than Alternative B and No-Build scenarios. For the fundable first phases of the project alternatives, Alternative C, Phase 1 will require more maintenance energy than Alternative B, Phase 1.

Based on the data presented in Table 3.2.8-3, Alternative B and C would result in comparable levels of indirect energy consumption. For the fundable first phases of the project alternatives, Alternative B, Phase 1 would result in slightly less indirect energy consumption. However, neither project alternative nor their fundable first phases are anticipated to result in wasteful or excessive indirect energy expenditures.

**Environmental Consequences**

**Increased Consumption of Direct Energy**

Direct energy consumption for each alternative would result from motor vehicle travel through the project area. This analysis compares traffic data summarized in the FTOR for the proposed project and inferred future energy consumption from the relationship between traffic conditions and fuel consumption.

Both build alternatives would result in increased VMT, reduced hours of delay, fuel consumption, and increased motor vehicle speed over no-project conditions. Increased VMT would result from increased motor vehicle trips traveling a greater distance over the project area. Increased vehicle speeds would increase travel flow and reduce congestion. While Tables 3.2.8-1 and 3.2.8-2 estimate fuel consumption, the analysis does not take into account vehicle speed or delay. The optimal fuel efficiency varies by vehicle, but generally the lowest fuel economy is in the 0–25 mph range, and the optimal range is 45–55 mph, with a steady decline in efficiency occurring as speeds exceed 55 mph. Under 2035 Alternative B and C full-build conditions, a.m. peak hour vehicle speeds increase to the optimal range for fuel efficiency (52.4 mph for Alternative B; 48.9 mph for Alternative B, Phase 1; 52.7 mph for Alternative C; 44.2 mph for Alternative C, Phase 1), a condition that would increase fuel efficiency when compared to no-project a.m. average speeds (41.8 mph). Improved traffic flow would reduce the vehicle hours of delay for all build scenarios (except 2015 Alternative C, Phase 1), a condition that might reduce fuel use as lower traffic speeds (0–25 mph) result in poor fuel economy. It is unknown to what extent drivers bypass the existing interchange and use alternate and potentially longer-distance traffic routes because of existing traffic conditions. The inability to capture these VMTs in the analysis likely has the greatest affect on the No-Build Alternative where delay hours are highest.
Implementation of either build alternative would relieve traffic congestion by reducing vehicle hours of delay and increasing network speeds, while increasing total VMT and fuel consumption through the project area. However, none of the build alternatives are expected to result in an inefficient, wasteful, or unnecessary consumption of energy.

**Increase Consumption of Indirect Energy**

Indirect energy consumption would result from project construction and maintenance. Construction of the proposed project would result in the consumption of energy to prepare the project site, manufacture and deliver construction materials to the project site, and construct the roadway interchange and associated structures. This increased fossil fuel consumption from project construction is not expected to have an appreciable impact on energy resources.

Based on the qualitative comparison, Alternative C would result in more AC pavement, more bridge structures (both PCC and rebar), slightly more barriers and guardrails, and would have a longer project distance. Based on the qualitative comparison, Alternative B would require more PCC pavement, more lighting, more traffic signals, more ramp meters, more striping, and more sidewalks, curbs, and gutters. For the fundable first phase scenarios, Alternative C, Phase 1 will require more PCC bridge structures, rebar structures, AC pavements, and roadway base aggregate materials than Alternative B, Phase 1. The construction of any of the proposed build alternatives would be a necessary component of the project and a one-time expenditure of energy. This one-time expenditure of energy would provide for energy benefits in the long run because reduced congestion and improved traffic flow through the interchange might result in reduced direct energy consumption. Based on the qualitative analysis, Alternative C was determined to be the most preferable alternative.

Implementation of the proposed project would result in an increase in indirect energy consumption relative to the No-Build Alternative due to project construction and maintenance. However, the associated construction and maintenance of the build alternatives are not expected to result in an inefficient, wasteful, or unnecessary consumption of energy.

**Avoidance, Minimization, and/or Mitigation Measures**

For the proposed project alternatives, an adverse impact on energy consumption would occur if a project alternative results in wasteful, inefficient, or unnecessary consumption of energy. The increase in energy consumption associated with any of the build alternatives is not expected to result in an inefficient, wasteful, or unnecessary consumption of energy. Moreover, to the extent that it is applicable or feasible for the project, standard energy efficiency measures such as LED bulbs, idling limits, and limits on haul distance will be included in the project. Because the build alternatives would not result in wasteful or excessive use of energy, avoidance, minimization, and mitigation measures would not be necessary.
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3.3 Biological Environment

The biological study area generally comprises the maximum project construction footprint for all alternatives and an area outside the project footprint to accommodate construction activities and staging where needed. The approximately 772-acre biological study area also includes areas outside of this general construction footprint in order to analyze indirect impacts on listed species. These additional areas include known occurrences of special-status plants within 250 feet of the construction footprint, seasonal wetlands that provide habitat for listed shrimp species (vernal pool fairy shrimp [Branchinecta lynchii] and vernal pool tadpole shrimp [Lepidurus packardii]) within 250 feet of the construction footprint, elderberry shrubs (host plant for valley elderberry longhorn beetle [Desmocerus californicus dimorphus]) within 100 feet of the construction footprint, California red-legged frog (Rana draytonii) (CRLF) aquatic and upland habitat and CRLF Critical Habitat within one mile, and California tiger salamander (Ambystoma californiense) (CTS) aquatic and upland habitat within 1.24 miles. Where seasonal wetlands extend beyond the 250-foot boundary, the entire wetland is included in the biological study area.

Temporary, permanent, and indirect project effects are described below for the proposed project. For purposes of this document, temporary effects are defined as effects that return to baseline or better conditions within a year following the disturbance and where there will be no ongoing disturbance such as mowing or herbicide spraying.

Potential biological resources associated with the proposed project were identified through agency coordination, a review of existing information, and field surveys. Field surveys included botanical surveys (May 2004, May 2005, August 2007, December 2008, April 2009, and May 2011 [only on one property west of Business Center Drive]); wetland delineations (April, May, and June 2004; June and August 2007; August 2008) and verification (January 2009); CTS habitat assessment (November 2010); reconnaissance-level surveys and CRLF site assessment (July and October 2007); fisheries habitat assessment (July 2007); valley elderberry longhorn beetle (Desmocerus californicus dimorphus) (VELB) surveys (July 2007); vernal pool fairy and tadpole shrimp habitat assessments (July 2007 and February 2009); Callippe silverspot butterfly (Speyeria callippe callippe) habitat survey (Monk & Associates 2004c) and focused surveys for Johnny-Jump-Up plants (Viola pedunculata), the host plant for the callippe silverspot butterfly, in May 2011 and March 2012; a fish passage assessment (September 2006, August 2007); salt-marsh harvest mouse (Reithrodontomys raviventris) site assessment (August 2007); tree surveys (November and December 2007); and biological reconnaissance surveys of the PG&E valve lot, a gas transmission facility location (December 2011). The analysis presented in this chapter is based on the technical reports (listed below) that documented the above studies.

- Interstate 80/Interstate 680/State Route 12 Interchange Natural Environmental Study (2010).
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

- Preliminary Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project (2008); field verified in January 2009, final verification on July 9, 2009.

- Interstate 80 High-Occupancy Vehicle Lane Project Initial Study/Proposed Mitigated Negative Declaration (2007).

- Interstate 80/Interstate 680/State Route 12 Interchange Project Biological Assessment (2010).

- Biological Opinion on the Effects of the Proposed Interstate 80/Interstate 680/State Route 12 Interchange Phase 1 Project, Solano County, California (EA 0A5300) (April 2012)


3.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities and their ecological function, 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 are discussed in the Threatened and Endangered Species Section 3.3.5. Wetlands and other waters are discussed in Section 3.3.2.

The study area supports nine natural communities of special concern: riparian woodland, blue oak woodland, live oak woodland, valley oak woodland, perennial marsh, perennial drainage, seasonal drainage, alkali seasonal marsh, and seasonal wetland (Volume 2, Figure 3.3-1). In the discussions of riparian woodland and oak woodlands below, the sheet numbers shown in parentheses indicate the sheet numbers in Volume 2, Figures 3.3-2a, 3.3-2b, 3.3-2c, and/or 3.3-2d. All biological resource figures are bound separately in Volume 2 of this document. Affected acreage is tabulated for each natural community under each alternative in Table 3.3.1-1.

Only riparian woodland and oak woodlands (blue oak woodland, live oak woodland, and valley oak woodland) are discussed in this section. The wetland communities and drainages are discussed in Section 3.3.2, “Wetlands and Other Waters.” Other parts of the study area support upland scrub, other woodland, eucalyptus grove, orchard, vineyard, nonnative annual grassland, ruderal, row crops, landscaped, and a small area of open water in an artificial pond.
3.3.1.1 Riparian Woodland

**Regulatory Setting**
Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and decline in extent. The Solano County Water Agency (SCWA) administrative draft habitat conservation plan (HCP) concludes that the riparian corridor along Suisun Valley Creek is important because it provides connectivity between the West Hills and Suisun Marsh (Solano County Water Agency 2009). The California Department of Fish and Game (CDFG) has adopted a no-net-loss policy for riparian habitat values, and the streambed alteration agreement (SAA) would include mitigation requirements for a loss of riparian vegetation. The USFWS mitigation policy identifies California’s riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644).

**Affected Environment**
Riparian woodland occurs along the drainages in the study area listed here and illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.

- Jameson Canyon Creek (OW-8) (Sheets 7, 9, and 14) south of SR 12W and on the east side of I-680, and its tributary south of I-80 (OW-8c) (Sheet 7).
- Two roadside ditches south of I-80 along Cordelia Road west of I-680 (W-26 and W-41) (Sheets 7–8).
- Green Valley Creek (W-45) (Sheet 17).
- Suisun Creek at I-80 (OW-56) (Sheet 22).
- Ledgewood Creek at SR 12E (W-90) (Sheet 32).

Tree species that characterize riparian woodland in the study area include valley oak, coast live oak, willows, white alder, California buckeye, California bay, Fremont’s cottonwood, and box elder. Riparian woodland also supports elderberry shrubs in three locations: along Green Valley Creek north of I-80, adjacent to the east side of Dan Wilson Creek, and along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek. Herbaceous groundcover consists of nonnative grasses, sedge species, mugwort, and Bermuda grass, and shrubs include Himalayan blackberry, California wild rose, poison-oak, and California wild grape.

Riparian woodland habitat provides wildlife movement corridors up- and downstream for fish, amphibians, reptiles, birds, and mammals on a seasonal basis. However, its biological value is reduced because of fragmentation by roads and nearby development.

Affected acreage in riparian woodland is tabulated for each alternative in Table 3.3.1-1.
Table 3.3.1-1. Summary of Impacts on Sensitive Communities by Project Alternative

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Sensitive Natural Communities (acres)</th>
<th>Alternative B</th>
<th>Alternative B, Phase 1</th>
<th>Alternative C</th>
<th>Alternative C, Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Riparian Woodland</td>
<td>Blue Oak Woodland</td>
<td>Valley Oak Woodland</td>
<td>Live Oak Woodland</td>
<td>Perennial Drainage</td>
</tr>
<tr>
<td>Temporary</td>
<td>0.41</td>
<td>0.52</td>
<td>0.03</td>
<td>4.12</td>
<td>1.00</td>
</tr>
<tr>
<td>Permanent</td>
<td>1.31</td>
<td>0.00</td>
<td>0.16</td>
<td>5.16</td>
<td>0.67</td>
</tr>
<tr>
<td>Total B</td>
<td>1.72</td>
<td>0.52</td>
<td>0.19</td>
<td>9.28</td>
<td>1.67</td>
</tr>
<tr>
<td>Temporary</td>
<td>0.06</td>
<td>0.50</td>
<td>&lt;0.01</td>
<td>0.88</td>
<td>0.23</td>
</tr>
<tr>
<td>Permanent</td>
<td>0.10</td>
<td>0.00</td>
<td>0.19</td>
<td>0.08</td>
<td>1.25</td>
</tr>
<tr>
<td>Total B,</td>
<td>0.16</td>
<td>0.50</td>
<td>0.20</td>
<td>0.96</td>
<td>1.48</td>
</tr>
<tr>
<td>Phase 1 Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>0.25</td>
<td>0.52</td>
<td>0.02</td>
<td>1.68</td>
<td>0.92</td>
</tr>
<tr>
<td>Permanent</td>
<td>2.24</td>
<td>0.00</td>
<td>0.17</td>
<td>12.17</td>
<td>0.66</td>
</tr>
<tr>
<td>Total C</td>
<td>2.49</td>
<td>0.52</td>
<td>0.19</td>
<td>13.85</td>
<td>1.58</td>
</tr>
<tr>
<td>Temporary</td>
<td>0.08</td>
<td>0.00</td>
<td>0.02</td>
<td>2.03</td>
<td>0.51</td>
</tr>
<tr>
<td>Permanent</td>
<td>1.11</td>
<td>0.00</td>
<td>0.14</td>
<td>11.77</td>
<td>0.10</td>
</tr>
<tr>
<td>Total C,</td>
<td>1.19</td>
<td>0.00</td>
<td>0.16</td>
<td>13.80</td>
<td>0.61</td>
</tr>
<tr>
<td>Phase 1 Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Perennial marsh acreages include areas mapped as perennial wetland drainage in the delineation.
- Non-jurisdictional seasonal drainage impacts are provided in Section 3.3.2.5. No compensatory mitigation is required for the impacts on non-jurisdictional seasonal drainages, as discussed in Section 3.3.2.5.
- Temporary impacts on alkali seasonal marsh and jurisdictional and non-jurisdictional seasonal wetland will be avoided and minimized through use of ESA-type and silt fencing, worker training, and biological monitoring during construction.
- Numbers are based on a reduction in fill achieved through refinements to Alternative C, Phase 1 design during the 404b(1) process.
Environmental Consequences

Loss or Disturbance of Riparian Woodland Resulting from Construction

Construction of Alternative B would result in a permanent loss of approximately 1.31 acres of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2a).

- Jameson Canyon Creek (OW-8) and the tributary of Jameson Canyon Creek (OW-8c) south of I-80 for widening of I-80 for the I-80/I-680/SR 12W interchange.
- Two roadside ditches (W-26 and W-41) south of I-80 along Cordelia Road west of I-680 for the I-80/I-680/SR 12W interchange (Sheets 7–8).
- The north side of Suisun Creek (OW-56) for the widening of I-80 (Sheet 22).
- Ledgewood Creek (W-90) for widening of SR 12E (Sheet 32).

Construction of Alternative B, Phase 1 would result in a permanent loss of approximately 0.10 acre of riparian woodland. These impacts would occur along Ledgewood Creek south of SR 12E within the project footprint (Volume 2, Figure 3.3-2b, Sheet 32).

Under Alternative C, construction of the proposed project would result in a permanent loss of approximately 2.24 acres of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2c).

- Jameson Canyon Creek (OW-8) and the tributary to Jameson Canyon Creek south of I-80 (OW-8c) for widening of I-80 for the I-80/I-680/SR 12W interchange (Sheet 7).
- Jameson Canyon Creek west of I-680 for realignment of I-680 to SR 12W (Sheets 9 and 14).
- One roadside ditch south of I-80 along Cordelia Road west of I-680 (W-26) for the I-80/I-680/SR 12W interchange (Sheet 8).
- The north side of Suisun Creek (OW-56) for widening of I-80 (Sheet 22).
- Ledgewood Creek (OW-90) for widening of SR 12E (Sheet 32).

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 1.11 acre of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2d).

- Jameson Canyon Creek west of I-680 (OW-8) and one of its tributaries (OW-8c) for the realignment of I-680 to SR 12W (Sheets 9 and 14).
- Roadside ditches south of I-80 along Cordelia Road west of I-680 (W-26 and W-41) for the I-80/I-680/SR 12W interchange (Sheet 8).
- Ledgewood Creek (OW-90) for the widening on SR 12E (Sheet 32).
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

The permanent impact area would include riparian trees, as well as woody understory plants such as young trees, coyote brush, Himalayan blackberry, and possibly elderberry, adjacent to the south side of the study area at Suisun Creek and along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek.

Approximately 0.41 acre of riparian woodland vegetation would be temporarily disturbed during construction of Alternative B in the areas listed above for permanent impacts. Under Alternative B, Phase 1, approximately 0.06 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. Under Alternative C, approximately 0.25 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. Under Alternative C, Phase 1, approximately 0.08 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. This impact would include the probable removal of additional trees and understory vegetation to provide equipment access to the drainages.

Indirect impacts on riparian woodland vegetation could occur from adjacent construction activity. Riparian vegetation is adjacent to the construction area and would not be removed for construction, but it could sustain damage from equipment.

Implementation of avoidance, minimization, and/or mitigation measures to install ESA-type fencing, to conduct environmental awareness training, and for biological monitoring will protect trees during construction and avoid indirect impacts. Implementation of compensation measures would mitigate loss of riparian habitat.

State and federal agencies require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian woodland vegetation is considered adverse because it provides a variety of important ecological functions and values.

Under the No-Build Alternative, there would be no temporary or permanent impacts on riparian woodland.

**Avoidance, Minimization, and/or Mitigation Measures**

To avoid and minimize impacts to biological resources, the Department includes the following measures as Standard Specifications (SS) or as Standard Special Provisions (SSP) in all construction contracts: prohibit construction work in environmentally sensitive areas (Standard Specification 14-1.02A); install ESA fencing (Standard Specification 14-1.03); monitor construction and other activities by a contractor-supplied biologist (Standard Special Provision 14-6.05); and conduct environmental awareness training (Standard Special Provision 14-6.08). Thus each of these measures is an element of the project and pertains to the minimization of impacts to riparian woodlands, as well as other biological resources discussed in this section. More specific measures to minimize impacts to riparian woodlands follow.

ESA fencing would be installed adjacent to areas of construction along Jameson Canyon Creek, Suisun Creek, Ledgewood Creek, and roadside ditches south of I-80 along Cordelia Road to protect trees and riparian vegetation from potential indirect impacts associated with project construction.
Avoid and Minimize Potential Disturbance of Riparian Communities

Potential disturbance of riparian communities will be avoided and minimized by implementing the following measures.

- Ground disturbing work in riparian areas will be restricted to the dry season, between June 15 and October 15.

- Vegetation clearing and construction operations shall be limited to the minimum necessary in areas of temporary access work areas and staging.

- The potential for long-term loss of riparian vegetation will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least one foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary within the construction zone. All cleared vegetation will be removed from the project site to prevent attracting animals to the project site. To protect nesting birds, the project proponent will not allow pruning or removal of woody riparian vegetation between February 1 and August 31 without preconstruction surveys.

- All vegetation trimmings shall either be hauled off-site and disposed of properly or chipped and left on-site as determined by the Department Resident Engineer. When possible, stockpiles of trimmed vegetation shall be kept at least 50 feet from the bed and bank.

- The areas that undergo vegetative pruning will be inspected immediately before construction, immediately after construction, and one year after construction to determine the amount of existing species cover, cover that has been removed, and cover that resprouts. If, after one year, these areas have not reached the success criteria agreed upon between the Department and resources agency, the project proponent will replant the areas with the same species (native species) to reestablish the vegetation cover.

Compensate for Temporary and Permanent Loss of Riparian Vegetation

Temporary construction-related loss of riparian vegetation will be compensated for by replanting the temporarily disturbed areas with native species appropriate to the area. Replanting will occur immediately after completion of the construction activities and no later than October 15 to minimize erosion, creek sedimentation, and adverse effects on fish.

Permanent loss of riparian vegetation will be compensated for at a ratio to be determined in cooperation with the RWQCB and CDFG. Potential mitigation areas include, but are not limited to, Solano Community College; the Solano Land Trust’s Lynch Canyon Open Space, which is northwest of I-80 in American Canyon; and the King Ranch Open Space, which is west of I-680 in the American Canyon area (according to Sue Wickham, project coordinator at the Solano Land Trust, in a phone conversation with Lisa Webber of ICF Jones & Stokes on March 12, 2008, and an e-mail to the same recipient on October 13, 2008). Compensation may be combined with project impacts on CRLF aquatic habitat. Mitigation areas will be placed within a conservation easement to ensure protection in perpetuity.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

The temporary and permanent losses of riparian vegetation will be compensated for through the preparation of a mitigation planting plan, including a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of native species appropriate to the area, and from local sources. Plantings will be monitored annually for three years or as required in the project permits.

An adaptive management plan will be developed to address plant mortality and methods for correction. If the survival criteria agreed upon by the Department and resource agency are not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected per the adaptive management plan.

3.3.1.2 Oak Woodlands

Regulatory Setting
Local and state agencies recognize oak woodlands as sensitive natural communities. The Resources Chapter of the draft Solano County General Plan (2008) includes policies to protect oak woodlands and heritage trees, encourage the planting of native tree species, and develop an ordinance to protect oak woodlands and heritage oak trees. The CDFG recognizes oak woodland types that include valley oak as rare natural communities of high priority for inventory in the California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2003). The California State Board of Forestry and Fire Protection oak conservation policy supports a statewide program of research and education known as the Integrated Hardwood Range Management Program. The State Wildlife Conservation Board enacted the Oak Woodlands Conservation Act of 2001 to recognize the importance of oak woodlands and provide financial support for oak woodland conservation activities. State agencies protect blue oak and valley oak woodlands and live oak woodland under CEQA. The CDFG recommends avoidance, minimization, and compensatory mitigation for the loss of native oak trees and oak woodland habitat. The loss or disturbance of oak woodland vegetation is considered adverse because this vegetation is declining and provides important wildlife habitat and other ecological functions and values.

The City of Fairfield Tree Conservation ordinance (FCC 25.36) also protects native trees that may occur in oak woodlands, including native oaks (Quercus spp.), bay laurel (Umbellularia californica), madrone (Arbutus menziesi), and California buckeye (Aesculus californica). This ordinance protects native trees located inside the City Limit Line on public property or on private property developed or landscaped with City approval, but not those located within the Department right-of-way. Because all the oak woodlands in the study area are located either outside the City Limit Line or inside of the Department right-of-way, no native trees in these woodlands are protected under the City ordinance.

Individual native trees in the study area that do not occur in or adjacent to riparian and oak woodland communities are discussed in Section 3.3.7, “Native Trees.”

Affected Environment
The study area supports three types of oak woodland: blue oak woodland, valley oak woodland, and interior live oak woodland. Because oak woodlands are regulated as a general type rather
than as separate community types, and the woodland types are often intergraded, the same mitigation would be required for impacts on all three community types.

The locations of each oak woodland type in the study area are listed here illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.

- Blue oak woodland occurs only in one location in the study area: on the hill south of I-80 and west of the I-80 westbound truck scale (Sheet 21). This community is dominated by blue oak with a nonnative grassland understory and scattered poison-oak shrubs.

- Several patches of valley oak woodland occur in the study area. One area occurs at the northeast quadrant of the Green Valley Road/Business Center Drive intersection (Sheet 17). A small area of valley oak woodland is located in the I-80 on-ramp loop at the I-80/I-680 interchange (Sheets 17–18). Valley oak woodland is also at the south side of I-80 near the eastbound truck scales (Sheet 21). This community is dominated by valley oak trees, although the overstory also contains coast live oak and blue oak. The understory is open and grassy with blue wildrye and poison-oak.

- Live oak woodland occurs in the study area along the north and south sides of SR 12W (Sheets 3–5 and 7–8) and west of the I-80 eastbound truck scales (Sheet 21). This community type is dominated by interior live oak with elderberry and poison-oak shrubs and an understory of nonnative annual grasses, creeping wildrye, and purple needlegrass.

Affected acreage in oak woodland is tabulated for each alternative in Table 3.3.1-1.

**Environmental Consequences**

**Permanent Loss and Temporary Disturbance of Oak Woodlands**

Construction of Alternative B would result in a permanent loss of approximately 0.16 acre of valley oak and 5.16 acres of live oak woodland types within the following parts of the project area (Volume 2, Figure 3.3-2a):

- Valley oak woodland in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80.

- Live oak woodland in the area proposed for the realignment of Red Top Road, the Red Top Road on- and off-ramps to SR 12W, and the SR 12W westbound on-ramp from WB I-80.

Temporary impacts occurring in the areas adjacent to the construction area for Alternative B could affect up to 0.52 acre of blue oak woodland, 0.03 acre of valley oak woodland, and up to 4.12 acres of live oak woodland. Shading of live oak woodland vegetation could occur in the area of the SR 12W connector ramps, which would be elevated. The effects of shading could include loss of vegetation over time in the area adjacent to the project footprint. No permanent impacts on blue oak woodland would occur within the Alternative B footprint.

Construction of Alternative B, Phase 1 would result in no permanent loss of blue oak woodland, but a loss of approximately 0.19 acre of valley oak woodland in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80 (Volume 2,
Figure 3.3-2b). Temporary impacts in the area adjacent to the construction area could affect up to 0.50 acre of blue oak woodland and less than 0.01 acre of valley oak woodland. No permanent or temporary impacts on live oak woodland would occur within the Alternative B, Phase 1 footprint.

Construction of Alternative C would result in a permanent loss of approximately 0.17 acre of valley oak woodland and 12.17 acres of live oak woodland types within the same general parts of the project area as described for Alternative B (Volume 2, Figure 3.3-2c). Temporary impacts in the area adjacent to the construction area could affect up to 0.52 acre of blue oak woodland, 0.02 acre of valley oak woodland, and 1.68 acres of live oak woodland. No permanent impacts on blue oak woodland would occur within the Alternative B footprint.

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 0.14 acre of valley oak woodland and 11.77 acres of live oak woodland along SR 12W and in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80 (Volume 2, Figure 3.3-2d). Approximately 0.02 acre of valley oak woodland and 2.03 acres of live oak woodland could be temporarily affected. No permanent or temporary impacts on blue oak woodland would occur within the Alternative C, Phase 1 footprint.

Under all build alternatives, indirect impacts on oak woodland vegetation outside the temporary impact zone could result from adjacent construction activity and damage from equipment. Construction could cause indirect impacts on trees in the oak woodland due to long-term damage through excessive pruning before construction begins.

**Avoidance, Minimization, and/or Mitigation Measures**

The loss or disturbance of oak woodland vegetation is considered adverse because it provides important wildlife habitat and other ecological functions and values. Implementation of the measure below and the Standard Specifications and Special Provision measures mentioned in Section 3.3.1.1 would work together to minimize permanent loss and temporary disturbance of oak woodlands.

**Compensate for Temporary and Permanent Loss of Oak Woodland Vegetation**

Temporary construction-related loss of oak woodland habitat will be compensated for by replanting the temporarily disturbed area with the native species removed, including blue oak, valley oak, and interior live oak. Replanting will occur in fall so that less frequent irrigation and maintenance will initially be necessary.

The permanent loss of oak woodland vegetation will be compensated for at a minimum ratio of 1:1 (1 acre restored or created for every one acre permanently affected). This ratio will be confirmed through coordination with state agencies as part of the permitting process for the proposed project. Potential mitigation areas include, but are not limited to the Solano Land Trust’s Lynch Canyon Open Space, which is northwest of I-80 in American Canyon, and the King Ranch Open Space, which is west of I-680 in the American Canyon area (Wickham pers. comm.). A mitigation planting plan will be developed for each construction phase or package that includes a species list and number of each, planting locations, and maintenance requirements. This plan will be reviewed and approved by USFWS no later than sixty (60)
calendar days prior to the date of initial groundbreaking. Plantings will consist of native species appropriate to the area and from local sources. Planted species will be based on those removed from the project area and may include valley and interior live oak, as well as suitable native understory species such as blue wildrye, creeping wildrye, and purple needlegrass. Plantings will be monitored annually for three years, or as required in the project permits. If the survival criteria agreed upon by the Department and resources agencies is not met at the end of the monitoring period, planting and monitoring will be repeated until the survival criterion is met.

### 3.3.2 Wetlands and Other Waters

The information presented here is taken from the *Preliminary Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project and the Interstate 80/Interstate 680/State Route 12 Interchange Project Natural Environment Study*. The wetland delineation was submitted to the U.S. Army Corps of Engineers (USACE) in August 2008. A field verification of the preliminary delineation was conducted with Andrea Meier of the USACE San Francisco District on January 7, 2009, and final verification of the revised map occurred on July 9, 2009. This section addresses waters of the United States, which are under the jurisdiction of the USACE, as well as wetland and drainage features that are outside USACE jurisdiction (nonjurisdictional features) and are regulated only as waters of the state. Impacts on nonjurisdictional features are also discussed per CEQA requirements in Chapter 4. Jurisdictional wetlands and other waters (waters of the United States) in the study area include perennial drainages (American Canyon Creek, parts of Green Valley Creek, parts of Dan Wilson Creek, Suisun Creek, and parts of Ledgewood Creek); seasonal drainages (Jameson Canyon Creek and unnamed drainages); perennial wetland drainages (parts of Green Valley Creek, parts of Dan Wilson Creek, parts of Ledgewood Creek, and unnamed drainages); perennial marshes; alkali seasonal marshes; and seasonal wetlands. Non-jurisdictional features (waters of the state) in the study area include seasonal drainages (irrigation and roadside ditches) and seasonal wetlands. In the discussions below, the sheet numbers shown in parentheses indicate the sheet numbers in Figures 3.3-2a, 3.3-2b, 3.3-2c, and 3.3-2d in Volume 2.

Documentation of this, and other, consultation with the USACE is presented in Appendix H and discussed in Chapter 5.

**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 Clean Water Act [CWA(33 U.S.C. 1344)], is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. 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 the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits. Nationwide permits, a type of General permit, are issued to authorize 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. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA’s Section 404(b)(1) Guidelines (U.S. EPA 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredge or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a LEDPA to the proposed discharge that would have less effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Department, the Federal Highway Administration (FHWA), the Army Corps of Engineers (USACE), the United States Environmental Protection Agency (U.S. EPA), and U.S. Fish and Wildlife Service (USFWS) entered into a memorandum of understanding (MOU) to integrate the National Environmental Policy Act (NEPA) and the Clean Water Act (CWA) for Environmental Impact Statement (EIS) projects that have five or more acres of permanent impact on Waters of the United States (U.S.). Under this Memorandum of Understanding (MOU), the signatory agencies agree to coordinate at three checkpoints: 1) purpose and need, 2) identification of range of alternatives, and 3) preliminary determination of the least environmentally damaging practicable alternative (LEDPA) and conceptual mitigation plan. The goal of the MOU process is to allow the USACE to more efficiently adopt the EIS for their Section 404 permit action.

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, 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.

The least environmentally damaging practicable alternative (LEDPA) was determined in consultation with the USACE, U.S. EPA, USFWS and NOAA’s NMFS. The USACE and the U.S. EPA concurred that Alternative C is the LEDPA (see correspondence in Appendix H). The Department considered all practicable measures to minimize harm in selecting this alternative. A wetland only practicable alternative finding has been developed to satisfy EO 11990 and is provided in Section 3.3.2.5 below.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or
Bay Conservation and Development Commission (BCDC) may also be involved. Sections 1600–1607 of the California Fish and Game Code (CFG) require any agency that proposes 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 the CDFG before beginning construction. If the CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG 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 the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCB were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB issues water quality certifications in compliance with Section 401 of the CWA. Please see the Water Quality section [3.2.2] for additional details.

Wetlands and drainages that are not under USACE jurisdiction but have beneficial uses are considered waters of the State and are regulated by the RWQCB. The RWQCB also issues waste discharge requirements (WDRs) for loss of waters of the State.

3.3.2.1 Perennial Drainage

**Affected Environment**

The drainage numbers used in this discussion correspond to the numbers used in the delineation of waters of the United States. However, there are drainage features that were not labeled on the delineation maps because they were in areas that had been delineated for other projects. These drainages are labeled in Figures 3.3-2a through 3.3-2d in Volume 2 for the purpose of discussion in this document. Perennial drainages that are densely vegetated are discussed separately from the unvegetated perennial drainages in this section. See the “Perennial Marsh” section below for descriptions of vegetated perennial drainages.

The following unvegetated drainages in the study area are perennial and carry flow year-round or nearly year-round.

- The downstream reach of American Canyon Creek (OW-23) (Sheet 12).
- Bridged parts of Green Valley Creek (Sheets 17 and 18).
- Dan Wilson Creek (OW-53) (Sheet 21).
- Suisun Creek (OW-56) (Sheet 22).
- Culverted parts of Ledgewood Creek (OW-90) (Sheet 32) and its tributary (OW-90a) (Sheets 30-31).

Functions and values of perennial drainages in the study area include flood conveyance and providing food and habitat for fish and wildlife species.

Drainages that connect to the Suisun Marsh sloughs and tributaries of these drainages are considered waters of the United States, subject to regulation under CWA Section 404. Both permanent and temporary placement of material in these areas, including cofferdams and bridge
supports, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB.

Affected acreage in perennial drainage is tabulated for each alternative in Table 3.3.1-1.

**Environmental Consequences**

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional drainages. Impact acreages are based on the final USACE-verified delineation.

**Loss or Disturbance of Perennial Drainage Resulting from Construction**

Construction of both of the build alternatives would result in permanent and temporary losses of perennial drainage within the project area as summarized in Tables 3.3.2-1 through 3.3.2-4 and Figures 3.3-2a through 3.3-2d in Volume 2. Impacts on perennial drainages that persist for less than one year are considered temporary, and those that continue for a longer period are considered permanent. Temporary impacts on perennial drainages would result from the use of cofferdams that would remain in place for less than one year. Construction at Green Valley Creek will continue for multiple years but coffer dams will not be left in place through the wet season; therefore, this impact will be considered temporary.

Under Alternative B, permanent impacts on perennial drainages would include construction associated with removal and replacement of the bridges over Green Valley Creek (OW-45) (Sheets 17 and 18), Dan Wilson Creek (OW-53) (Sheet 21), and Suisun Creek (OW 56) (Sheet 22) and replacement of culverts on American Canyon Creek (OW-23) (Sheet 12), a tributary of Ledgewood Creek (OW-90a) (Sheet 31), and Ledgewood Creek (OW-90) (Sheet 32) (Volume 2, Figure 3.3-2a). Construction would result in a total area of 1.67 acres and 286 linear feet of fill in perennial drainages, the highest of the build alternatives (Table 3.3.2-1).

<table>
<thead>
<tr>
<th>Drainage Type</th>
<th>Area of Permanent Fill (acres)</th>
<th>Area of Temporary Fill (acres)</th>
<th>Total Area of Fill (Permanent + Temporary) (acres)</th>
<th>Linear Feet of Permanent Fill</th>
</tr>
</thead>
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<tr>
<td>Waters of the State (Nonjurisdictional)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonjurisdictional Seasonal (constructed)</td>
<td>0.11</td>
<td>0.17</td>
<td>0.28</td>
<td>896</td>
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<td>Waters of the U.S. (Jurisdictional)</td>
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<td></td>
<td></td>
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<tr>
<td>Perennial</td>
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<td>1.00</td>
<td>1.67</td>
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<td>Jurisdictional Seasonal</td>
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<td>Total direct impacts</td>
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<td>1.95</td>
<td>4.95</td>
<td>15,801</td>
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*In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages.*
Under Alternative B, Phase 1, permanent impacts on perennial drainages would include construction associated with removal and replacement of the bridges over Green Valley Creek (OW-45) (Sheets 17 and 18), Dan Wilson Creek (OW-53) (Sheet 21), and Ledgewood Creek (OW-90) (Sheet 32) and with replacement of culverts on American Canyon Creek (OW-23) (Sheet 12) and Ledgewood Creek (Sheet 32) (Volume 2, Figure 3.3-2b). Construction of Alternative B, Phase 1 would result in a total area of 0.96 acre and 78 linear feet of fill in perennial drainages.

### Table 3.3.2-2. Direct Impacts on Drainages in the Study Area under Alternative B, Phase 1

<table>
<thead>
<tr>
<th>Drainage Type</th>
<th>Area of Permanent Fill (acres)</th>
<th>Area of Temporary Fill (acres)</th>
<th>Total Area of Fill (Permanent + Temporary) (acres)</th>
<th>Linear Feet of Permanent Fill</th>
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<tr>
<td>Waters of the State (Nonjurisdictional)</td>
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<tr>
<td>Nonjurisdictional Seasonal (constructed)</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Waters of the US (Jurisdictional)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Perennial</td>
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<td>0.88</td>
<td>0.96</td>
<td>78</td>
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<tr>
<td>Jurisdictional Seasonal</td>
<td>1.25</td>
<td>0.23</td>
<td>1.48</td>
<td>7,833</td>
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<td>Total direct impacts</td>
<td>1.33</td>
<td>1.11</td>
<td>2.44</td>
<td>7,911</td>
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* Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the acreages for waters of the U.S. in this table also represent acreages of waters of the State.

Under Alternative C, permanent and temporary impacts on perennial drainages would be in the same areas as described for Alternative B, though the total area of fill for perennial drainages would be 1.58 acres and 286 linear feet of fill, which is slightly less than Alternative B (Table 3.3.2-3).

### Table 3.3.2-3. Direct Impacts on Drainages in the Study Area under Alternative C

<table>
<thead>
<tr>
<th>Drainage Type</th>
<th>Area of Permanent Fill (acres)</th>
<th>Area of Temporary Fill (acres)</th>
<th>Total Area of Fill (Permanent + temporary) (acres)</th>
<th>Linear Feet of Permanent Fill</th>
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<td>Waters of the State (Nonjurisdictional)</td>
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<tr>
<td>Nonjurisdictional Seasonal (constructed)</td>
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<td>0.17</td>
<td>0.28</td>
<td>896</td>
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<tr>
<td>Waters of the US (Jurisdictional)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Perennial</td>
<td>0.66</td>
<td>0.92</td>
<td>1.58</td>
<td>286</td>
</tr>
<tr>
<td>Jurisdictional Seasonal</td>
<td>2.28</td>
<td>0.52</td>
<td>2.8</td>
<td>16,738</td>
</tr>
<tr>
<td>Total direct impacts</td>
<td>3.05</td>
<td>1.61</td>
<td>4.66</td>
<td>17,920</td>
</tr>
</tbody>
</table>

* In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages.

Construction of Alternative C, Phase 1 would result in permanent loss of perennial drainage (summarized in Table 3.3.2-4) for removal and replacement of the bridges over Green Valley Creek (OW-45) (Sheets 17 and 18), replacement of culverts on American Canyon Creek (OW-23) (Sheet 12), and widening of SR 12E over the tributary of Ledgewood Creek (OW-90a) (Sheet 31). Construction of Alternative C, Phase 1 would result in a total area of 0.61 acre and 53
linear feet of fill in perennial drainages, the smallest effect of the first fundable phase of the alternatives.

### Table 3.3.2-4. Direct Impacts on Drainages in the Study Area under Alternative C, Phase 1

<table>
<thead>
<tr>
<th>Drainage Type</th>
<th>Area of Permanent Fill (acres)</th>
<th>Area of Temporary Fill (acres)</th>
<th>Total Area of Fill (Permanent + Temporary) (acres)</th>
<th>Linear Feet of Permanent Fill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waters of the State (Nonjurisdictional)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonjurisdictional Seasonal (constructed)</td>
<td>&lt;0.01</td>
<td>0.05</td>
<td>0.05</td>
<td>51</td>
</tr>
<tr>
<td><strong>Waters of the US (Jurisdictional)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perennial</td>
<td>0.10</td>
<td>0.51</td>
<td>0.61</td>
<td>53</td>
</tr>
<tr>
<td>Jurisdictional Seasonal</td>
<td>1.52b</td>
<td>0.40</td>
<td>1.92b</td>
<td>13,084</td>
</tr>
<tr>
<td><strong>Total direct impacts</strong></td>
<td>1.62b</td>
<td>0.96</td>
<td>2.58b</td>
<td>13,188</td>
</tr>
</tbody>
</table>

*In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages. Under the No-Build Alternative, there would be no impacts on perennial drainage.*

* Numbers are based on a reduction in fill achieved through design refinements during the 404 b(1) process.

Although the bridges over Green Valley Creek, Dan Wilson Creek, and Suisun Creek are clear spans, and no piers would be placed below the ordinary high water mark (OHWM), and existing piers and supports would be removed from the creekbed. The removal may result in the need for placing fill and contouring the bed, which would be a direct permanent impact. This analysis assumes that the bridge abutments at these three creeks would be constructed above the OHWM and would not result in permanent fill. The SR 12E bridges carrying on- and off-ramps over Ledgewood Creek would each include a single pier wall within the OHWM of the creek, which would be permanent fill. Replacement of the culvert on I-680 at American Canyon Creek with a longer culvert and replacement of the culvert under SR 12E at Ledgewood Creek would be permanent fill. For bridge construction, cofferdams installed during construction would be considered a temporary impact.

Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of perennial drainages that lie outside the project footprint.

### Avoidance, Minimization, and/or Mitigation Measures

Implementation of the Standard Specification and Standard Special Provision measures in Section 3.3.1.1 (prohibit construction work in environmentally sensitive areas (Standard Specification 14-1.02A); install ESA fencing (Standard Specification 14-1.03); monitor construction and other activities by a contractor-supplied biologist (Standard Special Provision 14-6.05); and conduct environmental awareness training (Standard Special Provision 14-6.08)), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10), and the measures listed below to restore and compensate for drainage habitat would address the impacts on perennial drainages for all build alternatives.
ESA fencing would be installed at construction areas at Green Valley, Dan Wilson, Suisun, American Canyon, and Ledgewood Creeks, as well as a tributary of Ledgewood Creek during construction to minimize temporary and indirect impacts during construction. A 100-foot buffer will be established where feasible.

**Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands**

Features to be protected include American Canyon, Green Valley, Suisun, Dan Wilson, and Ledgewood Creeks; unnamed drainages; wetlands, and the Suisun Marsh Secondary Management Area in and adjacent to the project area. The following BMPs will be implemented before and during construction.

- All earthwork or foundation activities involving creeks, culverts, and bridges will occur in the dry season (generally between June 1 and October 15).
- Equipment used in and around drainages and wetlands will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance, staging, and materials storage will be performed at least 250 feet from all drainages and wetlands. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands. A Spill Response Plan will be prepared.
- Any surplus concrete rubble, asphalt, or other rubble from construction and water from concrete curing operations will not be allowed to enter watercourses and will be taken to an appropriate landfill or disposal facility.
- Spill containment kits will be maintained onsite at all times during construction operations and/or staging or fueling of equipment.
- An erosion control plan will be prepared and implemented for the proposed project. It will include the following provisions and protocols:
  - Discharge from dewatering operations, if needed, and runoff from disturbed areas will be made to conform to the water quality requirements of the waste discharge permit issued by the RWQCB.
  - Material stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.
  - Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed project and will be removed after the working area is stabilized or as directed by the engineer. The plan will detail the applications and type of measures, and the allowable exposure of unprotected soils. ESA-type fencing and silt fencing or other erosion control measures will be in place throughout the construction period in order to avoid indirect effects on adjacent parts of drainages, wetlands, and the Suisun Marsh Secondary Management Area. The least environmentally damaging practicable alternative for protecting temporarily affected wetlands will be used during construction, such as a timber mat system, which minimizes compaction of the
underlying wetland soils. The SWPPP for the proposed project will detail the applications and type of measures and the allowable exposure of unprotected soils.

- Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed surfaces will be stabilized at least three days prior to a forecasted rain event. Exposed dust-producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved streets will be swept daily following construction activities.
- The contractor will conduct periodic maintenance of erosion and sediment control measures.
- Disturbed areas will be restored to pre-project conditions to the maximum extent feasible and an appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.

**Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat**

Portions of the drainages temporarily disturbed by cofferdam construction will be restored to original grade and preconstruction conditions following construction, and no permanent impacts will result. All temporary disturbance will continue for less than one year, except at Green Valley Creek, which will require the placement of cofferdams over multiple years.

The permanent fill of other waters of the United States in drainages will be compensated for at a minimum ratio of 1:1 (one linear foot of habitat restored or created for every one linear foot permanently affected). The actual compensation ratios will be determined through coordination with the RWQCB and the USACE as part of the permitting process. Permanent loss of perennial and seasonal drainage will be compensated for by implementing one or a combination of the following options. The final mitigation approach will be determined in cooperation with the RWQCB and USACE.

- Purchase credits for created riparian stream channel at a locally approved mitigation bank. Written evidence will be provided to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Compensate out of kind for loss of drainages by implementing compensatory mitigation for riparian woodland impacts described in the measure to compensate for temporary and permanent loss of riparian vegetation in Section 3.3.1.1. Out-of-kind compensation is generally used for drainage impact mitigation due to the difficulty in creating new drainage habitat; therefore, restoration of riparian woodland in order to improve existing drainage habitat is recommended. The linear feet restored to compensate for loss of drainages will be in addition to the acreage restored for loss of riparian habitat. If this approach is used for mitigation of waters of the U.S., the restoration plan will comply with the USACE and EPA compensatory mitigation rule (40 CFR Part 230 Subpart J) and will include location and timing of restoration, species to be used, planting locations and maintenance, success criteria, and an adaptive management plan.
3.3.2.2 Seasonal Drainage

**Affected Environment**
Seasonal drainages in the study area primarily carry water after storm events and during the wet season. This category includes both natural seasonal drainages and constructed seasonal drainages, both of which provide habitat for wildlife. Some natural and constructed seasonal drainages in the study area are considered jurisdictional by the USACE and are subject to regulation under CWA Section 404. Drainages that are not under USACE jurisdiction but have beneficial uses or potential beneficial uses would be considered waters of the State that would be regulated by the RWQCB, which would issue WDRs for loss of drainage area.

**Natural Seasonal Drainage**
Natural seasonal drainages in the study area are listed here illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.
- Jameson Canyon Creek and its tributaries (OW-8, OW-8a, OW-8b, OW-8c, OW-8d, and OW-8e) (Sheets 3, 4, 5, 7, 9, and 14).
- Drainages north of SR 12W (OW-149 and OW-161) (Sheet 5).
- Erosional drainages north of I-80 and Red Top Road (OW-1a and OW-2b) (Sheets 2 and 3).
- Erosional drainages west of I-680 (OW-150 and OW-151) (Sheet 13).

Functions of natural seasonal drainages in the study area include flood conveyance during and after storm events. Most natural seasonal drainages in the study area ultimately drain to Cordelia or Peytona Sloughs, which in turn drain to Suisun Bay and are considered jurisdictional by the USACE. These features are subject to USACE regulation under CWA Section 404 and are considered sensitive natural communities. Some natural seasonal drainages in the study area are not subject to USACE jurisdiction, because they have no connection to the tidal sloughs that drain to Suisun Bay. However, these natural drainages are considered sensitive natural communities and would be considered waters of the state regulated by the RWQCB.

**Constructed Seasonal Drainages**
Constructed seasonal drainages occur throughout the study area and include ditches excavated in upland areas along roadsides, railroads, and agricultural fields or around developments. Some ditches are concrete lined. Roadside and irrigation ditches that were constructed in uplands and do not connect to a natural stream are not subject to USACE jurisdiction and are not considered sensitive natural communities. Based on the USACE-verified delineation of the waters of the U.S., the only non-jurisdictional seasonal drainages in the study area are OW-3 (Sheet 1) and OW-56a (Sheets 23 and 24).

**Environmental Consequences**
Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional and nonjurisdictional seasonal drainages. Impact acreages are based on the final USACE-verified delineation.
Loss or Disturbance of Nonjurisdictional Seasonal Drainages

Construction of the full build alternatives would involve the installation of culverts and placement of fill for road widening, resulting in direct disturbance of nonjurisdictional constructed seasonal drainages. Under Alternatives B and C, approximately 0.11 acre of nonjurisdictional irrigation ditch would be placed in a culvert for construction. Alternative B, Phase 1 would not affect nonjurisdictional seasonal drainages, and Alternative C, Phase 1 would remove less than 0.01 acre of nonjurisdictional seasonal drainage.

Loss or Disturbance of Jurisdictional Seasonal Drainages Resulting from Construction

Impacts on seasonal drainages that persist for less than one year are considered temporary, and those that continue for a longer period are considered permanent. Temporary impacts on jurisdictional seasonal drainages under both build alternatives would occur during project construction activities for equipment access and placement of cofferdams and falsework that would remain in place for less than one year.

Alternative B

Construction of Alternative B would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-1 and Volume 2, Figures 3.3-1 and 3.3-2a). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the areas listed below.

- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheets 7, 9, and 14); its tributaries (OW-8b, OW-8d, OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, OW-160) (Sheets 3, 4, and 5) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.

- Grading and culverting of unnamed drainages for the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).

- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1a, OW-2, OW-2a, OW-2b, OW-8, OW-57, OW-87, OW-88, OW-93, OW-139, and OW-141) (Sheets 1, 2, 3, 7, 19, 20, 21, and 23); I-680 (OW-8, OW-43, OW-44, OW-103c, OW-104, OW-150, and OW-151) (Sheets 10, 11, 13, 15, and 16); and SR 12E (OW-90b, OW-110, and OW-119) (Sheets 25, 32, 33, and 34).

- Improvements to the I-80/I-680 interchange (OW-45a, OW-45d, OW-45e, OW-61a, and OW-61) (Sheets 8, 16, 17, and 18).

Alternative B, Phase 1

Construction of Alternative B, Phase 1 would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-2 and Volume 2, Figure 3.3-2b). These impact acreages are based on the final USACE-verified delineation.
Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-57, OW-87, OW-88, OW-93, OW-139, and OW-141) (Sheets 19, 20, and 21); I-680 (OW-8, OW-43, OW-44, OW-104, OW-150, and OW-151) (Sheets 13, 14, 15, and 16); and SR 12E (OW-90b) (Sheet 32);
- Improvements to the I-80/I-680 interchange (OW-45a, 45d, OW-45e, OW-61a, and OW-61) (Sheets 16, 17, and 18).

**Alternative C**

Construction of Alternative C would result in a permanent loss of and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-3 and Volume 2, Figure 3.3-2c). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in Jameson Canyon Creek tributaries (OW-8b, OW-8d, and OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, and OW-160) (Sheets 3, 4, and 5) for realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Grading and culverting of unnamed drainages within the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).
- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1a, OW-2, OW-2a, OW-2b, OW-8, OW-57, OW-87, OW-88, OW-93, and OW-139) (Sheets 1, 2, 3, 7, 19, 20, 21, and 23); I-680 (OW-8, OW-19, OW-103c, OW-150, and OW-151) (Sheets 11 and 13); and SR 12E (OW-110, OW-90b, and OW-119) (Sheets 25, 32, 33, and 34).
- Improvements to the I-80/I-680 interchange (OW-8, OW-45a, OW-61a, and OW-61) (Sheets 8, 9, 14, 16, and 17).

**Alternative C, Phase 1**

Construction of Alternative C, Phase 1 would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (Table 3.3.2-4 and Volume 2, Figure 3.3-2d). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8); its tributaries (OW-8a, OW-8b, OW-8d, and OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, and OW-160) (Sheets 3, 4, and 5) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Grading and culverting of unnamed drainages within the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).
• Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1, OW-1a, OW-2, OW-2a, and OW-8) (Sheets 1, 2, 3, and 7); I-680 (OW-19, OW-150, and OW-151) (Sheet 13); and SR 12E (OW-119) (Sheet 33).

• Improvements to the I-80/I-680 interchange (OW-8, OW-45a, OW-61a, and OW-61) (Sheets 8, 9, 14, 16, and 17).

• Widening of I-80 east of the interchange (OW-87) (Sheet 19).

No-Build Alternative
Under the No-Build Alternative, there would be no impacts on seasonal drainage.

Avoidance, Minimization, and/or Mitigation Measures
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) would address temporary and indirect impacts on jurisdictional seasonal drainages for all build alternatives. The measure to restore and compensate for drainage habitat presented in Section 3.3.2.1 would address the permanent and temporary impacts on jurisdictional seasonal drainages for all build alternatives.

3.3.2.3 Perennial Marsh

Affected Environment
Perennial marsh includes areas mapped in the delineation of waters of the United States as perennial wetland drainages, as well as areas mapped as perennial marsh. Perennial marsh occurs within study area drainages in the following areas (Volume 2, Figures 3.3-2a through 3.3-2d).

• An unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103c-1) (Sheet 11).

• Green Valley Creek and an unnamed tributary (W-45 and W-45g) (Sheets 17 and 18).

• Dan Wilson Creek upstream of I-80 (W-53) (Sheet 21).

• The downstream reach of Ledgewood Creek that crosses SR 12E (W-90), and an unnamed constructed tributary to Ledgewood Creek (W-90a) (Sheets 30, 31, and 32).

• An unnamed drainage south of SR 12E (W-175) (Sheet 33).

Green Valley Creek has a cement-lined bed and bank under the I-80 bridges, which has been classified as perennial drainage, but also has areas north and south of the bridges that support dense emergent vegetation, including willow and cattail, which has been classified as perennial marsh. The unnamed drainage, Dan Wilson Creek, and Ledgewood Creek have natural beds and banks, although Ledgewood Creek and the unnamed constructed tributary are culverted under
SR 12E. In Ledgewood Creek and the tributary, the open water and emergent vegetation habitats are considered to function as a single ecological unit.

The five drainages listed above support freshwater marsh vegetation but are mentioned separately from either the perennial marsh or drainage types because they have characteristics and functions of both types. Dominant plant species observed in perennial wetland drainages include narrow-leaved cattail, bulrush, Himalayan blackberry, watercress, water-milfoil, and Goodding’s willow. Water is present year-round, or nearly year-round, in these areas. Wetland functions of perennial wetland drainages in the study area include flood conveyance and wildlife habitat because of the presence of generally dense wetland vegetation.

Perennial marsh wetlands that are outside of drainages occur in the following parts of the study area (Volume 2, Figures 3.3-2a through 3.3-2d).

- A pond north of SR 12W (W-150) (Sheet 5).
- A drainage basin between Rodriguez High School and Lopes Road (W-205) (Sheet 13).
- A pond north of Cordelia Road (W-105) (Sheets 15 and 16).
- In a mitigation area east of Green Valley Creek (W-45e-1) (Sheet 18).
- Surrounding a water treatment plant at the east end of SR 12E (W-136 and W-137) (Sheet 35).
- In the Webster Street off-ramp loop on SR 12E (W-155) (Sheet 35).
- South of SR 12E at the eastern end of the study area (W-142) (Sheets 33, 34, and 35).

Dominant plant species observed in perennial marsh wetlands include those found in the perennial wetland drainages, as well as California blackberry, Harding grass, curly dock, and soft rush. This community type is inundated or saturated year-round. Perennial marsh at the east end of SR 12E is brackish.

Wetland functions of perennial marsh in the study area include flood storage, groundwater discharge due to high water tables, sediment control (in the case of marsh that directly abuts a drainage), and wildlife habitat associated with the presence of generally dense wetland vegetation.

Perennial wetland drainages that connect to the Suisun Marsh sloughs and tributaries of these drainages are considered waters of the United States, subject to regulation under CWA Section 404. Placement of material in these areas, including cofferdams, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB. An SAA from the CDFG would be required for construction activity within perennial wetland drainages and their floodplains. No creeks in the study area are regulated by the State Lands Commission, and construction would not require a land lease amendment (Jones pers. comm.). Perennial marshes that are not under USACE jurisdiction but have beneficial uses would be considered waters of the State that would be regulated by the RWQCB, which would issue WDRs for loss of wetlands.
Environmental Consequences
Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional perennial marsh wetlands. Impact acreages are based on the final USACE-verified delineation. Affected acreage in this community is tabulated for each alternative in Table 3.3.1-1.

Loss or Disturbance of Non-jurisdictional Perennial Marsh
Under Alternative B and Alternative B, Phase 1, approximately 0.04 acre of non-jurisdictional perennial marsh in an isolated wetland (W-105 [Volume 2, Figures 3.3-2a and 3.3-2b, Sheets 15 and 16]) would be permanently affected and up to 0.01 acre of the same wetland would be temporarily affected by construction for the widening of I-680. Impacts on nonjurisdictional perennial marshes that occur during construction and last for less than one year are considered temporary, and impacts that continue for a longer period, such as placement of fill, are considered permanent.

Loss or Disturbance of Jurisdictional Perennial Marsh Resulting from Construction
Construction of all of the build alternatives would involve installation of culverts and placement of fill for road widening, resulting in direct disturbance of jurisdictional perennial marsh, including perennial wetland drainages and marsh habitat that occurs outside of drainages. Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of perennial wetland drainages that lie outside the project footprint. Impacts on jurisdictional perennial marshes that occur during construction and last for less than one year are considered temporary, and impacts that continue for a longer period, such as placement of fill or modification of hydrology, are considered permanent.

Alternative B
Construction of Alternative B would result in a permanent loss of approximately 5.15 acres of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2a).

- An unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103c-1), due to a lengthened culvert for the widening of I-680 (Sheet 11).
- One unnamed tributary of Green Valley Creek (W-45g) for the off-ramp from northbound I-680 to eastbound I-80 and Green Valley Road (Sheet 18).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) for a new off-ramp from westbound I-80 to Green Valley Road (Sheet 18).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E by ten feet on both sides (Sheets 30, 31, and 32).
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- Two brackish perennial marshes south of SR 12E at the eastern end of the study area (W-142, W-175) for widening of SR 12E and construction of access to Main Street in Suisun City (Sheets 33, 34, and 35).

Under Alternative B, a total of 4.68 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impacts listed above as well as in Green Valley Creek (W-45) (Sheet 17) and Dan Wilson Creek upstream of I-80 (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges within the I-80/I-680 interchange.

Without implementation of Best Management Practices (BMPs), indirect effects on jurisdictional perennial marsh would occur in areas adjacent to the construction area due to sedimentation caused by the construction. In perennial marsh located in drainages (W-103c-1, W-45, W-45g, W-45e-1, W-90, W-90a, and W-175), these indirect effects would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. In perennial marsh habitat located outside of drainages, these measures would also prevent sedimentation into the part of the wetlands located outside of the permanent impact area. The extent of fill in the marsh south of SR 12E (W-142) would remove a portion of the watershed for this feature, but the majority of the feature (3.74 acres filled out of 48.36 acres of the existing wetland) would be left intact and continue to function hydrologically as a wetland. No adverse indirect effect on perennial marsh is expected to occur, and no additional mitigation for indirect effects is proposed.

**Alternative B, Phase 1**

Construction of Alternative B, Phase 1 would result in a permanent loss of approximately 0.34 acre of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2b).

- One unnamed tributary of Green Valley Creek (W-45g) for the off-ramp from northbound I-680 to eastbound I-80 and Green Valley Road (Sheet 18).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) for a new off-ramp from westbound I-80 to Green Valley Road (Sheet 18).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E (Sheets 30, 31, and 32).

Under Alternative B, Phase 1, a total of 1.26 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impacts listed above, as well as in Green Valley Creek (W-45) (Sheet 17) and Dan Wilson Creek (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges within the I-80/I-680 interchange.

Without implementation of Best Management Practices (BMPs), indirect effects on jurisdictional perennial marsh would occur in areas adjacent to the construction area due to sedimentation caused by the construction. In perennial marsh located in drainages (W-45, W-45g, W-45e-1, W-90, and W-90a), these indirect effects be avoided by implementation of avoidance and
minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. No perennial marsh habitat located outside of drainages is present in the Alternative B, Phase 1 project area.

**Alternative C**
Construction of Alternative C would result in a permanent loss of approximately 5.03 acres of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2c).

- A drainage basin between Rodriguez High School and Lopes Road (W-205) for improvements to I-680 (Sheet 13).
- A small area of marsh in an unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103 and W-103c-1), for a lengthened culvert for widening of I-680 (Sheet 11).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E on both sides (Sheets 30, 31, and 32).

Under Alternative C, a total of 3.68 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impact areas listed above, as well as in Green Valley Creek (W-45) (Sheets 17 and 18) and Dan Wilson Creek upstream of I-80 (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges associated with the I-80/I-680 interchange.

Without implementation of Best Management Practices (BMPs), indirect effects on jurisdictional perennial marsh would occur in areas adjacent to the construction area due to sedimentation caused by the construction. In perennial marsh located in drainages (W-103, W-103c-1, W-45, W-45g, W-45e-1, W-90, W-90a, and W-175), these indirect effects would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. In perennial marsh habitat located outside of drainages, these measures would also prevent sedimentation into the parts of the wetlands located outside of the permanent impact area. The extent of fill in the marshes east of I-680 (W-205) and south of SR 12E (W-142) would remove a portion of the watershed for these features, but the remaining parts of the features (0.30 acre filled out of 1.20 acres existing for W-205 and 3.76 acres filled out of 48.36 acres existing for W-142) would be left intact and continue to function hydrologically as wetlands. W-155 is not connected to other wetlands and would be avoided entirely, therefore no indirect impacts on other wetlands would occur. No adverse indirect effect on perennial marsh is expected to occur, and no additional mitigation for indirect effects is proposed.

**Alternative C, Phase 1**
Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 0.07 acres of jurisdictional perennial marsh with reduction of fill achieved through design refinements during the 404 b(1) process. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2d).
• A drainage basin between Rodriguez High School and Lopes Road (W-205) for improvements to I-680 (Sheet 13).

• The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E on the south side (Sheets 31 and 32).

A total of 1.66 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impact areas listed above, as well as in Green Valley Creek (W-45) (Sheets 17 and 18), for installation of cofferdams during construction of clear-span bridges associated with the I-80/I-680 interchange.

Without implementation of Best Management Practices (BMPs), indirect effects on jurisdictional perennial marsh would occur in areas adjacent to the construction area due to sedimentation caused by the construction. In perennial marsh located in drainages (W-90 and W-90a), these indirect effects would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. In perennial marsh habitat located outside of drainages, these measures would also prevent sedimentation into the part of the wetland located outside of the permanent impact area. The extent of fill in the marsh east of I-680 (W-205) would remove a portion of the watershed for this feature, but the remaining part of the feature would be left intact and continue to function hydrologically as a wetland. No adverse indirect effect on perennial marsh is expected to occur, and no additional mitigation for indirect effects is proposed.

**No-Build Alternative**

Under the No-Build Alternative, no construction activities would occur, and no impacts on perennial marshes would occur.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) would address temporary and indirect impacts on perennial marsh for all build alternatives. The measure to restore and compensate for drainage habitat presented in Section 3.3.2.1 and the measures below to restore temporarily disturbed perennial marsh and compensate for permanent loss of wetlands would address the permanent and temporary impacts on perennial marsh for all build alternatives.

**Restore Temporarily Disturbed Perennial Marsh**

Portions of perennial marsh may be temporarily disturbed by cofferdam construction, if necessary. These areas will be restored to original grade and preconstruction conditions following construction. Cofferdams will remain in place for less than one year and will be
completely removed after construction activities in the area are completed. Any temporarily disturbed marsh vegetation in the channel is anticipated to regenerate.

**Compensate for Permanent Loss of Wetlands**

In compliance with the CWA Section 404 permit and WDRs, the permanent loss (fill) of wetlands, including perennial marsh, alkali seasonal marsh, and seasonal wetland, will be compensated for and measures will be taken to ensure no net loss of habitat functions. Loss of wetlands will be compensated for at a minimum ratio of 1:1 (one acre of mitigation for every one acre filled), except for any loss of wetlands in W-45e-1, which is a mitigation area and will require mitigation at a minimum ratio of 2:1. The actual compensation ratios will be determined through coordination with the RWQCB and the USACE as part of the permitting process. Compensation may be a combination of mitigation bank credits and restoration/creation of habitat. Permanent loss of wetland habitat will be compensated for by implementing one or a combination of the following options.

- Purchase credits for the affected wetland type (perennial marsh, alkali seasonal marsh, or seasonal wetland) at a locally approved mitigation bank. Written evidence will be provided to the resource agencies that compensation has been established through the purchase of mitigation credits.

- In coordination with the RWQCB and USACE, develop and ensure implementation of a wetland restoration plan that involves creating or enhancing the affected wetland type (perennial marsh, alkali seasonal marsh, or seasonal wetland). Potential restoration sites will be evaluated to determine whether this is a feasible option, and restoration sites will be approved by the RWQCB and USACE through coordination during the permitting process. If suitable restoration sites are approved by the RWQCB and USACE, a restoration plan will be developed that complies with the USACE and EPA compensatory mitigation rule (40 CFR Part 230 Subpart J). The plan will describe where and when restoration will occur and who will be responsible for developing, implementing, and monitoring the restoration plan. The plan will also include a species list and number of each species, planting locations, and maintenance requirements. Plantings will be native species appropriate to the area and from local sources. Plantings will be monitored annually for three years or as required in the project permits. If survival of wetland plant cover is at least 75%, or as required by the RWQCB and USACE, at the end of the monitoring period, the revegetation will be considered successful. An adaptive management plan will be developed to address plant mortality and methods for correction. 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 per the adaptive management plan. Mitigation sites will be protected in perpetuity in a conservation easement.

### 3.3.2.4 Alkali Seasonal Marsh

**Affected Environment**

Alkali seasonal marsh was mapped only in the area south of SR 12E at the eastern end of the study area (Figures 3.3-2a through 3.3-2d, Sheet 33 in Volume 2). This area is surrounded by seasonal wetland and nonnative annual grassland. Alkali seasonal marsh is seasonally inundated or saturated and is distinguished from seasonal wetland habitat by the presence of saline soils.
and salt-tolerant species, including curved sicklegrass, alkali weed, alkali heath and, in low areas, pickleweed.

Local, state, and federal agencies recognize alkali seasonal marshes as sensitive natural communities. Alkali seasonal marsh wetlands in the study area are considered waters of the United States, subject to regulation under CWA Section 404. Placement of material in these areas, including cofferdams, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB.

**Environmental Consequences**

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional alkali seasonal marsh wetlands. Impact acreages are based on the final USACE-verified delineation. Affected acreage in this community is tabulated for each alternative in Table 3.3.1-1.

**Loss or Disturbance of Alkali Seasonal Marsh Resulting from Construction**

Construction of Alternative B and Alternative C would involve placement of fill, resulting in direct disturbance of jurisdictional alkali seasonal marsh. These impact acreages are based on the final USACE-verified delineation. Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of alkali seasonal marsh that lie outside the project footprint.

**Alternative B**

Construction of Alternative B would result in a permanent loss of approximately 1.75 acres of alkali seasonal marsh. Alkali seasonal marsh would be filled for the new SR 12E off-ramp, extension of Meyer Lane between Beck and Pennsylvania Avenues, and widening of Pennsylvania Avenue south of SR 12E (W-163, W-164, W-166, and W-168) (Volume 2, Figure 3.3-2a, Sheet 33). Under Alternative B, 0.28 acre of alkali seasonal marsh lies within the temporary impact area, but implementation of avoidance and minimization measures listed below will avoid temporary impacts.

Indirect effects on alkali seasonal marsh could occur in areas adjacent to the construction area due to sedimentation caused by the construction. These indirect effects would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. The extent of fill in alkali seasonal marshes W-163, W-166, and W-168 would remove a portion of the watershed for these features, but the remaining parts of the features (0.22 acre filled out of 0.59 acres existing for W-163, 1.18 acres filled out of 4.90 acres existing for W-166, and 0.29 acre filled out of 1.95 acres existing for W-168) would be left intact and continue to function hydrologically as wetlands. W-164 would be filled entirely. No adverse indirect effect on alkali seasonal marsh is expected to occur, and no additional mitigation for indirect effects is proposed.

**Alternative B, Phase 1**

No alkali seasonal marsh occurs in the Alternative B, Phase 1 study area, and no impacts on this habitat would result from construction of Alternative B, Phase 1.
**Alternative C**
No permanent impact areas in alkali seasonal marsh habitat are identified for Alternative C, Phase 1 due to the design of a retaining wall to be constructed in the existing right-of-way south of SR 12E.

Indirect effects on alkali seasonal marsh could occur in areas adjacent to the construction area due to sedimentation caused by the construction. These indirect effects would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. No adverse indirect effect on alkali seasonal marsh is expected to occur, and no additional mitigation for indirect effects is proposed.

**Alternative C, Phase 1**
No permanent impact areas in alkali seasonal marsh habitat are identified for Alternative C, Phase 1 due to the design of a retaining wall to be constructed in the existing right-of-way south of SR 12E. Temporary impacts due to movement of construction equipment and indirect impacts due to sedimentation could potentially occur in portions of alkali seasonal marsh wetlands that lie outside the project footprint under Alternatives B and C. Indirect impacts could also potentially occur under Alternatives C and C, Phase 1. However, implementation of avoidance, minimization, and/or mitigation measures to install ESA-type fencing, to conduct environmental awareness training, and for biological monitoring in Section 3.3.1.1, measures to prevent erosion and sedimentation into drainages and wetlands in Section 3.3.2.1, and the measure below would avoid and minimize temporary and indirect impacts on alkali seasonal marsh.

Under the No-Build Alternative, no construction activities would occur, and no impacts on alkali seasonal marshes would occur.

**Avoidance, Minimization, and/or Mitigation Measures**
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) would address temporary and indirect impacts on alkali seasonal marsh for both full-build alternatives and Alternative C, Phase 1. The measures to compensate for permanent loss of wetlands in Section 3.3.2.3 would address the permanent impacts on alkali seasonal marsh under all build alternatives.

In the area south of SR 12E, the ESA-type fencing will be placed on the inside of the existing right-of-way fencing and will also include silt fencing (described in the Department Standard BMPs) to prevent sedimentation into the wetlands outside of the right-of-way. This fencing will prevent direct impacts on wetlands south of SR 12E between Ledgewood Creek and the eastern end of the construction area.
In addition, implementation of the following measure would prevent indirect impacts on wetlands located on the south side of SR 12E.

**Construct a Retaining Wall on the South Side of SR 12E**

A low retaining wall will be constructed on the south side of SR 12E between Ledgewood Creek and Suisun City. This design feature will reduce the overall footprint and southern expansion of the highway into alkali seasonal marsh and seasonal wetlands, and sensitive species habitat. These project modifications and implementation of the avoidance and minimization measures would prevent indirect impacts on adjacent alkali seasonal marsh, seasonal wetlands, and rare plants.

**3.3.2.5 Seasonal Wetland**

**Affected Environment**

The numbers used to refer to seasonal wetlands in this discussion are the numbers used in the delineation of waters of the United States conducted in the study area. However, there are wetland features that were not labeled on the delineation maps, because they were in areas that had been delineated for other projects. These wetlands are labeled on Figures 3.3-2a through 3.3-2d in Volume 2 for the purpose of discussion in this document.

Numerous seasonal wetlands were mapped in the study area; they are mostly in or adjacent to areas disturbed by development and agriculture. Many seasonal wetlands in the study area are near roadways and receive runoff from the roads. The vegetation in these wetlands is correspondingly degraded, often dominated by nonnative annual grasses and nonnative forbs. Dominant species observed in this wetland type typically include Italian ryegrass, Mediterranean barley, Harding grass, rabbits-foot grass, creeping wildrye, creeping spikerush, curly dock, iris-leaved rush, toad rush, prickly ox-tongue, birds-foot trefoil, and alkali mallow.

This habitat type also includes features south of SR 12E and west of Pennsylvania Avenue that were more specifically identified as “seasonally saturated annual grassland” in the wetland delineation conducted for another project in that area (Huffman-Broadway Group 2007). These areas are dominantly Italian ryegrass, Mediterranean barley, alkali weed, and alkali heath. Some seasonal wetlands located south of SR 12E support special-status vernal pool species. These wetlands were not categorized separately from the other seasonal wetlands, but they do provide higher quality habitat and support more native species.

Wetland functions of seasonal wetlands in the study area include flood storage, groundwater recharge, wildlife habitat, and—in the case of wetlands that support more native species—rare and endangered species habitat.

Some of the seasonal wetlands in the study area are considered jurisdictional by the USACE and subject to regulation under CWA Section 404; some are isolated features. Placement of material in these areas would be considered placement of fill in waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB. Wetlands that are not under USACE jurisdiction but have potential beneficial uses would be considered waters of the State that would be regulated by the...
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RWQCB, which would issue WDRs for loss of wetlands. Regardless of USACE or state jurisdiction, however, local, state, and federal agencies recognize seasonal wetlands as sensitive natural communities.

**Environmental Consequences**

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional and nonjurisdictional seasonal wetlands. Affected acreages in jurisdictional and nonjurisdictional seasonal wetlands are tabulated for each alternative in Table 3.3.1-1.

**Loss or Disturbance of Nonjurisdictional Seasonal Wetland**

Construction of Alternative B would result in a permanent loss of 0.03 acre of nonjurisdictional seasonal wetland as a result of project construction for the widening of I-680 (W-21) and I-80 east of Green Valley Road (W-85) (Volume 2, Figure 3-3-2a, Sheets 12 and 18).

Alternative B, Phase 1 would result in a permanent loss of 0.02 acre of nonjurisdictional seasonal wetland as a result of project construction for widening of I-80 east of Green Valley Road (W-85) (Volume 2, Figure 3-3-2b, Sheet 18).

Construction of Alternative C would result in a permanent loss of approximately 0.36 acre of nonjurisdictional seasonal wetland as a result of project construction for improvements to the I-80/I-680 interchange (W-3, W-21, and W-147) (Volume 2, Figure 3-3-2c, Sheets 2, 9, 12, and 14) and for widening of I-80 east of Green Valley Road (W-85) (Volume 2, Figure 3-3-2c, Sheet 18).

Alternative C, Phase 1 would result in a permanent loss of approximately 0.34 acre of nonjurisdictional seasonal wetland for improvements to the I-80/I-680 interchange (W-147) (Volume 2, Figure 3-3-2d, Sheets 9 and 14).

Additional temporary impacts due to movement of construction equipment during project construction and indirect impacts caused by sedimentation or modification of hydrology could occur in seasonal wetlands that lie outside the project footprint. However, implementation of Standard Specifications and Standard Special Provisions in Section 3.3.1.1 and Section 3.3.2.1 would avoid and minimize temporary and indirect impacts on nonjurisdictional seasonal wetlands.

**Loss or Disturbance of Jurisdictional Seasonal Wetland Resulting from Construction**

Under both of the build alternatives, temporary impacts due to movement of construction equipment during project construction and indirect impacts caused by sedimentation or modification of hydrology could occur in portions of seasonal wetlands that lie outside the project footprint. However, implementation of Standard Specifications and Standard Special Provisions would avoid and minimize temporary and indirect impacts on seasonal wetland.
Alternative B
Construction of Alternative B would involve placement of fill, resulting in a permanent loss of approximately 7.84 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2a). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas because of project construction.

- The realignment area to be graded for Red Top Road north of SR 12W (W-187 and W-189) (Sheets 5 and 6).
- Widening of the SR 12W/I-80 interchange (W-60 and W-62) (Sheets 7 and 8).
- Widening of I-80 east of the interchange (W-192 and W-193) (Sheet 21).
- Construction of the Meyer Lane extension between Beck and Pennsylvania Avenues (W-131 and W-132) (Sheet 32).

Under Alternative B, 1.85 acres of jurisdictional seasonal wetland lies within the temporary impact area, but implementation of avoidance and minimization measures listed below will avoid temporary impacts.

Without implementation of Best Management Practices (BMPs), indirect effects on seasonal wetlands would occur adjacent to the construction area due to sedimentation caused by the construction and by alteration of the wetland hydrology. Potential indirect effects due to sedimentation would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. Indirect effects due to alteration of wetland hydrology could occur where part of a wetland is filled and the rest of the wetland outside of the permanent impact area is left intact. Seasonal wetlands with small permanent impacts could continue to function hydrologically as wetlands. For small seasonal wetlands, however, a substantial part of the wetland and the surrounding upland area would be paved, potentially changing the amount of water that the remaining part of the wetland receives. Most of these wetlands have been historically altered due to the construction of roads and other development. For seasonal wetlands that are suitable habitat for federally listed fairy shrimp (discussed in Section 3.3.5.4), including W-143, W-189, W-15, and W-45a-2, the indirectly affected wetland area will be compensated for in addition to the directly affected area. In addition, all seasonal wetlands that are suitable habitat for federally
listed fairy shrimp and are within 250 feet of ground disturbance, with no intervening barrier, will be compensated as indirect impacts. With implementation of the avoidance and minimization measures and compensation for listed fairy shrimp habitat, the net indirect effect on seasonal wetland is not expected to be adverse, and no additional mitigation for indirect effects is proposed.

**Alternative B, Phase 1**
Construction of Alternative B, Phase 1 would involve placement of fill, resulting in a permanent loss of approximately 1.82 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2b). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts would occur in parts or all of seasonal wetlands W-45-1, W-45a-2, W-45-2, W-45-3, W-61, W-63, W-80, W-81, W-86, W-109, and W-191 (Sheets 8, 17, and 18) for improvements to the interchange.

Without implementation of Best Management Practices (BMPs), indirect effects on seasonal wetlands would occur adjacent to the construction area due to sedimentation caused by the construction and by alteration of the wetland hydrology. Potential indirect effects due to sedimentation would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. Indirect effects due to alteration of wetland hydrology could occur where part of a wetland is filled and the rest of the wetland outside of the permanent impact area is left intact. Seasonal wetlands with small permanent impacts could continue to function hydrologically as wetlands. For small seasonal wetlands, however, a substantial part of the wetland and the surrounding upland area would be paved, potentially changing the amount of water that the remaining part of the wetland receives. Most of these wetlands have been historically altered due to the construction of roads and other development. For seasonal wetlands that are suitable habitat for federally listed fairy shrimp (discussed in Section 3.3.5.4), including W-63, W-45a-2, and W-45-3, the indirectly affected wetland area will be compensated for in addition to the directly affected area. In addition, all seasonal wetlands that are suitable habitat for federally listed fairy shrimp and are within 250 feet of ground disturbance, with no intervening barrier, will be compensated as indirect impacts. With implementation of the avoidance and minimization measures and compensation for listed fairy shrimp habitat, the net indirect effect on seasonal wetland is not expected to be adverse, and no additional mitigation for indirect effects is proposed.

**Alternative C**
Construction of Alternative C would involve placement of fill, resulting in a permanent loss of approximately 8.62 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2c). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas as a result of project construction.

- The realignment area to be graded for Red Top Road north of SR 12W (W-183, W-187, and W-189) (Sheets 5 and 6).
• Widening of the SR 12W/I-80 interchange (W-60 and W-62) (Sheets 7 and 8).

Under Alternative C, 0.70 acre of jurisdictional seasonal wetland lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts.

Without implementation of Best Management Practices (BMPs), indirect effects on seasonal wetlands would occur adjacent to the construction area due to sedimentation caused by the construction and by alteration of the wetland hydrology. Potential indirect effects due to sedimentation would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. Indirect effects due to alteration of wetland hydrology could occur where part of a wetland is filled and the rest of the wetland outside of the permanent impact area is left intact. Seasonal wetlands with small permanent impacts could continue to function hydrologically as wetlands. For small seasonal wetlands, however, a substantial part of the wetland and the surrounding upland area would be paved, potentially changing the amount of water that the remaining part of the wetland receives. Most of these wetlands have been historically altered due to the construction of roads and other development. For seasonal wetlands that are suitable habitat for federally listed fairy shrimp (discussed in Section 3.3.5.4), including W-143, W-189, W-15, W-63, and W-45a-2, the indirectly affected wetland area will be compensated for in addition to the directly affected area. In addition, all seasonal wetlands that are suitable habitat for federally listed fairy shrimp and are within 250 feet of ground disturbance, with no intervening barrier, will be compensated as indirect impacts. With implementation of the avoidance and minimization measures and compensation for listed fairy shrimp habitat, the net indirect effect on seasonal wetland is not expected to be adverse, and no additional mitigation for indirect effects is proposed.

**Alternative C, Phase 1**

Construction of Alternative C, Phase 1 would result in direct disturbance of jurisdictional and nonjurisdictional seasonal wetlands.

Construction of Alternative C, Phase 1 would involve placement of fill, resulting in a permanent loss of approximately 2.88 acres of jurisdictional seasonal wetland with reduction of fill achieved through design design refinements during the 404 b(1) process (Table 3.3.1-1 and Volume 2, Figure 3.3-2d). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas because of project construction.

• The realignment area to be graded for Red Top Road north of SR 12W (W-184, W-187, and W-189) (Sheets 5 and 6).
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Without implementation of Best Management Practices (BMPs), indirect effects on seasonal wetlands would occur adjacent to the construction area due to sedimentation caused by the construction and by alteration of the wetland hydrology. Potential indirect effects due to sedimentation would be avoided by implementation of avoidance and minimization measures described in Section 3.3.2.1 that would prevent erosion and sedimentation into drainages and wetlands. Indirect effects due to alteration of wetland hydrology could occur where part of a wetland is filled and the rest of the wetland outside of the permanent impact area is left intact. Seasonal wetlands with small permanent impacts could continue to function hydrologically as wetlands. For small seasonal wetlands, however, a substantial part of the wetland and the surrounding upland area would be paved, potentially changing the amount of water that the remaining part of the wetland receives. Most of these wetlands have been historically altered due to the construction of roads and other development. For seasonal wetlands that are suitable habitat for federally listed fairy shrimp (discussed in Section 3.3.5.4), including W-63 and W-45a-2, the indirectly affected wetland area will be compensated for in addition to the directly affected area. In addition, all seasonal wetlands that are suitable habitat for federally listed fairy shrimp and are within 250 feet of ground disturbance, with no intervening barrier, will be compensated as indirect impacts. With implementation of the avoidance and minimization measures and compensation for listed fairy shrimp habitat, the net indirect effect on seasonal wetland is not expected to be adverse, and no additional mitigation for indirect effects is proposed.

**No-Build Alternative**
Under the No-Build Alternative, no construction activities would occur, and no impacts on seasonal wetlands would occur.

**Avoidance, Minimization, and/or Mitigation Measures**
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10), and the measure to construct a vegetated swale in Section 3.3.2.4 would address temporary and indirect impacts on nonjurisdictional and jurisdictional seasonal wetlands all alternatives. The measures to compensate for permanent loss of wetlands in Section 3.3.2.3 would address the permanent impacts on seasonal wetlands under all build alternatives.
Wetlands Only Practicable Finding
The following discussion of the alternatives and all practicable measures to minimize harm is intended to satisfy the requirements of Executive Order 11990, Protection of Wetlands.

The purpose and need for the project are presented in Chapter 1 of this document and the alternatives analyzed here and those withdrawn from consideration prior to the Draft EIR/EIS are presented in Chapter 2. The permits and regulations that pertain to the project are summarized in Table 2-3. As discussed in Section 2.5, Alternative C, which realigns I-680 to the west bringing it into the I-80/SR 12 interchange, is the Preferred Alternative.

Both Alternative B and Alternative C meet the purpose and need of the project discussed in Chapter 1, however, Alternative C would result in superior traffic operations and offers more favorable construction phasing and staging opportunities. While impacts to biological resources in general would be similar, Alternative C would impact approximately 0.5 acre less of jurisdictional wetlands (perennial marsh, alkali seasonal marsh, and seasonal wetlands) than Alternative B, as well as result in less impact to seasonal and perennial drainages. No jurisdictional waters would be affected under the No-Build Alternative, but the No-Build Alternative would not meet the purpose and need outlined in Chapter 1, because it would not increase capacity, address truck traffic or improve safety.

Several alternatives that were eliminated from consideration prior to the Draft EIR/EIS proposed new roads and were eliminated because they located a transportation facility within the Primary Suisun Marsh, in violation of the Suisun Marsh Preservation Act. The alternatives analyzed here represent the alternatives that address the purpose and need for the project with minimal disturbance to natural resources, by virtue of utilizing existing roadways.

All Practicable Measures to Minimize Harm
The Department has been incorporating all practicable measures to minimize environmental harm in project design. Wetland and marsh areas were avoided, and existing roadways are used or widened where possible.

Avoidance and minimization measures to be implemented to reduce additional indirect affects to wetlands are enumerated above and include installation of ESA-type fencing, environmental awareness training, biological monitoring, erosion and sedimentation minimization measures. Proposed mitigation measures are also provided above.

Finding
Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

3.3.3 Plant Species

Botanical surveys of the study area were conducted in April and May 2004, April and May 2005, August 2007, and April 2009. Surveys were conducted for Johnny jump-ups, host plant for the callippe silverspot butterfly, (on May 4, 2011 and March 15, 2012 only on portions of the
Dittmer property adjacent to the west end of Business Center Drive. Botanical surveys for the Gentry-Suisun project included a portion of the study area south of SR 12E and were conducted in spring 2000 and 2002; summer 2000; and April 6, 7, 8, 11, 12, 13, and 15, 2005. Five sensitive plant species (Table 3.3.3-1 located at the end of this section) were found in the study area during these surveys: alkali milk-vetch, pappose tarplant, Contra Costa goldfields, streamside daisy, and saline clover. Another species, showy Indian clover, was not found but has potential to occur in the part of the study area north of SR 12W that was part of the North Connector study area and has not been surveyed since 2003. Contra Costa goldfields and showy Indian clover are discussed in Section 3.3.5, Threatened and Endangered Species. The remaining species are discussed below.

Table 3.3.3-2 summarizes impacts on special-status plant species and native trees. Impacts on Contra Costa goldfields are discussed in Section 3.3.5.1, and impacts on native trees are discussed in Section 3.3.7.

**Table 3.3.3-2. Summary of Sensitive Plant Species and Native Tree Impacts by Project Alternative**

<table>
<thead>
<tr>
<th>(Number of plants, unless otherwise stated)</th>
<th>Alkali Milk-Vetch</th>
<th>Pappose Tarplant</th>
<th>Contra Costa Goldfields</th>
<th>Gold-fields Critical Habitat (acres)a</th>
<th>Streamside Daisy</th>
<th>Saline Clover</th>
<th>Native Treesb (# of trees)</th>
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a Includes all habitats in the designated critical habitat for Contra Costa goldfields. Only a part of the impact acreage is within suitable habitat for goldfields.

b Includes only native trees mapped outside of riparian woodland and oak woodland habitats.

**Regulatory Setting**

The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) 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 afforded 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 the Federal Endangered Species Act (FESA) and/or the...
California Endangered Species Act (CESA). Please see Section 3.3.4, “Threatened and Endangered Species” in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG 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 United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900–1913, and the California Environmental Quality Act (CEQA), Public Resources Code, Sections 2100–21177.

### 3.3.3.1 Alkali Milk-Vetch

Alkali milk-vetch (*Astragalus tener var. tener*) is an annual herb in the pea family (Fabaceae) that blooms between March and June. Alkali milk-vetch occurs in alkaline vernal pools and annual grasslands with adobe clay (heavy clay) soils at elevations below 200 feet. Alkali milk-vetch has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California with 20%–80% of occurrences threatened). The primary threats to this species are development; competition from nonnative plants; habitat destruction, especially agricultural conversion; and possibly trampling. (California Native Plant Society 2010.)

Alkali milk-vetch is known from the southern Sacramento Valley, northern San Joaquin Valley, and east San Francisco Bay Area. It is currently recorded in the CNDDB at 67 locations in Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, San Francisco, San Joaquin, Santa Clara, Solano, Sonoma, Stanislaus, and Yolo Counties. Of this total, 24 occurrences are in Solano County. One of these is recorded in the study area south of SR 12E, and another is approximately 0.5 mile south of this location. (California Natural Diversity Database 2010a.)

**Affected Environment**

Four populations of alkali milk-vetch occur in seasonal wetland habitat approximately 250 to 350 feet south of the study area, but outside the project construction areas, along SR 12E, between Ledgewood Creek and Pennsylvania Avenue (Volume 2, Figure 3.3-2a, Sheets 32–33). Based on surveys in 2000–2002 and 2005, these occurrences varied from one to 20 plants (Vollmar Consulting 2005). Although the occurrences were not found in 2009, the habitat remains suitable and the plants are assumed to be extant. Below average rainfall and varied temperature patterns in 2009 may have affected germination and growth of annual species such as alkali milk-vetch.
Environmental Consequences

Potential Direct and Indirect Effects on Alkali Milk-Vetch

Alkali milk-vetch plants are outside the temporary and permanent impact areas for all build alternatives. With implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Sections 3.3.2.1, none of the build alternatives would result in indirect effects on seasonal wetlands that support alkali milk-vetch. However, the project alternatives would not be constructed in the area of the alkali milk-vetch occurrences for many years, and updated surveys for the species will be needed to document the extent and number of plants at that time to ensure that the species has not established within the project footprint. If the species is found within the proposed construction area, compensation for loss of plants would be based on the preconstruction data obtained from the updated surveys.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described below would address impacts to alkali milk-vetch.

Conduct Preconstruction Surveys for Special-Status Plants

As a prerequisite to developing compensatory mitigation, a qualified botanist will be retained to conduct botanical surveys of the portion of the study area to be affected within one year prior to construction of each construction phase of the project. A list of special-status species with potential to occur in the study area will be compiled based on contemporary CNDDB and CNPS Inventory data. Surveys will be conducted during the blooming period for these special-status plants. Surveys will be conducted consistent with CNPS guidelines for botanical surveys (California Native Plant Society 2001).

If any special-status plants are identified during the surveys, the botanist will photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form, and submit the completed Survey Form to the CNDDB. The amount of compensatory mitigation required will be based on the results of these surveys.

Compensate for Loss of Special-Status Plants

Permanent loss (areas directly affected in the project area) of occupied special-status plant habitat for alkali milk-vetch, pappose tarplant, streamside daisy, or saline clover will be compensated for through preservation in an appropriate location in suitable habitat as agreed upon with CDFG. Detailed information will be provided to the agencies on the location and quality of the preservation area, the feasibility of protecting and managing the area in perpetuity, and the responsible parties involved. Other pertinent information will also be provided, to be determined through future coordination with the resource agencies.
3.3.3.2 Pappose Tarplant

Pappose tarplant (Centromadia parryi ssp. parryi) is an annual herb in the sunflower family (Asteraceae) that blooms between May and November. Pappose tarplant is found in meadows and seeps, salt marsh, and mesic annual grassland, often on alkaline soils at elevations below 1,400 feet. Pappose tarplant has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California, with 20–80% of occurrences threatened). The primary threats to the species have been development and habitat disturbance. (California Native Plant Society 2010.)

Pappose tarplant is known historically from central California in the Sacramento Valley and San Joaquin Valley. It is currently recorded in the CNDDB at 23 occurrences in Butte, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma Counties. Of this total, 13 occurrences are recorded in Solano County. One of these 13 occurrences is recorded in the study area south of SR 12E, and another is approximately 0.25 mile south of this location. One additional occurrence is generally mapped south of the I-80/I-680 interchange. (California Natural Diversity Database 2010a.)

Affected Environment

A total of 43 occurrences of pappose tarplant (approximately 7,000 plants) were found during the August 2007 and April 2009 botanical surveys of the study area (Volume 2, Figure 3.3-2a, Sheets 32–33). Points shown in Figure 3.3-2a represent stands of between one and 6,000 plants. This species was observed primarily in seasonal wetlands (W-118, W-134 W-135, W-162, W-163, W-165, W-166, and W-172), but three occurrences are in areas of nonnative annual grassland near these seasonal wetlands.

There are six occurrences (approximately 185 plants) of pappose tarplant in the proposed construction area for Alternative B, seven occurrences (approximately 200 plants) for Alternative C, and one stand (two plants) for Alternative C, Phase 1. None occur within 250 feet of the Alternative B, Phase 1 construction area.

All but one of these occurrences are south of SR 12E and east of Ledgewood Creek; one is north of SR 12E approximately 200 feet east of Ledgewood Creek. Additional occurrences were observed in the study area but outside the temporary and permanent impact areas. Five occurrences are within 250 feet of the temporary impact boundary for Alternative B, 33 occurrences are within the temporary impact boundary for Alternative C, and two occurrences are within the temporary impact boundary for Alternative C, Phase 1.

Environmental Consequences

Loss or Disturbance of Pappose Tarplant

Based on the 2007 and 2009 survey results, approximately 185 pappose tarplants would be removed within the Alternative B footprint south of SR 12E for construction of the Meyer Lane extension, widening of SR 12E, and construction of the frontage road south of SR 12E and west of Pennsylvania Avenue (Volume 2, Figure 3.3-2a, Sheets 32–33). Indirect effects on the 33 stands of pappose tarplant outside the Alternative B construction area but within 250 feet of the temporary impact area could result from adjacent construction activity. These plants would not
be removed for construction, but they could be indirectly affected by earthmoving activities and changes in hydrology.

Pappose tarplants are outside the temporary and permanent impact areas for Alternative B, Phase 1.

Within the Alternative C footprint, approximately 200 pappose tarplant plants would be removed south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue (Volume 2, Figure 3.3-2c, Sheet 33). Indirect effects on the five stands of pappose tarplant outside the construction area but within 250 feet of the temporary impact area could occur from adjacent construction activity.

Within the Alternative C, Phase 1 footprint, two pappose tarplant plants would be removed south of SR 12E for construction of the Meyer Lane extension, widening of SR 12E, and the frontage road south of SR 12E and west of Pennsylvania Avenue (Volume 2, Figure 3.3-2d, Sheets 32–33). Indirect effects on the two stands of pappose tarplant (approximately 300 plants) outside the construction area but within 250 feet of the temporary impact area could result from adjacent construction activity.

Because pappose tarplant is not a state- or federally listed species, authorization under FESA or CESA would not be required for removal of the plants. However, CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of a CNPS List 1B.2 species. The loss or disturbance of pappose tarplant is considered adverse because this species is identified by CNPS as rare or endangered in California.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.2.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1 would protect pappose tarplant and wetland habitat from indirect impacts. Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would address impacts to pappose tarplant.
3.3.3.3 Streamside Daisy

Streamside daisy (*Erigeron biolettii*) is a perennial herb in the sunflower family (Asteraceae). This species blooms between June and October and occurs in rocky, mesic areas, including woodlands below 2,300 feet. Streamside daisy has no state or federal listing status but is on CNPS List 3 (plants about which more information is needed to determine their status). The CNDDB does not currently include any records for streamside daisy, but the CNPS Inventory records the species in Humboldt, Mendocino, Marin, Napa, Solano, and Sonoma Counties (California Native Plant Society 2010; California Natural Diversity Database 2010a).

Affected Environment

Streamside daisy was observed in August 2007 at one location outside the study area within approximately 100 feet of the study area boundary, in the area north of the westbound I-80 truck scales (Volume 2, Figure 3.3-2a, Sheet 21). This site is a rocky hill vegetated by valley oak woodland, and fewer than 20 plants were observed. Since the time of the survey, the vegetation has been removed and the hill has been graded for another project. The population of streamside daisy on the hill is extirpated, because the hill has been removed.

Environmental Consequences

Potential Direct and Indirect Effects on Streamside Daisy

Streamside daisy plants near the study area have been removed. However, the project alternatives would not be constructed in this area for several years, and updated surveys for the species will be needed to document the presence of any streamside daisy plants at that time to ensure that the species has not established within the project footprint. If the species is found within the proposed construction area, compensation for loss of plants would be based on the preconstruction data obtained from the updated surveys.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would address effects to streamside daisy.

3.3.3.4 Saline Clover

Saline clover (*Trifolium depauperatum* var. *hydrophilum*) is an annual herb in the pea family (Fabaceae). This species blooms between April and June and grows in mesic, alkaline areas, including annual grasslands and vernal pools at elevations below 1,000 feet. Saline clover has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California with 20–80% of occurrences threatened). Saline clover is threatened by development. The CNDDB currently lists 20 records of saline clover occurrences in Alameda, Monterey, Napa, San Benito, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma Counties. Of this total, two occurrences are recorded in Solano County. (California Natural Diversity Database 2010a.)
**Affected Environment**
Based on surveys in 2000–2002 and 2005, a total of 12 occurrences of saline clover were found in seasonal wetland habitat south of SR 12E and east of Ledgewood Creek (Volume 2, Figure 3.3-2a, Sheets 32–33). These occurrences varied from one to 100 plants and were located outside the project construction area (Vollmar Consulting 2005). No occurrences were found within the proposed construction area, but eight occurrences were within 250 feet of the temporary impact boundary for the project. Based on surveys in 2000–2002 and 2005, these occurrences varied from one to 100 plants (Vollmar Consulting 2005). In April 2009, five additional occurrences of saline clover were observed north of the previously observed locations, and all five occur within the project construction area for Alternative B and Alternative C. The five occurrences varied from one to ten plants each.

**Environmental Consequences**

**Direct and Indirect Effects on Saline Clover**
Five occurrences of saline clover totaling 35 plants in an approximately 0.2-acre area are within the permanent impact area for Alternative B (Volume 2, Figure 3.3-2a, Sheet 33), based on the 2009 surveys. These plants would be removed within the project footprint south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue. An additional two occurrences are within the temporary impact area. Indirect effects on the four stands of saline clover outside the construction area but within 250 feet of the temporary impact area could result from adjacent construction activity. These plants would not be removed for construction, but they could be indirectly affected by earthmoving activity and changes in hydrology.

Six occurrences of saline clover totaling 65 plants in two 0.1-acre locations are within the permanent impact area for Alternative C (Volume 2, Figure 3.3-2c, Sheet 33), based on the 2005 and 2009 surveys. These plants would be removed within the project footprint south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue. Indirect effects on the four stands of saline clover could result from adjacent construction activity.

Saline clover plants are outside the temporary and permanent impact areas for Alternative B, Phase 1 and Alternative C, Phase 1.

Because saline clover is not a state- or federally listed species, authorization under FESA or CESA would not be required for removal of the plants. However, CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of a CNPS List 1B.2 species. The loss or disturbance of saline clover is considered adverse because the species is identified by CNPS as rare or endangered in California.

**Avoidance, Minimization, and/or Mitigation Measures**
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SPP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section...
13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1 will avoid indirect effects on saline clover. Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would address impacts to saline clover.

3.3.4 Animal Species

Based on the CNDDB search results and the USFWS list for the project region, 29 special-status wildlife species and ten special-status fish species were determined to have the potential to occur in the project region (Table 3.3.4-1 located at the end of this section). After completion of field surveys and review of species distribution and habitat requirements data, the biologists determined that 11 of the 29 wildlife species and six of the ten fish species would not occur in the study area because the area lacks suitable habitat for the species or is outside the species’ known range. An explanation for the absence of each of these species from the study area is provided in Table 3.3.4-1.

Four of the 18 special-status wildlife species with potential to occur in the study area have been observed in the study area; (California red-legged frog, burrowing owl, northern harrier, and western pond turtle). In addition, elderberry shrubs (host plant) for a fifth special-status species, valley elderberry longhorn beetle, is present in the study area.

The threatened or endangered species known or with potential to occur in the study area are discussed in Section 3.3.5. The remaining special-status species known to occur or with potential to occur in the study area, including migratory birds, raptors, and swallows are discussed below. Impacts for all special-status species are summarized in Tables 3.3.4-2a.

Four special-status fish species—central California coast steelhead, river lamprey, Sacramento splittail, and fall-run/late-fall-run Chinook salmon—have potential to occur in the study area based on the presence of suitable habitat (Table 3.3.4-2b). Central California coast steelhead is a threatened species and is discussed in Section 3.3.5.
### Table 3.3.4-2a. Summary of Special-Status Wildlife Species Potential Impacts by Project Alternative

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<th>Impact Type</th>
<th>Callippe Silverspot Butterfly Habitat Present</th>
<th>Vernal Pool Fairy and Tadpole Shrimp Habitat (acres)</th>
<th>VELB (number of shrubs)</th>
<th>CRLF Aquatic Habitat (acres)</th>
<th>CRLF Upland Habitat (acres)</th>
<th>CRLF Critical Habitat</th>
<th>CTS Upland Habitat</th>
<th>CTS Aquatic Habitat</th>
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</tbody>
</table>

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| a | Only permanent impacts are shown because there are no mitigation requirements for temporary losses of foraging habitat.

| b | Includes special-status birds such as burrowing owl and northern harrier as well as resident and migratory species. |
Table 3.3.4-2b. Summary of Special-Status Fish Species with Potential for Impacts by Project Alternative

<table>
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<th>Impact Type</th>
<th>Central California Coast Steelhead</th>
<th>Central Valley Fall/Late Fall–Run Chinook Salmon</th>
<th>Sacramento Splittail</th>
<th>River Lamprey</th>
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Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biologic Environment

Regulatory Setting

Many state and federal laws regulate impacts on wildlife. Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act.
- Fish and Wildlife Coordination Act.

State laws and regulations pertaining 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.

The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NOAA’s NMFS) and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act including CDFG fully protected species and species of special concern, and USFWS or NOAA’s NMFS candidate species. Species listed or proposed for listing as threatened or endangered are discussed in Section 3.3.5, “Threatened and Endangered Species.”

3.3.4.1 Western Pond Turtle

Western pond turtle is designated a state species of special concern. Western pond turtle occurs from Baja California to the lower Columbia River in Oregon and Washington (Jennings et al. 1992).

Western pond turtles are thoroughly aquatic, preferring the quiet waters of ponds, reservoirs, and sluggish streams (Stebbins 1985). The species occurs in a wide range of both permanent and intermittent aquatic environments (Jennings et al. 1992). Western pond turtles spend considerable time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. They move up to 1,300 feet or more to upland areas adjacent to watercourses to deposit eggs and to overwinter (Jennings and Hayes 1994). Western pond turtles spend time in upland habitats during the spring and summer, frequently moving between aquatic and upland habitats (Rathbun et al. 2002). Western pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992).

Affected Environment

The species is present within the Dan Wilson Creek/Green Valley Creek watershed (Solano County Water Agency 2009). Western pond turtles were also observed in the two ponds (Mangels pond and perennial marsh W-150) north of SR 12W (Solano Transportation Authority 2007) (Volume 2, Figure 3.3-2a, Sheet 5). One of those ponds (W-150 on the north side of SR 12W) is within the Alternative B, Alternative C, and Alternative C, Phase 1 study areas. In
addition, there is suitable upland habitat around the two ponds, some of which is within the study area. Western pond turtles share suitable habitat with California red-legged frogs, addressed in Section 3.3.5.6.

A western pond turtle was observed in Ledgewood Creek at I-80 (approximately one mile upstream of the study area for Alternatives B and C) in April and September 2008 during construction monitoring surveys for the I-80 HOV project (Caltrans 2007). In addition to Mangels pond and W-150, the following locations in the study area provide potential aquatic habitat for western pond turtles. The following locations can be found in Volume 2, Figure 3.3-2a

- Two locations on Ledgewood Creek at SR 12E (Sheet 32).
- Suisun Creek (Sheet 22).
- Dan Wilson Creek (Sheet 21).
- Green Valley Creek (Sheets 17 and 18).
- American Canyon Creek (Sheet 12).
- Four locations on Jameson Canyon Creek (Sheets 3, 7, and 9).

Except for W-150 north of SR 12W, upland habitat in the study area is in heavily disturbed areas along I-80, I-680, and SR 12E. If turtles nest or overwinter in these locations, they would do so in the narrow strip of riparian habitat between the aquatic habitat and urban development, agricultural crops, and roads.

**Environmental Consequences**

Because suitable aquatic habitat for western pond turtles is present within the study area, pond turtles could be affected by the project alternatives. Western pond turtles are very sensitive to disturbances and quickly retreat into the water when threatened. If pond turtles are present in the creek channel or along the creek bank during the construction period, they could be injured or killed during construction.

**Potential Loss or Disturbance of Western Pond Turtles Resulting from Construction**

Alternative B and Alternative C include Mangels pond, W-150, and upland habitat north of SR 12W, three locations on Jameson Canyon Creek—at Red Top Road, upstream from Red Top Road, and I-80 (Alternative B) and upstream from Red Top Road, I-80 and upstream from I-680 (Alternative C)—crossings in Green Valley Creek, Dan Wilson Creek, Suisun Creek, and Ledgewood Creek. Western pond turtles could be directly affected during construction activities in creeks and in upland habitat around ponds and adjacent to creeks.

Alternative B, Phase 1 includes construction associated with removal and replacement of the bridges over Green Valley Creek, Dan Wilson Creek and Ledgewood Creek and with replacement of culverts on American Canyon Creek and Ledgewood Creek. Western pond turtles could be directly affected during construction in creeks and in upland habitat around the creeks.
Alternative C, Phase 1 includes culverts or crossings over Green Valley Creek, and four locations on Jameson Canyon Creek—at Red Top Road, upstream from Red Top Road, I-80, and upstream from I-680. Although the areal extent of effects would be less than those described for Alternatives B and C, all project effects on western pond turtle would be the same as those described for Alternative B.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on western pond turtle.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Special Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1, and the mitigation measure below would avoid effects on western pond turtle. Avoidance, minimization and/or mitigation measures for CRLF (see Section 3.3.5.6) will also protect habitat for western pond turtles.

**Conduct Clearance Surveys for Western Pond Turtle**

A qualified biologist will conduct clearance surveys for western pond turtle immediately preceding construction activities in the creeks and near ponds, and will move turtles to a safe location.

**3.3.4.2 White-Tailed Kite**

White-tailed kite (*Elanus leucurus*) is a fully protected species under CFGC 3511. The species has a restricted distribution in the United States, occurring only in California and western Oregon and along the Texas coast (American Ornithologists’ Union 1983). The species is fairly common in California’s Central Valley lowlands. White-tailed kites nest in riparian and oak woodlands and forage in nearby grasslands, pastures, agricultural fields, and wetlands. White-tailed kites use nearby treetops for perching and nesting sites. Voles and mice are common prey species.

**Affected Environment**

No white-tailed kite nest sites are known from the study area, but the CNDDB (2010a) lists one record along Suisun Creek approximately 0.5 mile south of I-80. Riparian habitat in and adjacent to the study area provides potential nesting habitat for white-tailed kites. Kites could also nest in riparian and oak woodlands north of SR 12W. However, it is unlikely that white-tailed kites would nest in the study area because of its proximity to I-80/I-680/SR 12. Annual grasslands in the study area are located along I-80/I-680/SR 12 and within developed portions of Fairfield. These areas are not typically used by white-tailed kites for foraging. Higher quality foraging habitat (open agricultural fields) occurs in portions of the study area that would not be affected by the proposed project.
Environmental Consequences

Although there is a low likelihood that white-tailed kites would nest adjacent to I-80/I-680/SR 12, tree removal or noise associated with construction activities could result in the disturbance of nesting white-tailed kites if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503, 3503.5 and 3511 and the MBTA.

Potential Disturbance of Nesting White-Tailed Kites Resulting from Construction

Both build alternatives would result in a permanent loss and temporary disturbance of riparian woodland in the study area, which provides potential nesting habitat for white-tailed kites.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on white-tailed kites.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure below will reduce the project’s effect on white-tailed kites, their eggs, or young.

Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary

To avoid and minimize effects on nesting migratory birds, one or more of the following surveys and restrictions will be implemented to ensure compliance with the MBTA.

- Tree and shrub removal will occur during the nonbreeding season for most migratory birds and raptors (generally between September 1 and February 15).

- If construction activities, including tree and shrub removal, are scheduled to occur during the breeding season for migratory birds and raptors (generally between February 15 and September 1), a qualified wildlife biologist (with knowledge of the species to be surveyed) will be retained to conduct nesting migratory bird and raptor surveys before the start of construction. A set of three nesting surveys should be conducted within a 2-week period just prior to initiation of construction activities (including tree removal) between February 15 and September 1. If no active nests are detected during these surveys, tree removal can proceed.

- If surveys indicate that migratory bird or raptor nests are present in the survey area, a no-disturbance buffer will be established in coordination with CDFG around the site to avoid disturbance or destruction of the nest site until after the breeding season or until after a qualified wildlife biologist determines that the young have fledged (usually late June to mid-July). The extent of these buffers will be determined by the biologist (in coordination with the CDFG) and will depend on the level of noise or construction disturbance, the line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and
other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances. Suitable buffer distances may vary between species.

### 3.3.4.3 Western Burrowing Owl

Western burrowing owl (*Athene cunicularia*) is designated as a state species of special concern. Western burrowing owl is found throughout much of California in annual and perennial grassland, desert, and arid scrubland. It also can be found in vacant lots in residential areas, railroad ballast, dirt roads, and canal levees. The presence of burrows is the most critical requirement for western burrowing owl habitat; the species uses burrows excavated by ground squirrels and badgers, as well as artificial burrows, such as cement culverts, debris piles, or openings under roads. Its breeding season extends from March through August, peaking in April and May.

**Affected Environment**

Several (ten-plus) occurrences of burrowing owl have been reported within a ten-mile radius of the study area (California Natural Diversity Database 2010a). Burrowing owls were observed near Alternative B, Alternative C, and Alternative C, Phase 1 project limits north of SR 12W, in November 2003 and March 2004 (Solano Transportation Authority 2007). Annual grassland, edges of agricultural ditches and farm roads, and fallow fields in the project area provide suitable foraging and nesting habitat for burrowing owls. Minimal loss of foraging habitat for western burrowing owls would occur because most of the construction would occur in existing roadbeds and rights-of-way.

**Environmental Consequences**

If western burrowing owls are nesting in or within 250 feet of the construction right-of-way, grading and excavation activities could result in the removal of an occupied breeding or wintering burrow site and loss of adults, young, or eggs. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

**Potential Disturbance of Burrowing Owls and Permanent Loss of Habitat Resulting from Construction**

Both build alternatives and Alternative C, Phase 1 would result in a permanent loss and temporary disturbance of annual grassland that provides potential nesting habitat for western burrowing owl in and adjacent to the study area north of SR 12W. Both build alternatives could result in disturbances to burrowing owls that might be present in areas of annual grassland, edges of agricultural ditches and farm roads, and fallow fields in the study area.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on burrowing owls.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to
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conduct environmental awareness training (SSP 14-6.08) and measures listed below will reduce the project’s effects on burrowing owl burrows, eggs, or young.

Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary

CDFG (1994) recommends that preconstruction surveys be conducted in suitable habitat (except paved areas) in a project study area and in a 250-foot-wide buffer zone around the construction site to locate active burrowing owl burrows. This would apply to habitat north of SR 12W that provides the most suitable habitat for breeding burrowing owls. A qualified biologist will be retained to conduct preconstruction surveys for active burrows according to the CDFG guidelines. The surveys will include a nesting season survey and a wintering season survey (wintering season is the season immediately preceding construction).

If no burrowing owls are detected, no further mitigation is required. If active burrowing owl burrows are detected, the following measures will be implemented in coordination with DFG.

- Occupied burrows will not be disturbed during the nesting season (February 1–August 31).
- When destruction of occupied burrows is unavoidable outside the nesting season (September 1–January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (installing artificial burrows) on protected lands as agreed upon with CDFG. Newly created burrows will conform to guidelines established by the CDFG.
- If owls must be moved away from the project construction area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. At least one week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows.
- If avoidance is the preferred method of dealing with potential impacts, no disturbance will occur within 160 feet of occupied burrows during the nonbreeding season (September 1 to January 31) or within 250 feet during the breeding season. Avoidance also requires that foraging habitat (based on an approximately 300-foot foraging radius around an occupied burrow) be permanently preserved for each pair of breeding burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to the CDFG for approval.

Compensate for Loss of Burrowing Owl Nesting Habitat

If active burrowing owl burrows are found and the owls must be relocated, the loss of foraging and burrow habitat in the project construction area will be offset by acquiring and permanently protecting foraging habitat at a ratio agreed upon with CDFG. The protected lands should be located adjacent to the occupied burrowing owl habitat in the project construction area or at another occupied site near the project construction area. The location of the protected lands will be determined in coordination with the CDFG. If on-site compensation is not feasible, the Department will purchase credits at an approved mitigation bank. It may be possible to compensate for burrowing owl habitat in conjunction with compensation for loss of Swainson’s hawk habitat (Section 3.3.5.8).
3.3.4.4 Northern Harrier

Northern harrier (*Circus cyaneus*) is a state species of special concern. The breeding range includes most of the Central Valley, the Delta, Suisun Marsh, and portions of San Francisco Bay. Northern harriers use tall grasses and forbs in wetlands and field borders for cover (Zeiner et al. 1990). They roost on the ground in shrubby vegetation, often near a marsh edge. The species’ breeding season is between April and late August, with peak activity in June and July. Northern harriers feed mainly on voles, other small mammals, birds, small reptiles, crustaceans, and insects.

**Affected Environment**

Northern harriers are not known to nest in the study area (California Natural Diversity Database 2010a) but are known to nest in Solano County. In 2004, a northern harrier was observed foraging over grassland habitat north of SR 12W (Solano Transportation Authority 2007). The tall annual grassland north of SR 12W in the project area provides suitable foraging and nesting habitat for northern harriers (Volume 2, Figure 3.3-2a, Sheets 5 and 6).

**Environmental Consequences**

There is potential for northern harriers to nest in the undisturbed annual grassland habitat north of SR 12W. In addition to direct mortality during the breeding season from construction activities, noise associated with construction activities could result in the disturbance of nesting northern harriers if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

**Potential Disturbance of Nesting Northern Harriers Resulting from Construction**

Under Alternative B, Alternative C, and Alternative C, Phase 1, nesting northern harriers could be disturbed during construction in annual grassland habitat north of SR 12W. There is no suitable nesting habitat for northern harrier within the project area for Alternative B, Phase 1 and therefore there would be no effects to nesting habitat under this alternative.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on northern harriers.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will reduce the project’s effects on northern harrier nests, eggs, or young.
3.3.4.5 **Loggerhead Shrike**

Loggerhead shrike (*Lanius ludovicianus*) is a state species of special concern. It is a common year-round resident throughout the lowlands and foothills of California. Loggerhead shrikes prefer open habitats with shrubs, fences, utility line poles, or other perches. They tend to avoid urbanized areas but frequent open croplands. Nests are usually hidden in densely foliaged shrubs or trees. The breeding season is March through August.

**Affected Environment**

No loggerhead shrikes were observed in the study area during the field surveys; however, loggerhead shrikes are known to nest in Solano County, and trees and shrubs in the study area provide suitable nesting habitat for the species.

**Environmental Consequences**

If loggerhead shrikes are nesting in or adjacent to the construction right-of-way, grading and excavation activities could result in the removal of an occupied breeding site and loss of adults, young, or eggs. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

**Potential Disturbance of Nesting Loggerhead Shrikes Resulting from Construction**

Under both build alternatives, nesting loggerhead shrikes could be disturbed during construction throughout the study area.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on loggerhead shrikes.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will reduce the project’s effects on loggerhead shrike nests, eggs, or young.

3.3.4.6 **Tricolored Blackbird**

Tricolored blackbird (*Agelaius tricolor*) is a state species of special concern. It is a resident in the Central Valley from Butte County south to Kern County. Nests are usually 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.

**Affected Environment**

No tricolored blackbirds were observed in the study area during the field surveys; however, tricolored blackbirds are known to nest in Solano County, and marshes and shrubs in the study area provide suitable nesting habitat for the species.
Environmental Consequences
Implementation of either build alternative could affect nesting tricolored blackbirds if construction activities remove or otherwise disturb occupied nests during the breeding season. Construction activities during the breeding season that result in death of young or loss of reproductive potential would violate CFGC Sections 3503, 3503.5 and 3511, and the MBTA.

Potential Disturbance of Nesting Tricolored Blackbirds Resulting from Construction
Implementation of either build alternative could affect nesting tricolored blackbirds, if construction activities remove or otherwise disturb occupied nests during the breeding season. Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on tricolored blackbirds.

Avoidance, Minimization, and/or Mitigation Measures
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will reduce the project’s effects on tricolored blackbird nests, eggs, or young.

3.3.4.7 Migratory Birds and Raptors
Several migratory birds and raptors could nest in and adjacent to the study area. The breeding season for most birds is generally February 15 through August 31. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and CFGC Sections 3503 and 3503.5.

Affected Environment
A number of nesting birds have been observed in the study area during preconstruction surveys for the I-80 HOV construction project (Caltrans 2007). In 2008 and 2009, biological monitors observed a nesting mockingbird, Anna’s hummingbird, cliff swallow, northern rough-winged swallow, wrentit, bushtit, California spotted towhee, white-throated swifts, and black phoebes. Potential nesting habitat for other migratory birds and raptors occurs in riparian habitat, trees, oak woodlands, and shrubs in the Alternative B study area.

Environmental Consequences
Implementation of both of the build alternatives could affect nesting birds, including raptors, if construction activities remove or otherwise disturb occupied nests during the breeding season. Construction activities during the breeding season that result in death of young or loss of reproductive potential would violate CFGC Sections 3503 and 3503.5 and the MBTA.

Potential Disturbance of Nesting Migratory Birds and Raptors Resulting from Construction
Implementation of the build alternatives could affect nesting migratory birds and raptors if construction activities remove or otherwise disturb occupied nests during the breeding season.
Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on migratory birds or raptors.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will avoid adverse effects on nesting migratory birds and raptors.

### 3.3.4.8 Swallows

Swallows are not considered sensitive wildlife species. However, their occupied nests and eggs are protected by both federal and state laws, including the MBTA. Cliff and barn swallows are two swallow species that frequently build mud nests on the undersides of artificial structures, such as bridges. The two species winter in South America and arrive back in California to breed in February. Nesting generally occurs from March to August, and migration south occurs in September and October (Zeiner et al. 1990).

**Affected Environment**

Empty and remnant swallow nests were observed on the undersides of the bridge decks and ledges within the study area. At Green Valley and Suisun Creeks, no nests or nest remnants were observed in 2008 or 2009 during monitoring surveys for the I-80 HOV project, but approximately three cliff swallow nests were removed from the eastbound lanes on Green Valley Creek in 2007. During the 2008 monitoring surveys, the on-ramp from I-680 to EB I-80 (just south of the EB I-80 lanes) that spans Green Valley Creek had approximately 30 remnant cliff swallow nests, and the Central Way bridge (the southernmost of the four bridges) had an active cliff swallow colony of approximately 50 nests.

**Environmental Consequences**

Construction activities associated with bridge construction for both build alternatives could result in the direct loss of active swallow nests. Loss of a nest could in turn result in the death of adults, young, or eggs. This would violate CFGC Section 3503 and the MBTA.

**Potential Disturbance to Nesting Swallows Resulting from Construction**

Construction activities associated with bridge construction under both build alternatives could result in the direct loss of active swallow nests.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on nesting swallows.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of the measure below to prevent swallows from nesting adjacent to new bridge construction will reduce the project’s effect on swallow nests, eggs, or young.
Prevent Swallows from Nesting Adjacent to New Bridge Construction

To avoid adverse effects on nesting swallows and other bridge-nesting migratory birds that are protected under the MBTA and CFGC, the following measures will be implemented.

- If bridge construction will take place during the breeding season (generally between February 15 and August 31), a qualified wildlife biologist will be retained to inspect all bridges during the swallows’ non-breeding season (August 16 through February 14). If nests are found and are abandoned, they may be removed. To avoid damaging active nests adjacent to new bridge construction, nests must be removed before the breeding season begins (February 15).

- After nests are removed, the undersides of the bridges will be covered with 0.5- to 0.75-inch mesh net or poultry wire. All net installation will occur before February 15. The netting will be anchored so that swallows cannot attach their nests to the bridge through gaps in the net. Netting will be monitored during construction.

- An option to netting is to daily remove any newly constructed nests until the start of construction and continue monitoring during construction.

- If netting of the bridges does not occur by February 15 and swallows colonize the bridge, modifications to this structure should not begin before August 31 of that year or until a qualified biologist has determined that the young have fledged and all nest use has been completed.

If appropriate steps are taken to prevent swallows from constructing new nests, work can proceed at any time of the year.

3.3.4.9 Roosting Bats

Two species of special concern and three Working Bat Group priority bat species have potential to occur in the study area: pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), and Yuma myotis (*Myotis yumanensis*). Both pallid bats and Yuma myotis use bridges over perennial waterways or in or near open agricultural or grassland areas. Western red bats could occur in riparian woodland and orchards. All five bat species use trees for roosting. These areas provide abundant roosts as well as a source of insects, the primary food source for bats.

Affected Environment

At the time of the 2007, 2008, and 2009 field surveys, no evidence of bat presence (guano, urine staining, odor, or vocalizations) was observed on portions of the undersides of the existing bridges over creeks in the study area. However, the undersides of the bridge decks contained expansion joints that could provide roosting sites for bats. This habitat would not support a maternal roost but could support a small number of day- or night-roosting bats. In addition to bridges, trees throughout the study area provide suitable roost sites.

Environmental Consequences

Potential bat roosting areas occur in portions of the existing bridges and more mature trees in riparian woodland on Dan Wilson, American Canyon, Jameson Canyon, Green Valley, Suisun, and Ledgewood Creeks that could be directly disturbed during new bridge construction. No
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bridge roosting habitat would be permanently removed. Noise disturbances associated with new bridge construction and pile driving could disturb day-roosting bats if they are present in the bridge during construction. However, these disturbances would be temporary and would not result in the death of a large number of bats. Both build alternatives could remove bat roosting habitat in trees, with the potential to adversely affect roosting bats.

**Potential Disturbance to Roosting Bats Resulting from Construction**

Both build alternatives have the potential to disturb roosting bats. Construction noise during bridge construction could disturb day-roosting bats under bridges. Tree-roosting bats could be adversely affected under all build alternatives by the removal of mature trees in the construction area. Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on roosting bats.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of the measure below to conduct preconstruction surveys for bats will reduce the project’s effects on roosting bats.

**Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures**

The following measure will be incorporated in the project construction conditions to minimize direct impacts on roosting bats.

Bat species with potential to occur in the project area employ varied roost strategies, from solitary roosting in the foliage of trees to colonial roosting in trees. Daily and seasonal variations in habitat use are common. To obtain the highest likelihood of detection, preconstruction bat surveys will include these components.

- Identification of potential roosting habitat within project area prior to construction.
- Daytime search for bats and bat signs in and around identified habitat.
- Evening emergence surveys at potential day-roost sites, using night-vision goggles and/or active full-spectrum acoustic monitoring where species identification is sought.
- Passive full-spectrum acoustic monitoring and analysis to detect bat use of the area from dusk to dawn over multiple nights.
- Additional on-site night surveys as needed following passive acoustic detection of special status bats to determine nature of bat use of the structure in question (e.g., use of structure as night roost between foraging bouts).
- Qualified biologists will have knowledge of the natural history of the species that could occur in the project area and experience using full-spectrum acoustic equipment. During surveys, biologists will avoid unnecessary disturbance of occupied roosts.

**Bridges and Other Structures**

Before work begins on the bridge/structure, qualified biologists will conduct a daytime search for bat sign and evening emergence surveys to determine if the bridge/structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use naked
eye, binoculars, and a high-powered spotlight to inspect expansion joints, weep holes, and other bridge features that could house bats. Bridge surfaces and the ground around the bridge/structure will be surveyed for bat sign, such as guano, staining, and prey remains.

Evening emergence surveys will consist of at least one biologist stationed on each side of the bridge/structure watching for emerging bats from a half hour before sunset to 1-2 hours after sunset for a minimum of two nights within the season that construction will be taking place. Night-vision goggles and/or full-spectrum acoustic detectors shall be used during emergence surveys to assist in species identification. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted).

Additionally, passive monitoring with full-spectrum bat detectors will be used to assist in determining species present. A minimum of four nights of acoustic monitoring surveys will be conducted within the season that the construction will be taking place. If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and prepare a report with the results of the surveys. If acoustic data suggest that bats may be using the bridge/structure as a night roost, biologists will conduct a night survey from 1-2 hours past sunset up to 6 hours past sunset to determine if the bridge is serving as a colonial night roost.

If suitable roost structures would be removed, additional surveys may be required to determine how the structure is used by bats. Whether it is as a night roost, maternity roosts, migration stopover, or for hibernation.

**Trees**

If tree removal or trimming is necessary, qualified biologists will examine trees to be removed or trimmed for suitable bat roosting habitat. High-quality habitat features (large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch, etc.) will be identified and the area around these features searched for bats and bat sign (guano, culled insect parts, staining, etc.). Riparian woodland, orchards, and stands of mature broadleaf trees should be considered potential habitat for solitary foliage roosting bat species.

If bat sign is detected, biologists will conduct evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1-2 hours after sunset for a minimum of two nights within the season that construction will be taking place. Methodology should follow that described above for the bridge emergence survey.

Additionally, if suitable tree roosting habitat is present, acoustic monitoring with a bat detector will be used to assist in determining species present. These surveys will be conducted in coordination with the acoustic monitoring conducted for the bridge/structure.

Avoidance and minimization measures may be necessary if it is determined that bats are using trees as roost sites and/or sensitive bats species are detected during acoustic monitoring.
Appropriate measures will be determined in coordination with DFG and may include measures listed below.

- Tree removal will be avoided between April 15 and September 15 (the maternity period) to avoid impacts on pregnant females and active maternity roosts (whether colonial or solitary).
- All tree removal will be conducted between September 15 and October 30, which corresponds to a time period when bats have not yet entered torpor or would be caring for non-volant young.
- Trees will be removed in pieces, rather than felling the entire tree.
- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined the roost is no longer active.

If avoidance of non-maternity roost trees is not possible, and tree removal or trimming must occur between October 30 and September 15, qualified biologists will monitor tree trimming/removal. Prior to removal/trimming, each tree will be gently shaken and several minutes should pass before felling trees or trimming limbs to allow bats time to arouse and leave the tree. The 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 DFG.

**Avoid Disturbance of Roosting Bats**

Avoidance and minimization measures may be necessary if it is determined that bats are using the bridge/structure or trees as roost sites and/or sensitive bats species are detected during acoustic monitoring. Appropriate measures will be determined in coordination with DFG and may include measures listed below.

- Disturbance of the bridge will be avoided between April 15 and September 15 (the maternity period) to avoid impacts on reproductively active females and dependent young.
- Installation of exclusion devices from March 1 through April 14 or September 15 through October 30 to preclude bats from occupying the bridge during construction. Exclusionary devices will only be installed by or under the supervision of an experienced bat biologist.
- Tree removal will be avoided between April 15 and September 15 (the maternity period) to avoid impacts on pregnant females and active maternity roosts (whether colonial or solitary).
- All tree removal will be conducted between September 15 and October 30, which corresponds to a time period when bats have not yet entered torpor or would be caring for non-volant young.
- Trees will be removed in pieces, rather than felling the entire tree.
- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined the roost is no longer active.

If avoidance of non-maternity roost trees is not possible, and tree removal or trimming must occur between October 30 and September 15, qualified biologists will monitor tree trimming/removal. Prior to removal/trimming, each tree will be gently shaken and several minutes should pass before felling trees or trimming limbs to allow bats time to arouse and leave the tree.
leave the tree. The 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 DFG.

3.3.4.10 River Lamprey

Affected Environment
River lamprey (*Lampetra ayresi*), a state species of special concern, could occur in the study area in any of the drainages, although the occurrence of river lamprey has not been explicitly documented. The study area falls within the species’ distribution and environmental conditions generally support their habitat requirements. While it appears that the creeks in the study area do not support spawning or rearing habitat for river lamprey, these creek segments at a minimum support migration habitat for both adult and juvenile river lamprey. Juvenile lampreys (ammocoetes) rear in the silt and sand of backwater areas. None of the creeks in the study area have backwater habitat in the immediate vicinity of the impact areas: Green Valley and Ledgewood Creeks have concrete-lined channels and Suisun Creek has high-velocity water and gravel in the construction area. This is unsuitable rearing habitat for ammocoetes.

Environmental Consequences

Potential Effects on River Lamprey Resulting from Construction

Construction of either build alternative could affect water quality, substrate conditions, channel morphology, water temperature, and river lamprey movement in streams that provide habitat for river lamprey. In addition, all build alternatives could result in disturbance and direct injury to river lamprey. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek, and would have potential impacts only on Green Valley and Ledgewood Creeks. Under the No-Build Alternative, no construction activities would occur, and no impacts on river lamprey or its habitat would occur.

Water Quality

The assessment of water quality addresses the effects of both sediment and contaminants on river lamprey and their habitat. Activities associated with bridge removal and reconstruction, highway improvements, and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality; reduce feeding opportunities for fish, including rearing lamprey; and cause fish to avoid important habitat. Contaminants include toxic substances such as metals, petroleum products, pesticides, fertilizers, sewage, and uncharacteristically high sediment loading. Construction materials such as concrete, sealants, oil, and paint could adversely affect water quality if accidental spills occurred during project construction. Increased pollutant concentrations could limit fish production, abundance, and distribution by direct mortality of fish or their prey.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and avoidance, minimization, and/or mitigation measures listed below that would prevent
contaminants from entering streams and restrict the construction time frame for in-water work would address this impact.

**Habitat and Channel Morphology**

Construction activities associated with the project alternatives that would affect fish habitat include stream dewatering, removal of existing bridge structures, placement of new bridge abutments, and activities related to revegetation. Bridge replacement and bank stabilization activities would require removal of vegetation, resulting in temporary loss of vegetative cover and reducing fish habitat complexity. Construction activities, such as heavy equipment use, could also change the channel morphology by damaging or compacting the streambed substrate.

Riparian vegetation, including shaded riverine aquatic (SRA) cover, is an essential component of fish habitat. Undercut banks and overhead SRA cover, such as canopy cover and overhanging vegetation, provide fish with protection from predators, maintain shade necessary to reduce thermal input, and provide nutrients to the stream in the form of fallen leaves and insects. Riparian vegetation is also important in maintaining undercut banks and controlling streambank erosion, thereby contributing to instream structural diversity. Bridge construction would remove vegetation and SRA cover. However, the amount of vegetation removal is relatively minor, and revegetation would mitigate any long-term adverse effects related to its removal.

Construction activities in the streambeds could also change channel morphology and cause migration habitat to be degraded. However, the channels would be restored to preproject conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks, and no permanent changes to channel morphology are expected.

Implementation of measures listed below to minimize impacts on creek channels would avoid or minimize the potential for adverse effects.

**Water Temperature**

As a result of the lack of specific information regarding the habitat requirements of river lamprey, especially the ammocoete (juvenile lamprey) rearing stage, it is unknown whether existing water temperatures in the study area are suitable for ammocoete rearing. Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction, survival, and migration.

Water temperature is controlled primarily by flow, weather, stream width, stream depth, and shading of the stream surface. The proposed project would affect shade provided by riparian vegetation, however the amount of shade that would be affected by vegetation removal is relatively minor. Revegetation that is proposed in disturbed areas, combined with the shading provided by the bridge extension, is expected to maintain existing shade conditions in the study area.

Based on an evaluation conducted during the field visit, the proposed project would affect a relatively minimal amount of SRA cover and would not affect the low-flow channel geometry that could affect residence time, depth, or area of water exposed to solar radiation. From the perspective of water temperature, the temporary reduction in stream shading from removal of SRA cover vegetation would not result in any measurable increase in water temperature.
Furthermore, the loss of shade would be offset over time by the increased shading provided by the new bridges at Suisun and Ledgewood Creeks and the replacement and reestablishment of riparian vegetation in the affected areas. Implementation of the proposed project is not expected to affect creek shading and water temperature, therefore the project would not adversely affect river lamprey or its habitat.

Implementation of measures listed below to minimize impacts on creek channels would further reduce the project’s effect on river lamprey or river lamprey habitat.

**Interference with Movement**

Construction activities associated with the project alternatives would require temporary redirection of the flow of water through the use of cofferdams and pipelines. These devices could block the migration of adult and juvenile river lamprey. However, construction activities would be avoided during the primary migration time of river lamprey (i.e., fall, winter, and spring). Furthermore, maintenance of fish passage conditions through the construction site during stream dewatering activities would further reduce the potential for impacts on fish movement. The pipeline would be checked every few hours (or more often, if necessary) to clear debris buildup that may occur during construction. Therefore, temporary stream diversions associated with construction are not likely to adversely affect migrating river lamprey.

Implementation of measures listed below to restrict the timing of in-water work and to maintain a migration corridor in the study area creek channels would minimize or avoid any adverse effects on fish movement.

**Disturbance and Direct Injury**

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating in or adjacent to the water body. However, survival may be altered if disturbance causes fish to leave protective habitat (increasing exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. Injury and mortality may result from direct and indirect contact with humans and machinery, sound pressure, and physiological stress.

Physical disturbance and injury are most likely to occur during in-water work. Project actions that involve in-water work include removing and disturbing aquatic vegetation, removing sediment and debris from the stream channel, and removing the current bridge structures. Project actions that cause no direct harm but may temporarily disturb fish include movement of construction equipment and personnel, lighting, removal and disturbance of riparian vegetation, and grading and construction of access roads and staging areas adjacent to the stream.

Short-term noise disturbance caused by pile driving would occur during construction. Pile driving and blasting can generate intense sound pressure that can injure or kill fish. The effects on fish can range from avoidance to direct mortality, depending on the species, life stage, and
intensity of the pressure waves. Factors that influence the intensity of pressure waves include the proximity to the source, the maximum force generated, the rate at which the maximum force is generated, and characteristics of the medium (i.e., water and substrate) through which the waves travel. It is unknown how lamprey react to pile driving, but it is expected ammocoetes would move out of the disturbed area.

During in-channel construction activities, some harassment or delay of migrating adults or juveniles may occur because of noise, artificial light, and other disturbances. However, these disturbances are not expected to be of sufficient extent, duration, or intensity to affect survival, growth, or spawning success.

Implementation of the measures listed below to restrict the timing of in-water work, to provide alternate migration corridors through creek channels, and to minimize noise impacts would reduce the project’s effect on river lamprey.

**Potential Effects on River Lamprey Associated with Operations**

**Water Quality**

Both build alternatives will result in increased impervious surfaces. The fundable first phases of the alternatives have smaller footprints than the full build alternatives and, therefore, would result in lesser impacts. The Green Valley Creek crossing under Alternative C is slightly smaller than that of Alternative B and, therefore, Alternative C would result in a lesser effect. Under the No-Build Alternative, no additional impervious surfaces would be constructed and therefore there would be no potential effect on water quality from operations.

The increase in new impervious surfaces combined with runoff from petroleum products and other contaminants from automobiles potentially would result in an increase of contaminated runoff. The potential for impacts would likely be greatest during the initial winter storm event, or “first flush,” when pollutant constituents would be concentrated.

Although the creeks in the study area are believed to have no spawning or rearing habitat for river lamprey, pollutants entering the creeks could adversely affect migration of river lamprey.

Most of the discharges from the proposed project would occur in winter and spring, when dilution would greatly limit the amount of nutrient and pollutant constituent loading in the creeks. However, this effect on river lamprey is considered potentially adverse because of the potential for direct effects associated with the “first flush.”

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed below to prevent contaminants from entering the stream channel would minimize this effect.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of the measures below would avoid and minimize impacts to river lamprey related to water quality, habitat and channel morphology, interference with movement and disturbance.
Prevent Contaminants and Hazardous Materials from Entering the Stream Channel

A SWPPP will be implemented as part of the NPDES Construction General Permit and General Construction Activity Storm Water Permit to minimize the potential for sediment input to the aquatic system. A toxic materials control and spill response plan will be developed and implemented to regulate the use of hazardous materials, such as the petroleum-based products used as fuel and lubricants for equipment and other potentially toxic materials associated with project construction. In addition, the following measures will be implemented.

- Falsework will be installed to keep bridge debris and construction and maintenance materials from falling into streams during demolition, construction, and substantial maintenance activities.
- When concrete is poured to construct bridge footings or other infrastructure in areas of flowing water, work must be conducted to prevent contact of wet concrete with water (e.g., within a cofferdam).

Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons

In-channel construction, including riverbank and channel-bed construction below the OHWM, will be limited to the summer low-precipitation period (June 1–October 15) to reduce the likelihood of adverse effects on rearing juvenile salmonids and on adult fish spawning and migration, unless otherwise approved by appropriate resource agencies.

Minimize Impacts on Creek Channels

The following measures will be implemented to decrease impacts on the creek channel and habitat. Please also see the avoidance and minimization efforts in Section 3.3.2.1 “Perennial Drainage.”

- The duration and extent of in-water activities will be limited to the maximum extent practicable.
- The minimum amount of wood, sediment, gravel, and other natural debris will be removed to maintain and protect bridge function, ensure suitable fish passage conditions, and minimize disturbance of the streambed.
- Immediately upon completion of in-channel work, temporary fills (as needed), cofferdams, and other in-channel structures will be removed in a manner that minimizes disturbance to downstream flows and water quality.
- Streamflow through the widened portion of the bridges must meet the velocity, depth, and other passage criteria for salmonids as described by NOAA’s NMFS and the CDFG—or as developed in cooperation with NOAA’s NMFS and the CDFG—to accommodate site-specific conditions.
- All creek channels will be restored to preconstruction conditions or better, to the maximum extent feasible.
Provide Alternate Migration Corridor through Creek Channels

In-water construction activities will provide a migratory route through the creek channel by installing cofferdams in all creeks around the new footing excavations. Pipelines may be installed at Green Valley and Suisun Creeks to ensure fish passage through the project areas.

The pipeline in Green Valley and Suisun Creeks will be a corrugated steel pipe, approximately 24 to 36 inches in diameter, allowing passage of various sizes of fish. The pipe will span the width of the bridge plus ten feet on either side. It will be laid down in the channel so that all water passes through the pipeline, and it will be removed as soon as possible after construction. If flows exceed the capacity of the steel pipe, an additional or larger-diameter pipe will be installed to convey the increased flow. Subject to the sufficiency of ambient conditions in upstream and downstream stream reaches unaffected by project construction, adequate fish passage conditions will be sustained by maintaining contiguous flows, avoiding the creation of vertical drops in excess of six inches, and maintaining suitable water velocities (i.e., eight feet per second or less) and water depths (minimum of one foot).

Cofferdams will affect no more of the stream channel than is necessary to support completion of the construction activity. Flow will be diverted the minimum distance necessary to isolate the construction area. Water will be released downstream at an appropriate rate to maintain downstream flows at all times.

Retain a Fish Biologist During Instream Construction

Because special-status fish might be present and subject to potential injury or mortality from construction activities, a qualified biologist will conduct preconstruction surveys of the project area to determine whether such species are present or likely to be present near the project site. When special-status fish are present and could be affected by construction activities, the project biologist will identify appropriate methods to capture, handle, exclude, and relocate those individuals. All fish exclusion and salvage activities will adhere to accepted NMFS and CDFG protocols.

Minimize Noise Impacts on Special-Status Fish Species

Potential injury and mortality associated with pile driving will be avoided or minimized by implementing the following measures.

- Vibratory hammers will be used whenever feasible.
- The smallest pile driver and minimum force necessary will be used to complete the work.

3.3.4.11 Fall-/Late Fall–Run Chinook Salmon

Affected Environment

The Central Valley fall-/late fall–run evolutionarily significant unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) is a federal species of special concern and a commercial species. Only fall-run Chinook salmon are likely to occur in the study area streams (late fall–run Chinook salmon spawn and rear primarily in the Sacramento River drainage). Fall-run Chinook salmon
have been documented as occurring upstream of the study area (National Marine Fisheries Service 2006). For example, redds (nests) have been observed upstream of I-80 near Mangels Boulevard in Green Valley Creek; in Suisun Creek the upper limit of the Chinook salmon run extends to the Napa/Sonoma County line, more than six miles upstream of I-80. Chinook salmon have also been observed in Ledgewood Creek upstream of I-80. There is a potential spawning gravel patch in Suisun Creek about 20 feet downstream of the existing bridge. Spawning habitat is not supported in Green Valley and Ledgewood Creeks in the study area; however, both creeks support migration habitat for fall-run Chinook salmon. It is unlikely that Chinook salmon occur in Dan Wilson, American Canyon, or Jameson Canyon Creeks because these drainages are relatively small and dry and do not appear to support habitat conditions necessary for migration and spawning of fall-run Chinook salmon.

Fall-run Chinook salmon, a commercially valuable species, is managed under the Magnuson-Stevens Fishery Conservation and Management Act. This act requires that all federal agencies consult with NOAA’s NMFS on all proposed projects that may adversely affect Essential Fish Habitat (EFH). EFH is the aquatic habitat (water and substrate) necessary for fish to spawn, breed, feed, or grow to maturity (National Marine Fisheries Service 1998) that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. Because Chinook salmon is managed by NMFS and the species occurs in the study area streams, these streams are considered EFH for Chinook salmon.

Existing conditions for fish passage were examined in a Fish Passage Report prepared for this project. Existing conditions at Suisun Creek do not pose any barriers to fish movement. Under existing conditions the creek crossing (culvert) at Ledgewood Creek presents an impediment to adult fish passage due to shallow water in the notched culvert when flows are low. Under existing conditions, shallow water depths and sedimentation create unfavorable passage conditions at Green Valley Creek. The existing channel is concrete-lined and includes a low flow channel. However, deposited sediment has reduced the efficacy of this feature.

**Environmental Consequences**

**Potential Effects on Chinook Salmon Resulting from Construction**

Construction of either build alternative could affect water quality, channel morphology, water temperature, and Chinook salmon movement in streams that provide habitat for Chinook salmon. In addition, both build alternatives could result in disturbance and direct injury to Chinook salmon. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek, and would have potential impacts only on Green Valley and Ledgewood Creeks. Under the No-Build Alternative, no construction activities would occur, and no impacts on Chinook salmon or its habitat would occur as a result of construction activities. However, because creek crossings would not be replaced beneficial impacts from the replacement of existing bridges with clear span structures and improvement of fish passage conditions would not occur.
Water Quality
As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Green Valley, Suisun, and Ledgewood Creeks from construction activities and equipment. These water quality effects could increase Chinook salmon mortality; reduce feeding opportunities, including for rearing juveniles; and cause Chinook salmon to avoid important habitat. Increased pollutant concentrations could limit Chinook salmon production, abundance, and distribution by direct mortality of eggs, fry, and juveniles or by reducing availability of prey for juvenile Chinook salmon.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed in Section 3.3.4.10 to prevent contaminants from entering streams and to restrict in-water work to avoid spawning seasons would address this effect.

Habitat and Channel Morphology
As described above in Section 3.3.4.10, project construction activities would affect fish habitat (e.g., through vegetation removal) and could also change channel morphology by disturbing the streambed substrate. However, revegetation would mitigate the minor loss of vegetation and SRA cover, and the channel beds would be restored to a natural substrate wherever possible.

At Green Valley Creek, all existing bridges would be replaced with clear span structures under Alternative B, Alternative B, Phase 1, and Alternative C. Under Alternative C, Phase 1, the westbound off-ramp bridge would be replaced with a clear span bridge and the channel restored to a natural substrate, but the eastbound bridges would not be replaced. At Suisun Creek, the existing overcrossings would be replaced with freespan structures and the substrate restored to natural conditions under both full build alternatives. No construction would occur at Suisun Creek under Phase 1 for either alternative.

At Ledgewood Creek, the culvert would be widened under Alternative B and Alternative C, and Alternative C, Phase 1. Under all three alternatives, existing habitat and channel conditions would persist with the widened culvert. However, though fish passage impediments on Ledgewood Creek would be addressed with the implementation of the culvert retrofit described in the Avoidance, Minimization and/or Mitigation section below. No construction would occur at Ledgewood Creek under Alternative B, Phase 1.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would address this impact.

Water Temperature
Under existing conditions, habitat for juvenile Chinook salmon rearing in the study area is marginal to unsuitable. Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction, survival, and migration. This is especially true for Chinook salmon, which have relatively narrow temperature requirements for carrying out their life history. Any increase in water temperatures could further reduce the suitability of habitat in the study area for Chinook salmon.
As described above in Section 3.3.4.10, the project alternatives would have a minor effect on SRA cover. Revegetation proposed in disturbed areas, combined with the shading provided by the bridge extension, would be expected to offset shade loss and result in maintaining existing water temperatures in the study area. Therefore, the project alternatives would not adversely affect growth, reproduction, survival, or migration of Chinook salmon with respect to water temperature.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would reduce water temperature effects as a result of the project.

**Interference with Movement**
As described above in Section 3.3.4.10, construction activities associated with the project alternatives would require the use of cofferdams and pipelines, which could interfere with the migration of adult and juvenile Chinook salmon. However, the timing of construction activities and maintenance of fish passage through the construction site during stream dewatering activities would reduce the potential for impacts on fish movement. Therefore, temporary stream diversions associated with construction are not likely to adversely affect juvenile Chinook salmon.

Implementation of the measures listed in Section 3.3.4.10 to restrict the timing of in-water work and to maintain a migration corridor in the study area creek channels would minimize or avoid any adverse effects on fish movement.

**Disturbance to Potential Spawning Habitat**
A potential spawning gravel bed was observed in Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction. It is anticipated that the gravel bed would not be disturbed by the project alternatives. All construction equipment would access the construction site from the existing bridge and road. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions using, to the extent practicable, gravel removed from the site. No spawning habitat was observed on Ledgewood Creek or Green Valley Creek in the project area (the channel bottom at these two locations is concrete lined).

Alternatives B and C both include construction on Suisun Creek and therefore could disturb potential spawning habitat for Chinook salmon. Because no construction is proposed on Suisun Creek under the fundable first phase of either alternative or under the No-Build Alternative, there would be no effect on spawning habitat under these alternatives.

Implementation of measures listed below to avoid potential spawning habitat and measures in 3.3.4.10 to minimize impacts on creek channels would address this impact.

**Disturbance and Direct Injury**
As described above in Section 3.3.4.10, noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. Under Alternative B, short-term noise disturbance caused by pile driving would occur within Ledgewood Creek.
Potential direct effects of pile-driving activities include increased noise and turbidity. Researchers have suggested that salmonids can hear pile-driving noise approximately 2,000 feet from the source (Feist et al. 1992). Feist et al. (1992) observed that pile driving altered the distribution and behavior of juvenile pink and chum salmon. The potential impact on salmonids from pile-driving activities depends on the distance separating the noise-generating activity from fish and the duration of these activities. Evidence suggests that, although pile-driving noise may affect the distribution and behavior of juvenile pink and chum salmon, no significant changes occurred in their overall abundance (Feist et al. 1992).

Implementation of measures in Section 3.3.4.10 to restrict in-water work to avoid spawning seasons and to minimize noise impacts on fish would address this impact.

**Potential Water Quality Effects on Chinook Salmon Associated with Operations**

**Water Quality**
As described above in Section 3.3.4.10, both build alternatives except the No-Build Alternative would result in increased impervious surfaces and potential for contaminated runoff. The potential increase in contaminated runoff entering the creeks could adversely affect Chinook salmon that use the creeks for migration, spawning, and rearing. Pollutants could also cause mortality to, and reduced growth of, the egg, larval, and juvenile life stages of Chinook salmon.

Implementation of the measure in Section 3.2.3 to prepare and implement a SWPPP and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would address this impact.

**Potential Interference with Movement**
Current conditions in Ledgewood Creek under SR 12E are such that fish movement could be impeded by low water levels. Shallow water in the existing notched box culvert may create unfavorable passage conditions for adults. Results from modeling conducted for the fish passage assessment indicate that the proposed extension of the culvert under SR 12E would exacerbate existing shallow water conditions during the migration season and would worsen fish passage conditions relative to current conditions. Bridge widening would occur under both build alternatives. Implementation of measures discussed below to address shallow water depths by improving the channel downstream of the culvert would improve postproject fish passage conditions at Ledgewood Creek.

Under the No-Build Alternative, no construction would take place and the current conditions would remain. The impediment to fish movement would remain and no measures to improve conditions would be implemented.

**Avoidance, Minimization, and/or Mitigation Measures**
Implementation of the Water Pollution Control Standard Specification measures pertaining to water pollution control programs (SS 13-2), stormwater pollution prevention plans (SS 13-2), and measures in Section 3.3.4.10 to restrict in water work, minimize impacts on creek channels, provide alternate migration corridors, retain a biologist for instream construction, and minimize noise impacts and the measures below would avoid and minimize effects on Chinook salmon.
related to water quality, habitat and channel morphology, interference with movement and disturbance.

Avoid Potential Fish Spawning Habitat

In-water construction activities will avoid disturbance of the spawning gravel bed immediately downstream of the existing bridge on Suisun Creek. If the gravel cannot be avoided, the gravel will be removed temporarily and replaced to preconstruction conditions, using—to the extent practicable—gravel removed from the site. If imported gravel is used, only washed river rock ranging in size from 0.25- to 4.0-inches will be used (i.e., angular rock or unwashed gravel will not be used).

Implement Culvert Retrofit at the SR 12E Crossing on Ledgewood Creek

Because the proposed culvert design would maintain the existing culvert dimensions (width and slope) to address existing shallow water depths at low flows, it is recommended that the culvert invert be modified to concentrate low flows to increase water depths when flows are low (i.e., less than 20 cfs). In accordance with Article 3.5 Chapter 1 of Division 1 of the Streets and Highways Code, Caltrans will implement the following alternatives to be discussed with CDFG to remediate fish passage barriers:

- **Low-Flow Walls.** Low-flow walls running parallel to the long axis of the culvert and straddling the low-point of the culvert mid-line could be installed to help confine the width of low flows and increase water depths.

- **The walls could be configured at the inlet such that it directs and concentrates low flows to the mid-line of the culvert between the walls and be constructed of concrete.** The height of the walls and the distance separating the left and right walls would be determined based on hydraulic analyses to achieve minimum water depths of one foot. It is further recommended that once the dimensions of the low-flow walls are determined, a hydraulic analysis be performed to confirm that the low-flow walls do not compromise the culvert’s ability to safely pass flows with a 1% exceedance.

- **Offset (Washington) Baffles.** As an alternative to or in conjunction with low-flow walls, offset (Washington) baffles can be utilized to further increase minimum water depths while providing resting habitat for migrating fish. As described above for low-flow walls, offset baffles could be constructed out of concrete. Several different offset baffle configurations used in combination with or without low-flow walls are possible; the precise configuration would be determined based on hydraulic analyses and subject to evaluations to determine effects on safely passing flows with a 1% exceedance. While offset baffles have the added benefit of creating resting habitat for fish (especially during higher flows), they also have greater potential to trap debris which can render them impassable in extreme circumstances.

3.3.4.12 Sacramento Splittail

**Affected Environment**

Sacramento splittail (*Pogonichthys macrolepidotus*), a state species of special concern, is present in Suisun Marsh and its associated sloughs, including Peytonia Slough (Schroeter et al. 2006).
Due to the connection of Ledgewood Creek with Peytonia Slough downstream of the project area, water quality impacts could affect Sacramento splittail occurring in Peytonia Slough.

**Environmental Consequences**

**Potential Water Quality Effects on Sacramento Splittail Resulting from Construction**

Both build alternatives have the potential to affect water quality in Ledgewood Creek. Alternative B could have a greater effect than the other alternatives because it includes construction of a second, new bridge to the south. Under Alternative C and the fundable first phase of both alternatives, only the existing culvert would be widened. Under the No-Build Alternative, no construction activities would occur, and no impacts on Sacramento splittail or its habitat would occur.

As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Ledgewood Creek from construction equipment. These water quality effects could increase Sacramento splittail mortality; reduce feeding opportunities, including those for rearing splittail; and cause splittail to avoid important habitat. Increased pollutant concentrations could limit Sacramento splittail reproduction, abundance, and distribution by direct mortality of splittail or their prey.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and avoidance, minimization, and/or mitigation measures in Section 3.3.4.10 to prevent contaminants from entering streams would address this impact.

**Potential Water Quality Effects on Sacramento Splittail Associated with Operations**

As described above in Section 3.3.4.10, water quality effects could result from construction of new bridges and increased impervious surfaces at Ledgewood Creek. Pollutants entering Ledgewood Creek and carried downstream could cause mortality to and reduced growth of the egg, larval, and juvenile life stages of Sacramento splittail. As mentioned above, implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would minimize this effect.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of the Water Pollution Control Standard Specification measures pertaining to water pollution control programs (SS 13-2), stormwater pollution prevention plans (SS 13-2), and measures in Section 3.3.4.10 to prevent contaminants from entering streams would avoid and minimize effects on Sacramento splittail related to water quality.

**3.3.5 Threatened and Endangered Species**

This section addresses species listed or eligible for listing as threatened or endangered. Tables 3.3.3-1 and 3.3.4-1 list the threatened and endangered plant and animal species, respectively,
with potential to occur in the study area. CNDDB occurrences are shown in Figures 3.3-3a and 3.3-3b. The USFWS list of federally listed species for the study area is provided in Appendix F.

Based on early coordination with USFWS it was determined that there is potential for a “may affect” determination for the following federally listed species:

- Contra Costa goldfields (*Lasthenia conjugens*), and critical habitat,
- Showy Indian clover (*Trifolium amoenum*),
- Callippe silverspot butterfly (*Speyeria callippe callippe*),
- Vernal pool fairy shrimp (*Branchinecta lynchii*),
- Vernal pool tadpole shrimp (*Lepidurus packardi*),
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*),
- California tiger salamander (*Ambystoma tigrinum*), and
- California red-legged frog (*Rana draytonii*) and critical habitat.

The Department has made a "no effect" determination for the remaining federally species listed below based on the absence of suitable habitat or because the project is outside of the species range.

- Baker’s stickyseed (*Blennosperma bakeri*)
- Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*)
- Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*)
- Soft bird’s-beak (*Cordylanthus mollis* ssp. *mollis*)
- Colusa grass (*Neostapfia colusana*)
- Antioch Dunes evening–primrose (*Oenothera deltoides* ssp. *howellii*)
- San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)
- Keck’s checker-mallow (*Sidalcea keckii*)
- Solano grass (*Tuctoria mucronata*)
- Conservancy fairy shrimp (*Branchinecta conservatio*)
- Delta green ground beetle (*Elaphrus viridis*)
- Myrtle’s silverspot butterfly (*Speyeria zere ne myrtleae*)
- California freshwater shrimp (*Syncaris pacifica*)
- Alameda whipsnake (*Masticophis lateralis euryxanthus*)
- Giant garter snake (*Thamnophis gigas*)
- Western snowy plover (*Charadrius alexanderinus nivosus*)
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- California clapper rail (*Rallus longirostris obsoletus*)
- California least tern (*Sternula antillarum browni*)
- Northern spotted owl (*Strix occidentalis caurina*)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*)
- Green sturgeon (*Acipenser medirostris*)
- Tidewater goby (*Eucyclogobius newberyi*)
- Delta smelt (*Hypomesus transpacificus*)
- Coho salmon (*Oncorhynchus kisutch*)
- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*)

Two state listed species have potential or are known to occur in the study area, Swainson’s hawk (*Buteo swainsoni*) and CTS, both of which are included in this section. The proposed project would not result in take of either Swainson’s hawk or CTS.

One additional species with the potential to occur within the study area, salt-marsh harvest mouse (*Reithrodontomys raviventris*), was determined to be not present within the study area. Dr. Phil Leitner conducted a habitat assessment for salt-marsh harvest mouse (federally listed as endangered and a fully protected species) on August 31, 2007. The primary survey area was south of SR 12E between Ledgewood Creek and Suisun City. To assess the condition of adjoining habitat, he also inspected the area north of SR 12E that is within the project footprint, and areas to the south as far as Cordelia Road. Dr. Leitner concluded, in a letter sent to Stephanie Myers of ICF Jones & Stokes on September 2, 2007, that there is no suitable salt-marsh harvest mouse habitat within the project footprint. The area did support this species more than 20 years ago, but land use changes appear to have significantly reduced and degraded the pickleweed habitat. The small patches of pickleweed that remain do not have the structure and density required by salt-marsh harvest mouse. USFWS further stated in their April 10, 2012 BO that although there are records of the salt marsh harvest mouse from the pickleweed habitat in the Gentry Suisun wetlands which is adjacent to the portion of the project along SR 12E, that the species would not be adversely affected because the Department proposed retaining wall which will avoid any intrusion into the adjacent wetlands.

A Biological Assessment addressing central California coast steelhead (*Oncorhynchus mykiss*) was submitted to NOAA’s NMFS in December 2010. A letter of concurrence was issued January 14, 2011 by NOAA’s NMFS concurring with the finding that the project is not likely to adversely affect central California coast steelhead.

Impacts on habitat for each sensitive wildlife species and fish are tabulated for each project alternative in Table 3.3.4-2.

During preparation of this document, the Department and ICF coordinated with the following federal and state agencies.
March 20, 2008: Ms. Myers contacted USFWS biologist Peter Johnsen to initiate coordination concerning the potential for effects on federally listed species in the project vicinity. Mr. Johnsen requested a project description and stated that he would be our contact for Section 7 coordination and consultation. Ms. Myers emailed him a copy of the project description on March 25, 2008.

November 19, 2009: Ms. Webber, Ms. Myers, and Ms. Ashkar from ICF met with Department biologist, Mr. Hashemi and USFWS biologist John Cleckler to review the interchange project, discuss our approach to analysis for the BA, and discuss listed species issues including but not limited to CRLF, its critical habitat, and callippe silverspot butterfly.

March 26, 2010: ICF obtained a species list from the USFWS website of all federally proposed and listed endangered and threatened species and critical habitat that could occur in the vicinity of the proposed project (Appendix F).

June 28, 2010: Meeting between the Department, STA, ICF, and FWS to discuss BA species effects and conservation measures.

July 15, 2010: An email from USFWS (Cleckler pers. comm.) summarized their review of the CRLF site assessment. Mr. Cleckler stated that USFWS would consider the project area north of I-80 to be potential aquatic and upland CRLF habitat and would likely limit the consideration of potential CRLF habitat on the south side of I-80 to where the project intersects Jameson Canyon Creek. He further noted that much of this area is within or adjacent to designated critical habitat (units SOL-2 and SOL-3). USFWS advises STA and the Department to incorporate frog-friendly undercrossings (not just hydrologically connected) in the design of the new road through the Mangels property to minimize the effects of road mortality and population fragmentation.

July 19, 2010: Field visit with Ms. Webber, Ms. Myers, Mr. Cleckler, and Sue Wickham with the Solano Land Trust to view possible mitigation and compensation lands on Solano Land Trust properties including Lynch Canyon and the Swett and King Ranches.

September 13, 2010: Email from USFWS (Cleckler pers. comm.) provided information and photographs of tunnels and directional fencing constructed in a new roadway in Livermore, California to allow California tiger salamander safe crossing. Mr. Cleckler recommended considering this application for CRLF crossings on the new roadway that will connect Red Top Road and Business Center Drive.

November 2009 through April 2011: Numerous email exchanges between ICF, Department, and USFWS biologists.

November 4, 2010: Ms. Webber, Ms. Myers, from ICF; Dale Dennis and Janet Adams with STA; Scott Steinwert with CirclePoint met with USFWS biologists John Cleckler and Chris Nagano to review the interchange project, discuss our approach to analysis for the BA, and discuss listed species issues including but not limited to Contra Costa goldfields, CTS, CRLF, its critical habitat, and callippe silverspot butterfly.

November 18, 2010: Field visit with Ms. Myers and Ms. Webber from ICF, Ahmad Hashemi from the Department, and John Cleckler and Chris Nagano from USFWS to view CTS and
Contra Costa goldfields project impact area south of SR 12E and callippe silverspot and CRLF critical habitat area near Business Center Drive and SR 12W.

April 2011: The Department submitted a Biological Assessment to USFWS on April 19, 2011.

April 2012: The Department received a final Biological Opinion on April 16, 2012

**Regulatory Setting**
The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NOAA’s 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 is a Biological Opinion or an Incidental Take statement. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (CDFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the CDFG. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.
Contra Costa goldfields (Lasthenia conjugens) is an annual herb in the sunflower family (Asteraceae). It can bloom from March to June but is usually at its peak bloom in the project region in late April and early May. Contra Costa goldfields inhabits neutral to alkaline or saline vernal pools and adjacent seasonally moist grassy areas at elevations below 1,500 feet. It is dependent on continuous, high soil-moisture content and appears to occupy deep pools that dry out later in the growing season, rather than very shallow, “flashy” pools (Ornduff 1966; Rajakaruna 2003). Saturated, low-salinity soils appear to provide optimum conditions for germination and growth of Contra Costa goldfields (Collinge et al. 2003). Contra Costa goldfields requires insect pollinators for reproduction. Ground-nesting solitary bees (Andrenidae) that nest in the uplands around vernal pools are important pollinators of the goldfields genus (Thorp and Leong 1998).

Contra Costa goldfields was federally listed as endangered on July 18, 1997 (62 FR 33029–33038). The USFWS designated final critical habitat for Contra Costa goldfields on February 10, 2006 (71 FR 7217–7266) (Figure 3.3-6). The designation of critical habitat requires federal agencies to consult with the USFWS regarding any action that could destroy or adversely modify critical habitat. This species is included in the 2005 recovery plan for vernal pool species (U.S. Fish and Wildlife Service 2005).

Contra Costa goldfields has no state listing status, but it is on CNPS List 1B.1 (rare, threatened, or endangered in California and elsewhere; seriously endangered in California—more than 80% of occurrences threatened/high degree and immediacy of threat). The primary threats to the species have been historical habitat loss, commercial and residential development, grazing, and competition from invasive nonnative plants (California Native Plant Society 2010).

Contra Costa goldfields is known historically from coastal valleys in central California (from Mendocino to Santa Barbara County) and from the western edge of the Sacramento Valley, north of Suisun Marsh. The CNNDDB lists 32 occurrences in Alameda, Contra Costa, Marin, Mendocino, Monterey, Napa, and Solano Counties (California Natural Diversity Database 2010a). The largest known concentration of Contra Costa goldfields is in Solano County in the City of Fairfield. Of the 32 total recorded occurrences, 12 are recorded in Solano County.

Affected Environment

Based on the 2005 surveys (Vollmar Consulting 2005), two stands of Contra Costa goldfields (29 plants) occur within seasonal wetland W-165 in the Alternative B footprint south of SR 12E on the west side of Pennsylvania Avenue as illustrated in Volume 2, Figure 3.3-2a (Sheet 33). The total area occupied by the plants in these three stands was less than 0.01 acre. Thirteen additional stands (Sheets 33 and 35) with a total of 420 plants, based on the 2005 survey results (Vollmar Consulting 2005), were mapped within several hundred feet of the Alternative B project area. Nine of the stands are within 250 feet of the project area; these supported 190 plants in 2005 (Vollmar Consulting 2005).

Four stands of Contra Costa goldfields occur within seasonal wetlands (W-165, W-171, and W-174) in the project footprint for Alternative C south of SR 12E, on the west and east sides of Pennsylvania Avenue as illustrated in Volume 2, Figure 3.3-2c (Sheet 33). Based on the 2005
surveys (Vollmar Consulting 2005), the two stands in W-165 west of Pennsylvania Avenue comprised a total of 29 plants, and the stands in W-171 and W-174 east of Pennsylvania Avenue each comprised a single plant. The total area occupied by the plants in these four stands was less than 0.01 acre. Eleven additional stands (Sheets 33 and 35) with a total of approximately 420 plants, based on the 2005 survey results (Vollmar Consulting 2005), were mapped within several hundred feet of the Alternative C project area. One of the stands, less than 100 feet from the project area, contained one plant in 2005 (Vollmar Consulting 2005). Three of the stands (totaling 116 plants) were within 250 feet of the temporary impact area.

The area south of SR 12E is fairly flat, with a gradual slope to the south, and the wetland depressions are shallow and difficult to discern. W-165, W-171, and W-174 are annual grassland habitats that are not located in depressions, but remain saturated during the wet season, providing suitable habitat for Contra Costa goldfields. Due to the lack of landscape depressions to hold the water, the seasonal saturation is likely due to a high water table or perching of rainwater and sheet flow over a shallow hardpan soil. A shallow roadside swale is located south of SR 12E and west of Pennsylvania Avenue at the base of the road prism. The hydrologic connection between this swale and the wetlands located south of the ROW fence line was assessed utilizing topographic surveys and an onsite qualitative evaluation. It is likely this roadside swale contributes flow directly into wetlands W-162 and W-163. These seasonal wetlands occur at the base of a berm that extends southwest of the swale. The swale may also contribute sheet flow to the annual grassland south of SR 12E in the area where the CCG were found. The SR 12E roadway has been assessed and sections of the road that drain to the south and contribute runoff into this roadside swale have been identified. No Contra Costa goldfields have been found within the Alternative B, Phase 1 or Alternative C, Phase 1 study areas.

Because Contra Costa goldfields is an annual plant, the numbers of plants that grow in an area can vary widely from year to year, depending on rainfall, disturbance regime, and other factors that affect seed germination and plant survival (U.S. Fish and Wildlife Service 2005). Although the stands of Contra Costa goldfields were not found in April 2009, the habitat remains suitable and the plants are assumed to be extant. The area has not been visibly disturbed since 2005, and the seed bank for Contra Costa goldfields would still be present in the area where the plants were observed in 2005. Below average rainfall and varied temperature patterns in 2008/2009 may have affected germination and growth of this species for spring 2009, causing the lack of mature plants during the 2009 surveys. For the purposes of this analysis, the extent of occupied habitat and numbers of plants are based on the 2005 data.

The area immediately south of SR 12E between Beck Avenue and Pennsylvania Avenue includes the northern edge of Vernal Pool Critical Habitat Unit 5B, which is designated for Contra Costa goldfields (71 FR 7217–7266).

Environmental Consequences

Loss or Disturbance of Contra Costa Goldfields Resulting from Construction

Impacts on Contra Costa goldfields could occur under either full build alternative. No Contra Costa goldfields occur within the temporary or permanent impact areas for Alternative B, Phase 1 or Alternative C, Phase 1.
Based on the 2005 and 2009 survey results, approximately 30 Contra Costa goldfields plants in a total area of less than 0.01 acre would be removed within the Alternative B and Alternative C footprints. Under Alternative B, this would occur south of SR 12E for construction of the Meyer Lane extension, the frontage road south of SR 12E and west of Pennsylvania Avenue, and widening of Pennsylvania Avenue south of SR 12E (Volume 2, Figure 3.3-2a, Sheets 32–33). Under Alternative C, impacts would occur south of SR 12E on either side of Pennsylvania Avenue for construction of the Pennsylvania Avenue interchange (Volume 2, Figure 3.3-2c, Sheet 33). Implementation of the measures to compensate for the loss of Contra Costa goldfields would reduce the severity of this impact under either alternative.

A total of 55.95 acres of critical habitat for Contra Costa goldfields would be permanently removed and approximately 14.02 acres of critical habitat would be temporarily disturbed with implementation of Alternative B. Of these totals, 6.22 acres of the permanent impact and 0.96 acre of the temporary impact would be within seasonal wetlands and alkali seasonal marsh, which are the Primary Constituent Elements (PCEs) of Contra Costa goldfields critical habitat in this area. The remaining permanent and temporary impacts are within habitats that do not support Contra Costa goldfields, including landscaped, nonnative annual grassland (upland), other woodland, perennial drainage, perennial marsh, riparian woodland, ruderal, seasonal drainage, and developed areas.

Alternative B, Phase 1 would not directly affect Contra Costa goldfield plants, but 7.27 acre of its critical habitat would be permanently removed and 1.17 acre would be temporarily affected. These effects are all within habitats that do not support Contra Costa goldfields, including landscaped, nonnative annual grassland (upland), other woodland, perennial drainage, perennial marsh, riparian woodland, ruderal, and developed areas.

A total of 39.59 acres of Contra Costa goldfields critical habitat would be permanently removed in the Alternative C project area and approximately 8.55 acres of critical habitat would be temporarily affected by construction of Alternative C. Of these totals, 4.47 acres of the permanent impact and 0.49 acre of the temporary impact would be within seasonal wetlands and alkali seasonal marsh, which are PCEs of Contra Costa goldfields critical habitat. The remaining permanent and temporary impacts are within habitats that do not support Contra Costa goldfields, including landscaped, nonnative annual grassland (upland), other woodland, perennial drainage, perennial marsh, riparian woodland, ruderal, seasonal drainage, and developed areas.

Alternative C, Phase 1 would not directly affect Contra Costa goldfield plants, but 1.31 acres of its critical habitat would be permanently removed and 2.52 acres would be temporarily affected. However, these effects are all within habitats that do not support Contra Costa goldfields, including nonnative annual grassland (upland), other woodland, perennial drainage, perennial marsh, riparian woodland, ruderal, and seasonal drainage. There would be no direct temporary or permanent project effects on the seasonal wetlands. Project construction of a retaining wall, as discussed in Section 3.3.2.4, would minimize indirect effects on goldfields critical habitat.

Implementation of measures to install construction barriers, to conduct environmental awareness training and to conduct biological monitoring discussed in Section 3.3.1.1, the measure to protect water quality and prevent erosion and sedimentation discussed in Section 3.3.2.1, and the
measure to construct a retaining wall south of SR 12E discussed in Section 3.3.2.4 would protect Contra Costa goldfields and wetland habitat within the designated critical habitat for the species. Because Contra Costa goldfields is a federally listed species, consultation under FESA was required for removal of the plants. Loss or disturbance of Contra Costa goldfields and its critical habitat would be considered an adverse effect. The USFWS concurred with a determination of "may affect, not likely to adversely affect" Contra Costa goldfields in the Biological Opinion (BO) dated April 16, 2012. The federal lead agency must ensure that its activities do not adversely modify critical habitat to the point that it will no longer aid in the species’ recovery. The SR 12E portion of the project would not be constructed until funding is available, which is not expected until after 2035.

Under the No-Build Alternative, no construction activities would occur, and no effects on Contra Costa goldfields or its habitat would occur.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08); Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1; the measure to construct a retaining wall south of SR 12E discussed in Section 3.3.2.4; and the measure below would address direct and indirect effects to Contra Costa goldfields under all alternatives.

Implementation of the following measure would avoid all direct impacts on Contra Costa goldfields under Alternative C, Phase 1; therefore, no compensatory mitigation is required under these alternatives.

**Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Contra Costa Gold Fields**

- The Department will construct a retaining wall along SR 12E between Ledgewood Creek and Suisun City. This design feature will limit the roadway expansion to the existing raised roadbed and avoid permanent intrusion into the immediately adjacent seasonal wetland (Gentry Suisun Wetland) that provides potential Contra Costa goldfields habitat.

- The boundaries of sensitive wetland habitat along SR 12E will be identified as inaccessible by an orange construction barrier fence (ESA-type fencing) and depicted on final design plans. The fence will be at least 4 feet high, it will include signage as the boundary of an Environmentally Sensitive Area, and the installation will be guided and monitored by a USFWS-approved biologist.

- A USFWS-approved biologist will identify potential Contra Costa goldfields habitat prior to ground-disturbing activities, and a protective silt fence, described in the Department’s Standard BMPs, will be installed to protect down-gradient areas from being affected by
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sediment loading. This fencing will prevent direct impacts on wetlands south of SR 12E between Ledgewood Creek and the eastern end of the construction area.

- A USFWS-approved biologist will conduct construction monitoring in and adjacent to all sensitive special-status plant populations. Construction monitoring frequency will range from daily to weekly depending on the biological resource and the construction activities.

- A USFWS-approved biologist will coordinate with the Resident Engineer to ensure that the contractor maintains the staked, fenced, and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources, including potential Contra Costa goldfields habitat.

- Vegetation removal within the retaining wall construction area south of SR 12E will be limited to the minimum necessary.

- Construction in the area between Ledgewood Creek and Suisun City will be confined to the driest season (May 15 to October 15) to protect down-gradient wetland habitat.

Compensate for the Loss of Contra Costa Goldfields

No compensatory mitigation would be necessary under the Phase 1 alternatives. Under both full-build alternatives, a plan to compensate for the permanent loss of Contra Costa goldfields will be developed and implemented. The Contra Costa goldfields compensation plan will include mitigation for impacts on seasonal wetlands, because the primary constituent elements of critical habitat for the goldfields are associated with seasonal wetlands/vernal pool habitat.

The Contra Costa goldfields compensation plan will be developed through extensive and well-documented coordination between the Department, resource agency specialists, and conservation groups. Compensation for permanent loss (areas directly affected in the project area) of Contra Costa goldfields will consist of restoration of Contra Costa goldfields habitat by transplantation of Contra Costa goldfields onto suitable habitat sites on private property. Compensation will occur as agreed upon with appropriate resource agencies.

Should restoration be selected for compensation, a qualified restoration ecologist will work with resource agency specialists and knowledgeable individuals to identify a transplantation area and ensure that the area can be managed and protected in perpetuity. Transplanting the Contra Costa goldfields plants will entail the activities listed below.

- Identifying suitable transplant sites within Vernal Pool Critical Habitat Unit 5B that either do not support the goldfields or support a sparse cover of goldfields.

- Moving the plant material and seed bank to the transplant sites.

- Monitoring the transplant sites to document recruitment and survival rates.

The restoration ecologist will develop a detailed transplanting and monitoring plan. The following general steps will be involved in the transplanting and monitoring efforts, as appropriate.
• Conduct a site analysis to document the biotic and physical requirements of the Contra Costa goldfield plants that will be affected by the proposed action. This task will include an evaluation of the plant populations to gather the following information: soil type, soil salinity, plant species associations, aspect, level of disturbance, and surrounding upland vegetation cover and soil type.

• Identify and evaluate sites that may be suitable for transplanting the Contra Costa goldfields. Preferred sites will include pools with neutral soils; saturated conditions through at least mid-spring; and solitary bee nesting habitat, such as mounds and uplands with friable soils. The information identified in the previous bullet item will be gathered for the transplant sites.

• Prepare the transplant sites by excavating the topsoil, roughening the subsoil, presoaking the subsoil, and removing weeds from the surrounding area.

• Excavate the topsoil from the area containing the Contra Costa goldfields that would be directly affected by the proposed action. The topsoil will be excavated with the seed bank and any roots in place (depth of excavation will be determined after further research on the species and site conditions). This excavation will occur after the plants have flowered and set seed (generally by June or July). The excavation will be done by hand or with a truck-mounted tree spade. The type of equipment chosen will depend on the depth and diameter of excavation required. The topsoil will be placed on the transplant site immediately after excavation. This activity will be conducted or monitored by a botanist to ensure that the appropriate amount of topsoil is removed and placed in the appropriate location. Special project specifications will be developed for removing and relocating soils containing Contra Costa goldfields. A post-transplantation report will be prepared, documenting the measures used to relocate the populations and where they were relocated.

• Protect the transplanted Contra Costa goldfields by installing ESA-type fencing with signs around the transplant sites. The purpose of this temporary fencing will be to prevent animals and humans from entering and disturbing the transplant sites during the establishment phase. The fencing will remain in place during the monitoring period or longer, if it appears that the populations could be significantly disturbed by grazing or human encroachment. Grazing might be necessary in and around the transplant area over the long term to prevent overgrowth and encroachment by other species.

• Conduct periodic maintenance visits to ensure that the transplant sites are undisturbed and the ESA-type fencing is in place. Maintenance activities may consist of manual weeding, supplemental watering, and mending of fences.

• Monitor the transplanted populations to document survival and recruitment rates over a period established in consultation with the resource agencies and vernal pool community experts. The populations will be monitored annually during the flowering period to document success rates and identify remedial actions. The detailed transplanting and monitoring plan will provide specific monitoring protocols and documentation procedures. A copy of the annual monitoring reports and the final monitoring report, with maps of the transplant sites, will be provided to the USFWS and public agencies for their review.
3.3.5.2 Showy Indian Clover

Showy Indian clover is an annual herb in the clover family (Fabaceae) that blooms from April to June. This species was known to occur in several habitats, including low-lying, wet swales and grasslands, sometimes on hillsides, at elevations below 1,020 feet. It can occur on serpentine soils, but was typically found in moist, heavy soils. The sites found in 1993 and 1996 are on a roadside and an eroding cliff face, respectively (California Natural Diversity Data Base 2010b).

Showy Indian clover, also known as showy rancheria clover, was federally listed as endangered on October 22, 1997 (62 FR 55791–55808). No critical habitat has been designated, because the USFWS determined that it would not confer any additional benefit to the listing and would increase the degree of threat to the species.

Showy Indian clover has no state listing status, but is on the CNPS List 1B.1 (rare, threatened, or endangered in California and elsewhere; seriously endangered in California—more than 80% of occurrences threatened/high degree and immediacy of threat). The primary threats to showy Indian clover have been urban and agricultural development. Overgrazing may have also caused the elimination of the clover from some locations (62 FR 55800–55801), and competition with weedy invasive species may have also extirpated populations (62 FR 55803).

Showy Indian clover occurred historically from the western edge of the Sacramento Valley in Solano County to Marin and Sonoma counties, and also in Santa Clara County. Showy Indian clover was considered extinct until its rediscovery at a site in Sonoma County in 1993. It was later extirpated from this site, but in 1996 another location was found on private land in Marin County. This population comprises approximately 200 plants and is the only known extant natural population. A reintroduction project was conducted in 2006 that planted showy Indian clover seed on a site at Point Reyes National Seashore. Monitoring of the site in 2008 indicated that 77 plants survived, and 76 of those produced flowers and were in the process of setting seed at the last monitoring visit that year (U.S. Fish and Wildlife Service 2009a).

The CNDDB lists 26 occurrences of showy Indian (rancheria) clover, all but two of which are historic sightings from 1969 and earlier (California Natural Diversity Data Base 2010b). Three of these historic occurrences (last seen in 1952, 1909, and 1892) are in Solano County within the Elmira and Fairfield North 7.5-minute USGS quadrangles. The other 23 occurrences are in Sonoma, Marin, Napa, and Santa Clara counties. The only know extant population is in Marin County.

Affected Environment

No showy Indian clover was observed in the project study area for any of the alternatives during the 2009 surveys, however, the Mangels property north of SR 12W was not accessible for those surveys. The Mangels property was surveyed as part of the North Connector project in 2003, and no showy Indian clover or other federally listed plant species were observed in the study area. On May 4, 2011, Lisa Webber and Stephanie Myers from ICF, with Chris States and Frankie Malamud-Roam from the Department conducted a field survey on portions of the Dittmer property not previously surveyed by ICF. No showy Indian clover was observed during this survey.
Environmental Consequences

Loss or Disturbance of Showy Indian Clover Resulting from Construction

Impacts on showy Indian clover could occur under Alternative B, Alternative C, and Alternative C, Phase 1. No showy Indian clover occurs within the temporary or permanent impact areas for Alternative B, Phase 1.

No showy Indian clover plants were observed during the surveys conducted in 2004, 2005, 2007, and 2009. The area north of SR 12W was surveyed in 2003 for the North Connector project, and no showy Indian clover was found (Volume 2, Figure 3.3-2a, -2c, and -2d Sheets 4-6). However, the area north of SR 12W was not accessible for the surveys in 2004 and later, and the species absence cannot be concluded with certainty. Therefore, project construction for Alternative B, Alternative C, or Alternative C Phase 1 in the area north of SR 12W could potentially affect suitable habitat for showy Indian clover through excavation and road construction. Implementation of the avoidance and minimization measures below and mitigation measures to conduct preconstruction surveys and to compensate for the loss of showy Indian clover, if present, would reduce the severity of this effect.

Indirect effects on suitable habitat north of SR 12W could result from the alteration of hydrology and soil compaction from earthmoving activities during construction. Implementation of measures to install construction barriers, to conduct environmental awareness training and to conduct biological monitoring discussed in Section 3.3.1.1 and the measure to protect water quality and prevent erosion and sedimentation discussed in Section 3.3.2.1 would protect showy Indian clover habitat, avoiding this potential effect.

The USFWS concurred with a determination of "may affect, not likely to adversely affect" showy Indian clover in the Biological Opinion (BO) dated April 16, 2012.

Under the No-Build Alternative, no construction activities would occur, and no effects on showy Indian clover or its habitat would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measures below to conduct protocol level surveys and avoid and minimize disturbance to populations would reduce direct effects to showy Indian clover and its habitat under Alternative B, Alternative C, and Alternative C, Phase 1. Implementation of Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1 would address indirect effects under the same alternatives.
Conduct Protocol-Level Surveys for Showy Indian Clover

As a prerequisite to developing compensatory mitigation, a qualified botanist will be retained to conduct botanical surveys of the part of the Mangels property north of SR 12W that is in the project construction area within one year prior to construction in that area. Surveys will be conducted in accordance with the USFWS protocol (USFWS 1996; Cypher 2002), and survey results will be submitted to the USFWS and DFG. If any showy Indian clover plants are identified during the surveys, the botanist will photograph and map locations of the plants, document the location and extent of the showy Indian clover population on a CNDDB Survey Form, and submit the completed Survey Form to the CNDDB.

Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Showy Indian Clover

If populations of showy Indian clover are found within 250 feet of the construction work area, the following measures will be implemented.

- Orange ESA-type fencing at least 4 feet in height will be installed to protect ESAs. A USFWS-approved biologist will identify sensitive biological resources adjacent to the construction area; the ESAs to be fenced will be included in the contract plans and specifications.

- A USFWS-approved biologist will identify potential showy Indian clover habitat, and a protective silt fence, described in the Department Standard BMPs, will be installed to protect down-gradient habitat for showy Indian clover from being affected by sediment loading.

- Construction activities conducted within the area of potential showy Indian clover habitat will be confined to the dry season (June 1–October 15) to protect down-gradient, showy Indian clover habitat and minimize potential indirect dust effects on identified flowering showy Indian clover plants.

- A USFWS-approved biologist will be present during all ground-disturbing activities occurring within 250 feet of occupied showy Indian clover habitat to ensure that showy Indian clover habitat is avoided.

- Vegetation removal within 250 feet of occupied showy Indian clover habitat will be limited to the maximum extent practicable.

- A USFWS-approved biologist will develop and conduct environmental education training for construction employees working on ground-disturbing activities. The program will include the following: a description of showy Indian clover and its habitat needs, photographs of the plant species, an explanation of its legal status and protection under FESA, and a list of the measures that will be implemented to minimize and avoid potential effects on showy Indian clover.

- The biological monitor will coordinate with the Resident Engineer to ensure that the contractor maintains the staked, fenced, and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources, including occupied or potential showy Indian clover habitat.
To the maximum extent practicable, the Department or STA will install bio-swales and biofiltration in the area adjacent to the highway to avoid and minimize sediment loading and point source pollutants.

Dust control will be managed through Department standard water quality control BMPs through the utilization of an organic tackifier and water trucks.

If plants cannot be completely avoided, consultation with the USFWS pursuant to Section 7 of the FESA will be reinitiated, and additional measures will be developed to ensure that the project would avoid direct and indirect effects on showy Indian clover.

### 3.3.5.3 Callippe Silverspot Butterfly

Callippe silverspot butterfly (CSB) was listed as endangered in 1997 (FR 62:64306) and has no state listing. In August 2009, USFWS published a 5-year review recommending that the species retain its endangered status (U.S. Fish and Wildlife Service 2009b). There is no designated critical habitat for the species.

Historically, CSB occupied much of the Bay Area, from Vallejo and southeastern Napa and Sonoma Counties to northwestern Contra Costa County, south to the Castro Valley area, east to the Livermore–Pleasanton–Sunol area, and from San Francisco south to the vicinity of La Honda in San Mateo County. Currently, USFWS recognizes only two existing populations: one in the San Bruno Mountain in San Mateo County and a second in the Cordelia Hills in Solano County. The population in the Cordelia Hills on the King–Swett Ranches Solano Land Trust property has been observed as recently as spring 2009 (Wickham pers. comm.). While the CSB is found within the fog-influenced zone surrounding San Francisco Bay at a regional level, it appears that the distribution of the butterfly at a local, site-specific level may be limited by the avoidance of fog during the flight season. For example, the distribution of adult CSB on San Bruno Mountain shows a clear boundary of adult presence on the sunny side of the summer persistent fog line.

Female CSB lay their eggs on or near the dried remains of their host plant, Viola pendunculata, and within a week the larvae hatch and eat their egg shells, wander a short distance, and spin a silk pad upon which they pass the summer and winter in diapause (an inactive period). Upon ending diapause the following spring, the larvae search for food plants, spend the next few months feeding, pupate after completing their larval development, and emerge as adults about 2 weeks after pupating. The adult flight season is about 6–8 weeks from mid-May through early to mid-July, but timing and length of the flight season varies depending on annual weather conditions. Warmer weather accelerates the blooming period of nectar plants and tends to shorten the adult flight season, while cooler weather tends to extend the blooming period and flight season. The average lifespan of the adult CSB was determined to be about 5 days for males and 7 days for females (Arnold 1981).

Adults of the Speyeria genus are known to be strong fliers and can disperse several miles during the adult life span. Adult CSBs have been documented to disperse up to 0.8 mile between breeding colonies at San Bruno Mountain (Thomas Reid Associates 1981; Arnold 2004). In the Cordelia Hills, near the BSA, nectar plants are not in close proximity to larval host plants, requiring the adults to fly more than 1 mile for food gathering (Arnold pers. comm.).
Habitat requirements (Arnold 1981) are listed below.

- Grasslands with proper topography in the San Francisco Bay area.
- Sufficient larval host plants.
- Adequate nectar sources.
- Hilltops for mate location.
- Shelter from coastal winds.

**Grasslands:** The topography of the grassland is an important factor influencing larval host plant growth and survival. Researchers have demonstrated that the best grassland habitat for CSB, based on the distribution of adults, includes cool north- and east-facing hill slopes with fairly dense occurrences of both the larval host plant and nectar source plants (U.S. Fish and Wildlife Service 2009b). Also important are large areas of continuous grassland that support a variety of nectar sources since the CSB is a large and vagile butterfly that can have a home range encompassing hundreds of acres of grassland habitat.

**Larval host plant:** Johnny jump-ups in the San Francisco Bay Area are associated with clay soils that have established grass cover. They may bloom anywhere from January through April, depending on weather conditions (Arnold pers. comm.). Although the plant is a perennial, all aboveground growth dies back annually, with only its roots and rhizomes surviving year-round. Annual precipitation seems to influence the annual bloom, with fewer blooming individuals and area of cover in dry years and larger numbers and area in wet years. Thus, plant density fluctuates annually. The distribution of viola patches, as well as density of any particular patch, contributes to the successful completion of the butterfly’s life cycle. Low-density patches of viola near other, denser patches can also support CSB, but not as many.

**Nectar plants:** A variety of flowering plants provide nectar sources used by adult CSB. Nectar sources include California buckeye, native coyote mint (*Monardella villosa*), Alameda County thistle (*Cirsium quercetorum*), blessed milk thistle (*Silybum marianum*), and nonnative thistles (*Carduus* spp.) (Arnold 2006).

**Hilltops:** Hilltops that have connectivity with grasslands containing nectar sources and larval host plants are vital to the hill-topping behavior of CSB. Hill-topping allows the congregation of males and females, which promotes mate selection. Sites that support larval and adult food plants do not always coincide with areas where mate location and other behaviors occur, and Arnold (2004) observed adults gathering nectar at locations more than 1 mile from the nearest patches of the larval host plant.

These habitat components need to be relatively close to each other to support the species. The larval host plants presumably need to be in relatively high-density patches interspersed within grasslands, typically along steep hill slopes, such as are found in places in Solano County.

Threats to CSB that were identified when the butterfly was listed and still persist today include the loss to urbanization and fragmentation of potential habitat in the San Francisco Bay area, poaching by insect collectors, indiscriminate use of herbicides, inappropriate grazing regimes,
elimination of larval host plants by competition from invasive plants, fire-suppression policies resulting in hotter wildfires, and the negative effects of small and geographically isolated populations. Threats that were defined after listing during the 5-year review (U.S. Fish and Wildlife Service 2009) include road mortalities, increased interactions with humans, deposition of nitrogen from local traffic that encourages invasive plants, nonnative predators, and global climate change. Apparently, there is no documented evidence that some of these additional threats have caused the demise of any populations (Arnold pers. comm.). While afforded some protection by preserved areas of potential habitat on Solano Land Trust properties, the butterfly population in the Cordelia Hills is threatened by grazing management practices that do not favor the butterfly and by habitat fragmentation, degradation, and loss caused by a series of local development projects.

The current number of individual butterflies in each of the known populations (Cordelia Hills and San Bruno Mountain) remains unknown (U.S. Fish and Wildlife Service 2009b).

**Affected Environment**

There are no known CNDDB (2011) occurrences of CSB within the BSA or project footprint. However, the draft Solano County HCP (BUGGY database, as cited in LSA 2009) lists eight records ranging from 1 to 5 miles from the western portion of the project BSA, all to the southwest near the Cordelia Hills (Figure 3.3-7). Richard Arnold observed an adult butterfly and several stands of larval host plants in 1993 at the nearest known occurrence approximately 1 mile from the BSA (LSA 2008). In support of the draft EIR for the Fieldcrest Development project, LSA (2008) conducted follow-up surveys at this location for larval host plants in 2007 and found two stands of host plants. In previous years, surveys had recorded seven distinct stands.

Areas of the BSA that have potential CSB habitat are generally located in the western portion of the BSA between the Business Center Drive extension on the Mangels property and I-80 (Figure 3.3-2a, sheets 4–6). No surveys for adult CSB or host plants were conducted within the BSA by ICF for this project due to access limitations on the Mangels property. However, in 2004, Monk & Associates surveyed a portion of the BSA on the Mangels property north of SR 12W for presence/absence of larval host plants for STA’s North Connector project (Monk & Associates 2006). The 2004 survey identified two populations of the host plant, Johnny jump-ups, but did not record density of the populations. Both of these locations are within the area identified as part of the Callippe Silverspot Butterfly Conservation Area in the Solano Multi-species Habitat Conservation Plan (LSA 2009) and provide connectivity to butterfly habitat located to the south in the Cordelia Hills.

On May 4, 2011, Lisa Webber and Stephanie Myers from ICF, with Chris States and Frankie Malamud-Roam from the Department conducted a field survey on portions of the Dittmer property not previously surveyed by ICF. The survey area included one of the Viola populations previously identified by Monk & Associates in 2004. In addition, the survey area is adjacent to the Mangels property and the second population of Viola identified by Monk & Associates in 2004.

One Viola plant was observed on the Mangels property within the area south of the proposed alignment and previously mapped by Monk & Associates. No Viola plants were observed on the Dittmer property. However, it is likely we missed this year’s optimal blooming period for Viola.
Sue Wickham, project coordinator with Solano Land Trust, stated in a May 16, 2011 email that Viola plants on their properties had peaked by mid-April and were hard to find by May so it is likely that our survey in early May was too late and missed Viola plants. Numerous Italian thistle (Carduus pycnocephalus), milk thistle (Silybum marianum), and bull thistle (Cirsium vulgare) plants, all adult butterfly nectar sources, were observed on both the Dittmer and Mangels property.

On March 4, 2012, H.T. Harvey & Associates conducted a field survey on portions of the Dittmer property. The survey area included the two Viola populations identified by Monk & Associates in 2004. In contrast to the May 2011 survey, H.T. Harvey & Associates found 7 populations, which included the two previously identified by Monk & Associates (2004) (Figure 3.3-2a sheets 6-8). H.T. Harvey & Associates observed a total of 1,350 individual plants. Based on the topography of the BSA and the presence of grasslands with nectar plants, there is potential CSB habitat within the BSA in the area between the Business Center Drive extension and I-80 (Figure 3.3-2a, Sheets 4–6). Some, and possibly all, of the essential habitat features identified by USFWS in its 5-year review (U.S. Fish and Wildlife Service 2009b) have historically been present or may currently be present within the BSA.

Environmental Consequences

Under Alternative B, Phase 1, no construction is proposed in the vicinity of Red Top Road and SR 12W; therefore this alternative would not have the potential for effects.

Alternative B, Alternative C, and Alternative C, Phase 1 would result in the permanent loss of 38.82 acres of callippe silverspot butterfly habitat due to construction of the Business Center Drive Extension from approximately 500 feet west of the existing western terminus of Business Center Drive to the existing Red Top Road/I-80 Intersection. Establishment of this new road will require extensive grading and recontouring of rolling grasslands that provide topographical features important for callippe silverspot butterfly hill-topping breeding behavior, foraging, and possible larval development. Construction of the road will result in replacement of butterfly habitat with hardscape and maintained ROW that will likely be inhospitable for the listed butterfly. In addition to the harm and harassment associated with the destruction of callippe silverspot butterfly habitat, the project is also likely to result in effects associated with habitat fragmentation.

Construction of the Business Center Drive Extension will also result in the temporary loss of 19.32 acres of callippe silverspot butterfly habitat. This habitat will be temporarily lost due to construction access, staging, and recontouring for borrow material. Successful restoration of temporarily disturbed areas with a grassland seed mix that includes callippe silverspot butterfly nectar plants is likely to limit the habitat loss to less than one year following the initial ground disturbance.

The USFWS concurred with a determination of “not likely to adversely affect” California tiger salamander (central California distinct population segment) in the Biological Opinion (BO) dated April 16, 2012. This impact will be mitigated through compliance with avoidance and minimization measures described below.
**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), as well as Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1 and the measure below would address permanent and temporary effects to Callippe silverspot butterfly under Alternative B, Alternative C, and Alternative C, Phase 1.

**Conduct Surveys for Larval Host Plants for Callippe Silverspot Butterfly**

The Department will survey for the presence of adult nectar and larval host plants and adult nectar sources within areas that will be subject to temporary effects within callippe silverspot habitat. The surveys will be conducted during the blooming season (March to May) no more than one year prior to the excavation and grading of the Business Center Drive Extension proposed to occur during Construction Packages within callippe silverspot butterfly habitat. SLT will be contacted in order to synchronize the surveys with peak *Viola* blooming on the Swett Ranch. Observed adult nectar plants and *Viola* will be mapped and flagged. The Department will modify the boundaries of temporary work areas to avoid the nectar and host plants when feasible.

**Minimize Potential Direct and Indirect Disturbance of Populations of Callippe Silverspot Butterflies**

- To the maximum extent possible, the Department will avoid areas of *Viola* delineated prior to construction and during preconstruction surveys within temporary affected areas.
- The project footprint will be clearly delineated with ESA-type fencing and signage to limit construction activities to the described footprint and to maintain awareness. All Environmentally Sensitive Areas will be shown on the final construction drawings.
- Grading activities within callippe silverspot butterfly habitat will be conducted between August 1 and April 1, to the extent practicable as determined during constructability review. When grading activities must take place after April 1 and before August 1, daily biological monitoring will occur for the callippe silverspot butterfly.
- Insecticides or herbicides in the Business Center Drive Extension ROW will not be applied during road construction or long-term operational maintenance within 300 feet of the host plant occurrences mapped by Monk & Associates in 2004 or otherwise identified or adult nectar plants or from other locations where the chemical treatments can be carried in by wind or surface flow.
- Standard erosion and dust control measures will be implemented to minimize the deposition of dust, soil, and silt on callippe silverspot butterfly habitat.
- The Department and STA will ensure there is no drift of sprayable dust control formulations used for dust and erosion control towards callippe silverspot butterfly habitat during
construction. Appropriate spray devices and application methods, such as spray pressures, nozzle opening size, and additives such as spray retardants, will be used to prevent drift. Applications will be made on calm days or when the wind speed is low and blowing away from callippe silverspot butterfly habitat. Spray applications will not be made within 200 yards by air or 40 yards by ground upwind from callippe silverspot butterfly habitat. Applications will not occur during rain events.

- No equipment will be driven or parking or laydown areas established within 20 feet of larval host plants located outside the defined construction footprint and, to the extent feasible, within 20 feet of adult nectar plants located outside the defined construction footprint.

- If any other life history phases of the callippe silverspot butterfly are found such as adults, pupae, larvae, or eggs, the USFWS shall be immediately contacted for further guidance.

- Compensate for Direct and Indirect Effects on Callippe Silverspot Butterfly Habitat

The Department will minimize harm to the callippe silverspot butterfly resulting from the adverse effects on habitat. Compensation implemented within USFWS-approved areas that are both California red-legged frog habitat and callippe silverspot butterfly may be overlaid on common acreage as long as it is appropriate habitat for each species. The area will receive conservation credit from the USFWS for both species. The compensation will be phased to coincide with project construction packages as presented in Table 3.3.5-1 and implemented 60 calendar days prior to the date of initial ground disturbance.

Compensation will be based on the amount of permanent and temporary loss of callippe silverspot butterfly habitat. Temporary habitat loss will be compensated at rates based on the amount of time it takes to restore the habitat to baseline conditions following the date of initial habitat disturbance and whether the restored habitat will be subjected to ongoing roadway maintenance activities that would not be entirely beneficial to the species. Off-site conservation will offset routine maintenance activities that are short in duration, e.g., mowing. Habitat value in these ROW areas is diminished but not permanently destroyed. Should the determination of permanent versus temporary habitat loss change after the Department has provided this compensation, the Department will provide additional compensation, if necessary, or apply excess compensation towards future projects that adversely affect the callippe silverspot butterfly.

The maintained ROW is defined as the ROW between the edge of pavement or denuded road shoulder and the Department ROW fence. Permanent effects will occur within the bounds of the maintained ROW (road surface and area between edge of pavement and ROW fence).
The Department will compensate for adverse effects to callippe silverspot butterfly habitat by implementing one of the following two options:

1. The Department will establish in-perpetuity callippe silverspot butterfly habitat preservation by purchasing habitat or purchasing callippe silverspot butterfly habitat credits from a USFWS-approved conservation bank. Compensation will be implemented with in-perpetuity preservation of callippe silverspot butterfly habitat with high conservation values and: a) include ridge line topographical features associated with callippe silverspot butterfly breeding behavior and adult and/or larval nectar plants, and b) preference given to areas located within the Callippe Silverspot Butterfly Conservation Area defined in the Draft Solano HCP (SCWA 2009). Location of the proposed conservation areas will be submitted to the USFWS for review and approval.

The habitat will include a USFWS-approved conservation easement, held by a third party. An approved ecologically-based conservation easement will include managed public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a PAR-like property analysis. The management plan will include a description of the site, management needs (e.g., grazing plan, non-native vegetation and animal control, etc.), when the management activities will be implemented, how often and to what level monitoring of the site will occur, and an action/contingency plan to address potential management issues.

or

2. The Department will implement or fund restoration and enhancement actions within occupied callippe silverspot butterfly habitat that will have beneficial effects on the species. Such measures shall be implemented on lands with in-perpetuity conservation beneficial to the callippe silverspot butterfly. Implementation includes identification of land to be restored or enhanced, associated agreements to fund restoration or enhancement activities, and a restoration plan and schedule approved by the USFWS.

The Department will provide a Funding Assurance Letter stating that sufficient funds for habitat compensation have been budgeted in the Phase 1 Project Expenditure Authorization. The Funding Assurance Letter will be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering.

The Department would ensure that land used for habitat compensation will include a USFWS-approved conservation easement. An approved ecologically-based conservation easement will include managed public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a PAR-like property.
analysis. The management plan will include a description of the site, management needs (e.g., grazing plan, non-native vegetation and animal control, etc), when the management activities will be implemented, how often and to what level monitoring of the site will occur, and a action/contingency plan to address potential management issues.

The Department would provide a restoration and revegetation plan for callippe silverspot butterfly and California red-legged frog for each construction package to be reviewed and approved by the USFWS no later than sixty (60) calendar days prior to date of its initial groundbreaking of each construction package. The plan will include, but will not be limited to: schedule, methodology, a list of the seed mixes and container plants, plant material source, irrigation, maintenance schedule, monitoring program, success criteria, control of invasive, noxious weeds, and remediation and adaptive management. In addition, annual monitoring reports on the success of the plantings shall be provided to the USFWS following the completion for each construction package. The reports will be submitted on or before December 31 of each year monitoring is conducted.

The revegetation plan will include a photo monitoring plan. The plan will include, but is not limited, to the following:

a. An adequate number of photo monitoring stations will be established to provide representative views of project restoration and construction activities. Stations will be located in areas that allow for unobstructed views and a field of vision of approximately 2,000 feet, to the extent allowed by surrounding vegetative cover and topography. Each station will provide a representative panoramic view of the restoration footprint. The Department will ensure that photo monitoring stations numbers and locations are sufficient to document restoration success.

b. Baseline photographs will be taken during the spring growing season prior to construction. Following the completion of ground disturbance, photo documentation will be conducted quarterly to document restoration relative to four seasons. Photo documentation will conclude when the USFWS has agreed that success criteria have been met.

c. Photo monitoring station locations will be provided to the USFWS in an acceptable geographic format with the coordinate system identified.

d. If the USFWS or the biological monitor(s) determines that additional monitoring stations are necessary, the locations will be added to the inventory of photo monitoring stations prior to the date of the next photo documentation.

e. During each photo monitoring cycle all stations will be visited within a two day period.

f. At the conclusion of restoration, the acreage of restored areas will be tabulated and provided to the USFWS. The extent of restoration will be delineated with a handheld GPS device and a trackfile provided to the USFWS Representative.

g. Routine maintenance activities will be identified in the Restoration/Revegetation Plan. Maintained R-O-Ws may include routine maintenance activities that are short in duration, such as spraying and mowing. Specific restrictions may apply for the valley elderberry longhorn beetle, callippe silverspot butterfly, California red-legged frog, and the showy Indian clover.
3.3.5.4 Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp

Vernal pool fairy shrimp is listed as threatened under FESA (59 FR 48136). Vernal pool fairy shrimp occurs in the Central Valley from Tehama to Madera Counties and in the eastern margin of the central and southern Coast Ranges from San Benito to Ventura Counties. A disjunct population occurs in Riverside County (Eng et al. 1990). Most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges (Eng et al. 1990).

Vernal pool tadpole shrimp is listed as endangered under FESA (59 FR 48136). Vernal pool tadpole shrimp occurs in the Central Valley from Shasta County in the north to Merced County in the south, and a disjunct population occurs in western Alameda County (Rogers 2001).

Vernal pool fairy shrimp and vernal pool tadpole shrimp (listed branchiopods) are restricted to seasonal wetland habitats (e.g., vernal pools and wet swales) in California that provide the necessary environmental conditions. These species produce cysts (eggs) that lie dormant in the soil over summer and hatch when pools fill during the winter rainy season. To complete their life cycle, vernal pool fairy shrimp and vernal pool tadpole shrimp require an annual cycle of inundation during cold and wet winter months, when the water temperature is cool and oxygen concentration is high, contrasted by dry soil conditions during the summer months (Helm 1998; Eriksen and Belk 1999).

Vernal pool fairy shrimp and vernal pool tadpole shrimp are not known to occur in shallow seasonal wetlands that lack a defined basin and do not provide a water column of sufficient depth (>1 inch) and duration (three to four weeks), because such conditions are necessary for reproduction. Similarly, these species do not occur in wetlands that remain wet or damp throughout most of the year (such as seasonal marsh and perennial wetlands) or permanent bodies of water (such as riverine and marine habitats) because these conditions do not allow egg cysts to properly dry and cure (59 FR 48136–48153).

Affected Environment

There are no known occurrences of vernal pool fairy shrimp or vernal pool tadpole shrimp (both species are part of the listed branchiopods group, which includes a number of species) within the BSA or the project footprint. The nearest recorded occurrence of vernal pool fairy shrimp (CNDDB occurrence 331, dated 2001, 2002) is 2.6 miles away in Tolenas (Fairfield) in a seasonal wetland created by a railroad borrow pit and surrounded by development and the railroad. The nearest recorded occurrence of vernal pool tadpole shrimp (CNDDB occurrence 158, dated 2002) is approximately 3.75 miles away in an isolated vernal pool in a grazed grassland on the Parker Ranch, 2.5 miles west of Travis Field. Within Solano County, there are 23 records of vernal pool fairy shrimp and 30 records of vernal pool tadpole shrimp, most reported near Jepson Prairie Preserve, northeast of the BSA.

While habitat assessments for vernal pool fairy shrimp and vernal pool tadpole shrimp were conducted by ICF for the proposed project, ICF did not conduct protocol-level surveys because of access restrictions and the long timeline for this project. However, Brent Helms conducted protocol-level surveys of a 250-foot buffer along SR 12W as part of the Jameson Canyon project.
This analysis includes results of habitat assessments completed for the proposed project and, additionally, references the results of protocol-level surveys conducted within and adjacent to the BSA for other development projects. Helm Biological Consulting (HBC) conducted protocol-level wet- and dry-season surveys of W-13, W-14, W-15, and W-149 along the north and south sides of SR 12W west of I-80 as well as other adjacent basins in the vicinity as part of the Jameson Canyon Road Widening project BA and found no branchiopods or cysts (Helm 2009). Based on the negative results of the surveys in these features, they are not discussed further.

The study area does not occur within designated critical habitat for vernal pool fairy shrimp (71 FR 7117). Vernal Pool Critical Habitat Units 12A and 12B are located in Napa County, approximately six miles west of the study area.

**Alternative B**
There are 29 suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp within 250 feet of the Alternative B construction area (i.e., within the study area for vernal pool crustaceans).

Suitable habitat was observed in the areas listed below and illustrated in Figure 3.3-2a in Volume 2.

- Along the north and south sides of SR 12W west of I-80 (Sheets 4–6).
- In disturbed areas on the north side of I-80 (Sheets 11 and 14).
- Along Ramsey Road west of I-680 (Sheets 11 and 14).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheets 32–34).

Suitable habitat features observed during the habitat assessment were primarily seasonal wetlands. Many of the habitat features occur in disturbed areas that are subject to plowing, diskng, stormwater runoff, and other human influences that greatly reduce the ecologic value these habitats provide for listed shrimp species.

**Alternative B, Phase 1**
Four suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp are located within 250 feet of the Alternative B, Phase 1 construction area.

Suitable habitat was observed in two locations in the Alternative B, Phase 1 study area as illustrated in Figure 3.3-2b in Volume 2.

- In disturbed areas on the north side of I-80 (Sheets 8 and 17).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheet 32).

**Alternative C**
There are 24 suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp located within 250 feet of the Alternative C project construction area.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

During the July 27, 2007, habitat assessment, suitable habitat was identified in the project areas listed below and illustrated in Figure 3.3-2c in Volume 2.

- Along both the north and south sides of SR 12W west of I-80 (Sheets 4–6).
- In disturbed areas on the north side of I-80 (Sheets 8 and 17).
- Along Ramsey Road west of I-680 (Sheet 11).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheets 32–34).
- On the south side of SR 12E between Webster Street and the railroad tracks on the edge of Suisun City (Sheet 35).

**Alternative C, Phase 1**

Nineteen suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp are located within 250 feet of the project construction area for Alternative C, Phase 1.

Suitable habitat was observed in the project areas listed below and illustrated in Figure 3.3-2d in Volume 2.

- Along the north and south sides of SR 12W west of I-80 (Sheets 4–6).
- In disturbed areas on the north side of I-80. (Sheets 8 and 17).

**Environmental Consequences**

**Potential Loss or Disturbance of Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp Resulting from Construction**

Both build alternatives would result in temporary and permanent impacts on vernal pool fairy shrimp or vernal pool tadpole shrimp. This conclusion is consistent with a “may affect, likely to adversely affect” determination under the Section 7 FESA process.

See the discussions below for more specific information.

The USFWS generally considers all habitats for listed shrimp species that are located within 250 feet of ground disturbance to be indirectly affected unless suitable habitat is separated from construction activities by a road or other suitable barrier. The acreages below are based on this assumption. Project construction would directly affect suitable seasonal wetlands through excavation and road construction. Indirect impacts on suitable seasonal wetlands that could result from project activities include altered hydrology, soil compaction, introduction of urban stormwater runoff, and increased human activity.

Under the No-Build Alternative, no construction activities would occur, and no effects on vernal pool fairy shrimp or vernal pool tadpole shrimp or their habitat would occur.

**Alternative B**

Alternative B would directly affect 15 suitable habitat features (all pools within the construction footprint) totaling 1.36 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp (Table 3.3.5-2 and Volume 2, Figure 3.3-2a). In addition, Alternative B could indirectly affect 14
suitable habitat features (all pools within 250 feet of the construction footprint) totaling 1.24 acres of habitat for these species.

Table 3.3.5-2. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp in the Study Area under Alternative B

<table>
<thead>
<tr>
<th>Pool Identification Number</th>
<th>Direct Impact</th>
<th>Indirect Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-13 (Sheet 5)</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>W-14 (Sheet 4)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>W-15 (Sheet 5)</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>W-25 (Sheet 14)</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>W-35 (Sheet 11)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-36 (Sheet 11)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-37 (Sheet 11)</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>W-38 (Sheet 11)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>W-39 (Sheet 11)</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>W-45a-2 (Sheet 17)</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>W-45-3 (Sheet 17)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-63 (Sheet 8)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-118 (Sheet 32)</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>W-121 (Sheet 34)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-128 (Sheet 33)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>W-151 (Sheet 6)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>W-154 (Sheet 35)</td>
<td>0.09</td>
<td>0.14</td>
</tr>
<tr>
<td>W-156 (Sheet 4)</td>
<td>0.02</td>
<td>0.07</td>
</tr>
<tr>
<td>W-177 (Sheet 5)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-182 (Sheet 6)</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>W-183 (Sheet 6)</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>W-184 (Sheet 6)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>W-185 (Sheet 6)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-186 (Sheet 6)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>W-187 (Sheet 6)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>W-188 (Sheet 6)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-189 (Sheet 6)</td>
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<td></td>
</tr>
<tr>
<td>Total impact (acres)</td>
<td>1.36</td>
<td>1.24</td>
</tr>
<tr>
<td>Total combined impact (acres)</td>
<td>2.60</td>
<td></td>
</tr>
</tbody>
</table>

Alternative B, Phase 1

Alternative B, Phase 1 would directly affect three suitable habitat features encompassing 0.20 acre of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp. In addition, Alternative B, Phase 1 could indirectly affect one suitable habitat feature encompassing 0.04 acre of habitat for these species (Table 3.3.5-3 and Volume 2, Figure 3.3-2b).

Table 3.3.5-3. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative B, Phase 1

<table>
<thead>
<tr>
<th>Pool Identification Number</th>
<th>Direct Impact</th>
<th>Indirect Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-45a-2 (Sheet 17)</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>W-45-3 (Sheet 17)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-63 (Sheet 8)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-118 (Sheet 32)</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>Total impact (acres)</td>
<td>0.20</td>
<td>0.04</td>
</tr>
<tr>
<td>Total combined impact (acres)</td>
<td>0.24</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

Alternative C
Project construction would directly affect suitable seasonal wetlands through excavation and road construction. Alternative C would directly affect 14 suitable habitat features totaling 1.33 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp. In addition, Alternative C could indirectly affect 15 suitable habitat features totaling 1.10 acres of habitat for these species (Table 3.3.5-4 and Volume 2, Figure 3.3-2c).

Table 3.3.5-4. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative C

<table>
<thead>
<tr>
<th>Pool Identification Number</th>
<th>Direct Impact</th>
<th>Indirect Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-13 (Sheet 5)</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>W-14 (Sheet 4)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>W-15 (Sheet 5)</td>
<td>0.19</td>
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</tr>
<tr>
<td>W-25 (Sheet 14)</td>
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<td>0.21</td>
</tr>
<tr>
<td>W-35 (Sheet 11)</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>W-36 (Sheet 11)</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>W-37 (Sheet 11)</td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>W-38 (Sheet 11)</td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>W-39 (Sheet 11)</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>W-45a-2 (Sheet 17)</td>
<td>0.16</td>
<td>0.02</td>
</tr>
<tr>
<td>W-45-3 (Sheet 17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-63 (Sheet 8)</td>
<td>0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>W-118 (Sheet 32)</td>
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<td></td>
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<tr>
<td>W-121 (Sheet 34)</td>
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<td>W-128 (Sheet 33)</td>
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<td></td>
</tr>
<tr>
<td>W-154 (Sheet 36)</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>W-156 (Sheet 4)</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>W-177 (Sheet 5)</td>
<td></td>
<td>0.07</td>
</tr>
<tr>
<td>W-182 (Sheet 6)</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>W-183 (Sheet 6)</td>
<td>0.37</td>
<td></td>
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<tr>
<td>W-184 (Sheet 6)</td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>W-185 (Sheet 6)</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>W-186 (Sheet 6)</td>
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<td>0.01</td>
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<td>W-187 (Sheet 6)</td>
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<td></td>
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<tr>
<td>W-188 (Sheet 6)</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>W-189 (Sheet 6)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td><strong>Total impact (acres)</strong></td>
<td>1.33</td>
<td>1.10</td>
</tr>
<tr>
<td><strong>Total combined impact (acres)</strong></td>
<td>2.43</td>
<td></td>
</tr>
</tbody>
</table>

Alternative C, Phase 1
Alternative C, Phase 1 would directly affect 12 suitable habitat features totaling 1.45 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp (Table 3.3.5-5 and Volume 2, Figure 3.3-2d). The direct impact acreage for Alternative C, Phase 1 includes construction of a bike trail north of SR 12W that is not part of the full build alternative, and the bike trail would cross one wetland not directly affected by the full build alternative (W-183) and indirectly affect another wetland (W-184). In addition, Alternative C, Phase 1 could indirectly affect seven suitable habitat features totaling 0.26 acre of habitat for these species.
Table 3.3.5-5. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative C, Phase 1

<table>
<thead>
<tr>
<th>Pool Identification Number</th>
<th>Direct Impact</th>
<th>Indirect Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-45a-2 (Sheet 17)</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>W-45-3 (Sheet 17)</td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>W-63 (Sheet 8)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>W-151 (Sheet 6)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>W-156 (Sheet 4)</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>W-177 (Sheet 5)</td>
<td></td>
<td>0.07</td>
</tr>
<tr>
<td>W-182 (Sheet 6)</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>W-183 (Sheet 6)</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>W-184 (Sheet 6)</td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>W-185 (Sheet 6)</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>W-186 (Sheet 6)</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>W-187 (Sheet 6)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>W-188 (Sheet 6)</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>W-189 (Sheet 6)</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Total impact (acres)</td>
<td>1.45</td>
<td>0.26</td>
</tr>
<tr>
<td>Total combined impact</td>
<td>1.71</td>
<td></td>
</tr>
</tbody>
</table>

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Water Pollution Control Standard Specification measures pertaining to water pollution control program (SS Section 13-2), stormwater pollution prevention plan (SS Section 13-3), temporary soil stabilization (SS Section 13-5), temporary sediment control (SS Section 13-6), temporary linear sediment barriers (SS Section 13-10) mentioned in Section 3.3.2.1, the measure to construct a retaining wall south of SR 12E discussed in Section 3.3.2.4; and the measure below would address direct and indirect effects to vernal pool fairy shrimp and vernal pool tadpole shrimp under all alternatives.

**Avoid and Minimize Potential Indirect Disturbance of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat**

- To the extent practicable, the Department and its contractors will initiate all work in or within 250 feet of potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.
- between May 1 and November 1. When construction activities must take place after November 1 and before May 1, daily biological monitoring by a USFWS-approved biological monitor will occur within 250 feet of suitable habitat.
- To the extent practicable, incorporate design modifications to avoid direct permanent effects on potential habitat for federally listed branchiopods.
- The Department will avoid potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat, to the maximum extent practicable, during construction activities in temporary work areas. All potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat not directly affected will be designated as an ESA and protected with appropriate fencing and signage. All ESAs will be shown on the final construction drawings.
- The Department will perform all work in accordance with a SWPPP. BMPs will be implemented and may include the use of silt fences, sandbags, detention basins, and other means as appropriate to prevent erosion into any identified or potential, but not surveyed, habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.
Compensate for Direct and Indirect Impacts on Vernal Pool Fairy Shrimp or Vernal Pool Tadpole Shrimp Habitat

The potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat within the study area is within what is described in the draft Solano HCP as having a low conservation value. The Department will compensate for the effects to vernal pool habitat based on the conservation strategy in the draft Solano HCP as follows:

<table>
<thead>
<tr>
<th>Type of Effect</th>
<th>Compensation Ratio</th>
<th>Type of Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>1:1</td>
<td>Preservation of vernal pool and swale habitat</td>
</tr>
<tr>
<td>Direct</td>
<td>1:1</td>
<td>Restoration of vernal pool and swale habitat</td>
</tr>
<tr>
<td>Indirect</td>
<td>1:1</td>
<td>Preservation of vernal pool and swale habitat</td>
</tr>
</tbody>
</table>

The above compensation through preservation and restoration will be implemented no later than sixty (60) calendar days prior to the date of initial ground disturbance of the specific construction packages.

Preservation and restoration for adverse effects to Low Value Conservation Areas shall occur within Medium to High Value Conservation Areas identified in the draft Solano HCP. The location of the compensation will be submitted for USFWS approval. Preservation and restoration ratios reflected above are based on the premise that effects to low value conservation areas will be compensated in medium to high value areas.

The Department will provide a Funding Assurance Letter stating that sufficient funds for habitat compensation have been budgeted in the Phase 1 Project Expenditure Authorization. The Funding Assurance Letter will be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering.

3.3.5.5 Valley Elderberry Longhorn Beetle (VELB)

VELB is federally listed as a threatened species (45 FR 52803). This species was first described in 1921 from specimens collected in Sacramento (U.S. Fish and Wildlife Service 1984). On February 14, 2007, USFWS completed a 5-year review recommending the species be delisted. However, a delisting proposal has not yet been released. The species’ range extends throughout the associated foothills of the Central Valley in California, from Kern County in the south to Shasta County in the north (Jones & Stokes Associates 1985, 1986, 1987).

VELB is closely associated with elderberry, the host plant for beetle larvae. Elderberry is considered a typical riparian shrub (Roberts et al. 1977; Katibah et al. 1984; Warner 1984) in California. Blue elderberry is a hardy shrub that successfully grows in a variety of riparian habitat types. In a study of Sacramento Valley riparian vegetation, Conard et al. (1977) found that elderberry grows mainly at an intermediate elevation in the floodplain, in association with box elder and buttonbush. Where a source of water exists, elderberry shrubs grow in nonriparian habitats. However, most VELB occurrences are known from elderberry shrubs in or adjacent to riparian communities.
**Affected Environment**

Information on all elderberry shrubs in the study area is provided below in Table 3.3.5-7. Effects on VELB by alternative are discussed in the Environmental Consequences section.

<table>
<thead>
<tr>
<th>Shrub</th>
<th>Presence of Exit Holes?</th>
<th>Riparian Habitat?</th>
<th>Number of Stems (by Diameter)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>One to Three Inches</td>
<td>Three to Five Inches</td>
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<td>3</td>
<td>Yes, old hole</td>
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<td>22</td>
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</tr>
</tbody>
</table>

**Table 3.3.5-7. Summary of Stem Counts for All Elderberry Shrubs In the Study Area**

Twenty-two shrubs were identified in the study area. Locations of all the shrubs are shown in Figure 3.3-2a, 2b, 2c, 2d - Sheets 7, 17, 18, and 21 in Volume 2. Shrubs 1–15 were located during field surveys in 2007. Shrubs 16–22 were located on the east side of Dan Wilson Creek during field surveys in 2004 conducted for the City of Fairfield Corporate Commons EIR (RBF Consulting 2005). An exit hole was observed in Shrub 2 and an old exit hole was observed in Shrub 3 which would indicate the presence of VELB.
In 2004, the seven elderberry shrubs (shrubs 16-22) adjacent to Dan Wilson Creek appeared to have been cut back to the ground in the preceding couple of years, as evidenced by the large amount of new growth that appeared to be growing from existing parent material, as well as the presence of large remnants of cut elderberry stems. Although only a few of the living elderberry stems on the seven shrubs measured at least one inch in diameter at the time of the 2004 field surveys, these shrubs appeared to be growing rapidly, and a number of additional stems are likely to have attained a diameter of one inch or more by the end of the 2010 growing season and in subsequent growing seasons.

**Alternative B**
Under Alternative B, 12 elderberry shrubs were identified in the following three locations. The number and size of stems present on each shrub and riparian habitat associations for each shrub are listed in Table 3.3.5-7 and illustrated in Figure 3.3-2a in Volume 2.

- Along Green Valley Creek north of I-80 (Sheet 17 and 18).
- Adjacent to the east side of Dan Wilson Creek (Sheet 21).
- Along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek in the project area (Sheet 7).

**Alternative B, Phase 1**
In the project area for Alternative B, Phase 1, one elderberry shrub was identified in one location along Green Valley Creek north of I-80 (Volume 2, Figure 3.3-2b, Sheet 18).

**Alternative C**
In the Alternative C study area, 11 elderberry shrubs were identified in three locations, as illustrated in Figure 3.3-2c in Volume 2.

- Along Green Valley Creek north of I-80 (Sheet 17).
- Adjacent to the east side of Dan Wilson Creek (Sheet 21).
- Along the north and south sides of SR 12W in the vicinity of Jameson Canyon (Sheet 7).

**Alternative C, Phase 1**
Twelve elderberry shrubs were identified including

- Ten shrubs along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek in the project area (Volume 2, Figure 3.3-2d, Sheet 7).
- Two shrubs along Neitzel Road near Green Valley Creek (Volume 2, Figure 3.3-2b, Sheet 18).

**Environmental Consequences**

**Potential Loss of VELB Habitat Resulting from Construction**

Both build alternatives would directly affect (by removal or transplanting) VELB habitat (elderberry shrubs) although Alternative B, Phase 1 would only indirectly affect elderberry
shrubs. These conclusions are consistent with a “may affect, likely to adversely affect” determination that would occur under the Section 7 FESA process.

Possible indirect effects on VELB potentially occurring within 100 feet of the construction work area include increases in dust accumulation on shrubs from ground-disturbing activities and removal of associated woodland species. Tree and shrub removal activities within the study area would be minimized and would involve only the removal of trees and shrubs necessary to construct the proposed project; however, ground-disturbing activities occurring within 100 feet of an elderberry shrub could cause an accumulation of dust on elderberry shrubs, altering VELB habitat. Although implementation of the build alternatives would not change the hydrology of the existing habitat, excavation and grading in the vicinity of an elderberry shrub could damage the root system, resulting in death of the shrub.

Construction activities associated with Alternative B would directly affect 11 elderberry shrubs, as listed in Table 3.3.5-8. Shrub 16 is more than 20 feet but less than 100 feet from proposed construction activities for Alternative B, and could be indirectly affected by construction.

### Table 3.3.5-8. Summary of Elderberry Shrub Effects under Alternative B

<table>
<thead>
<tr>
<th>Shrub</th>
<th>Presence of Exit Holes?</th>
<th>Riparian Habitat?</th>
<th>Number of Stems (by Diameter)</th>
<th>Effect on Shrub (None, Direct, or Indirect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>One to Three Inches</td>
<td>Three to Five Inches</td>
</tr>
<tr>
<td>1</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Yes, old hole</td>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td>Yes</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>No</td>
<td>Yes</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>No</td>
<td>Yes</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Indirect total | 4 | 0 | 0

Direct total | 15 | 16 | 16

Overall total | 19 | 16 | 16

Alternative B, Phase 1 would directly affect one shrub during construction, as listed in Table 3.3.5-9. Alternative B, Phase 1 would not indirectly affect any shrubs.
Table 3.3.5-9. Summary of Elderberry Shrub Effects under Alternative B, Phase 1

<table>
<thead>
<tr>
<th>Shrub</th>
<th>Presence of Exit Holes?</th>
<th>Riparian Habitat?</th>
<th>Number of Stems (by Diameter)</th>
<th>Effect on Shrub (None, Direct, or Indirect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>One to Three Inches</td>
<td>Three to Five Inches</td>
</tr>
<tr>
<td>11</td>
<td>No</td>
<td>Yes</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternative C would directly affect ten shrubs, as listed in Table 3.3.5-10. Shrub 16 is more than 20 feet and less than 100 feet from proposed construction activities for Alternative C, and could be indirectly affected by construction.

Table 3.3.5-10. Summary of Elderberry Shrub Effects under Alternative C

<table>
<thead>
<tr>
<th>Shrub</th>
<th>Presence of Exit Holes?</th>
<th>Riparian Habitat?</th>
<th>Number of Stems (by Diameter)</th>
<th>Effect on Shrub (None, Direct, or Indirect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>One to Three Inches</td>
<td>Three to Five Inches</td>
</tr>
<tr>
<td>1</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Yes, old hole</td>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td>Yes</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>No</td>
<td>Yes</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Indirect totals: 4  0  0
Direct totals: 12 14 14
Overall totals: 16 14 14

Alternative C, Phase 1 would directly affect shrubs 1–10 during construction, as listed in Table 3.3.5-11. Construction could indirectly affect shrubs 11 and 12 which are within 100 feet of construction along Neitzel Road.
### Table 3.3.5-11. Summary of Elderberry Shrub Effects under Alternative C, Phase 1

<table>
<thead>
<tr>
<th>Shrub</th>
<th>Presence of Exit Holes?</th>
<th>Riparian Habitat?</th>
<th>Number of Stems (by Diameter)</th>
<th>Effect on Shrub (None, Direct, or Indirect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>One to Three Inches</td>
<td>Three to Five Inches</td>
</tr>
<tr>
<td>1</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Yes, old hole</td>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td>Yes</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>No</td>
<td>Yes</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>No</td>
<td>Yes</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>No</td>
<td>Yes</td>
<td>15</td>
<td>0</td>
</tr>
</tbody>
</table>

Indirect total 18 2 2
Direct total 12 14 14
Overall total 30 16 16

Under the No-Build Alternative, no construction activities would occur, and no impacts on VELB or its habitat would occur.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08) and the measure below would address direct and indirect effects to VELB under all alternatives.

**Minimize Direct and Indirect Effects on VELB**

For the compensation measure below, minimization ratio tables are provided specific to each build alternative.

- The direct and indirect effects on VELB will be minimized by transplanting directly affected shrubs, as well as providing supplemental plantings to ensure there is an abundance of host plants for VELB. The Department and STA will work with the Solano County Resource Conservation District or a USFWS-approved bank to facilitate the plant removal and transplanting effort. Transplantation of all elderberry shrubs that are within the construction footprint will be done prior to ground-disturbing activities within 100 feet of the shrubs and will be conducted according to the USFWS’s 1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle. A USFWS-approved biologist will be on-site to monitor the transplanting of the elderberry plants.

- Install ESA-type fencing and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by USFWS, the fencing will provide a minimum 20-foot setback from the drip line of each elderberry plant.
• Provide contractors with training educating them on the status of VELB and its host plant and emphasizing the need to avoid damaging elderberry plants.

• Dust control measures will be implemented for all ground-disturbing activities in the project area. These measures may include application of water to graded and disturbed areas that are unvegetated. To avoid attracting Argentine ants, at no time will water be sprayed within the driplines of elderberry shrubs.

• Erect signs every 50 feet along the edge of the avoidance area with 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.” The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

• Restore, to the maximum extent practicable, any damage or disturbance to the buffer area (areas within 100 feet of elderberry plants) during construction. Provide erosion control and revegetate with appropriate native plants.

• Prohibit use of insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant in the buffer areas or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or more in diameter at ground level.

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat

Project areas will be resurveyed for elderberry shrubs prior to construction.

The Department would implement one of the following:
1. Provide replacement plantings and associated native plantings as described in Table 3.3.5-12 at a USFWS-approved location.
2. Purchase valley elderberry longhorn beetle credits from a USFWS-approved conservation bank.

Table 3.3.5-12. USFWS-Approved Compensation Ratios for VELB Habitat

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems (diameter in inches at ground level)</th>
<th>Exit Holes?</th>
<th>Elderberry Seedling Ratio</th>
<th>Associated Native Plant Ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonriparian</td>
<td>1–3</td>
<td>No:</td>
<td>1:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Nonriparian</td>
<td>3–5</td>
<td>No:</td>
<td>2:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Nonriparian</td>
<td>≥5</td>
<td>No:</td>
<td>3:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Riparian</td>
<td>1–3</td>
<td>No:</td>
<td>2:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Riparian</td>
<td>3–5</td>
<td>No:</td>
<td>3:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Riparian</td>
<td>≥5</td>
<td>No:</td>
<td>4:1</td>
<td>1:1</td>
</tr>
</tbody>
</table>

* Ratio of native trees/plants to each elderberry seedling.
Alternative B
The minimum numbers of elderberry cuttings or seedlings and native plants required to
compensate for effects under Alternative B are provided in Table 3.3.5-13.

Table 3.3.5-13. Affected Elderberry Plant Minimization Ratios Based on Location,
Stem Diameter, and Presence of Exit Holes under Alternative B

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems</th>
<th>Holes</th>
<th>Number of Stems</th>
<th>Elderberry Ratios (multiply number of stems by)</th>
<th>Elderberry Planting</th>
<th>Associated Native Planting</th>
<th>Native Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-riparian</td>
<td>≥ 1 inch</td>
<td>No</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>and &lt; 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>Yes</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>&gt; 3 inches</td>
<td>No</td>
<td>7</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>and &lt; 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>Yes</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>≥ 5 inches</td>
<td>No</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian</td>
<td>≥ 1 inch</td>
<td>No</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>and &lt; 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>Yes</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>&gt; 3 inches</td>
<td>No</td>
<td>8</td>
<td>3</td>
<td>24</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>and &lt; 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>Yes</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>≥ 5 inches</td>
<td>No</td>
<td>9</td>
<td>4</td>
<td>36</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>47</td>
<td>127</td>
<td>147</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total acres</td>
<td></td>
<td></td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternative B, Phase 1
The minimum numbers of elderberry cuttings or seedlings and native plants required to
compensate for proposed project effects are provided in Table 3.3.5-14.

Table 3.3.5-14. Affected Elderberry Plant Minimization Ratios Based on Location,
Stem Diameter, and Presence of Exit Holes under Alternative B, Phase 1

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems</th>
<th>Holes</th>
<th>Number of Stems</th>
<th>Elderberry Ratios (multiply number of stems by)</th>
<th>Elderberry Planting</th>
<th>Associated Native Planting</th>
<th>Native Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-riparian</td>
<td>1–3</td>
<td>No</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>3–5</td>
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<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>&gt;5</td>
<td>No</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>1–3</td>
<td>No</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>3–5</td>
<td>No</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>1</td>
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<td>0</td>
<td>6</td>
<td>0</td>
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<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>&gt;5</td>
<td>No</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>1</td>
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<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>7</td>
<td>20</td>
<td>20</td>
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<td></td>
</tr>
<tr>
<td>Total acres</td>
<td></td>
<td></td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternative C
The minimum numbers of elderberry cuttings or seedlings and native plants required to
compensate for proposed project effects under Alternative C are shown in Table 3.3.5-15.
### Table 3.3.5-15. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative C

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems (diameter in inches at ground level)</th>
<th>Holes</th>
<th>Number of Stems</th>
<th>Elderberry Ratios (multiply number of stems by)</th>
<th>Elderberry Planting</th>
<th>Associated Native Planting</th>
<th>Native Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-riparian</td>
<td>1–3</td>
<td>No</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>3–5</td>
<td>No</td>
<td>7</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>&gt;5</td>
<td>No</td>
<td>5</td>
<td>3</td>
<td>15</td>
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<td>1</td>
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<td></td>
<td></td>
<td>Yes</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>1–3</td>
<td>No</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
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<td>0</td>
<td>4</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>3–5</td>
<td>No</td>
<td>6</td>
<td>3</td>
<td>18</td>
<td>18</td>
<td>1</td>
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<td></td>
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<td>Yes</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>&gt;5</td>
<td>No</td>
<td>7</td>
<td>4</td>
<td>28</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td>40</td>
<td>107</td>
<td>127</td>
<td><strong>Total acres needed for compensation</strong></td>
<td>0.97</td>
</tr>
</tbody>
</table>

### Alternative C, Phase 1

The minimum numbers of elderberry cuttings or seedlings and native plants required to compensate for effects under Alternative C, Phase 1 are provided in Table 3.3.5-16.

### Table 3.3.5-16. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative C, Phase 1

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems (diameter in inches at ground level)</th>
<th>Holes</th>
<th>Number of Stems</th>
<th>Elderberry Ratios (multiply number of stems by)</th>
<th>Elderberry Planting</th>
<th>Associated Native Planting</th>
<th>Native Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-riparian</td>
<td>1–3</td>
<td>No</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>1</td>
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<td></td>
<td></td>
<td>Yes</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>3–5</td>
<td>No</td>
<td>7</td>
<td>2</td>
<td>14</td>
<td>14</td>
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<td></td>
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<td>1</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>&gt;5</td>
<td>No</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>2</td>
<td>6</td>
<td>12</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>1–3</td>
<td>No</td>
<td>20</td>
<td>2</td>
<td>40</td>
<td>40</td>
<td>1</td>
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<td></td>
<td>Yes</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Riparian</td>
<td>3–5</td>
<td>No</td>
<td>8</td>
<td>3</td>
<td>24</td>
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<td>4</td>
<td>36</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
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<td><strong>Totals</strong></td>
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<td>62</td>
<td>157</td>
<td>177</td>
<td><strong>Total acres needed for compensation</strong></td>
<td>0.97</td>
</tr>
</tbody>
</table>

### 3.3.5.6 California Red-Legged Frog

CRLF is federally listed as threatened and is a California species of special concern. USFWS published a recovery plan in 2002 (U.S. Fish and Wildlife Service, 2002) and published a final
rule to revise critical habitat for CRLF on March 17, 2010 (75 FR 12816). The BSA contains a portion of one recovery area, the Jameson Canyon-Lower Napa River Core Recovery Area, as well as portions two critical habitat Units (SOL-2 and SOL-3) (Figure 3.3-5).

Historically, CRLF was common from Redding to Baja California, including the Sierra Nevada and Coast Ranges. Its current range is much reduced, and most remaining populations are found in central California along the coast from Marin to Ventura Counties.

CRLFs breed in lowland and foothill streams and wetlands, including livestock ponds (Jennings and Hayes 1994). They may also be found in upland habitats near breeding areas and along intermittent drainages connecting aquatic sites. Adults may take refuge during dry periods in rodent holes or leaf litter in riparian habitats. Although CRLFs typically remain near streams or ponds, recent studies in Santa Cruz suggest that they are capable of moving 1 mile or more in upland habitat or through ephemeral drainages (Bulger 1999).

Although CRLFs are found in ephemeral streams and ponds, populations cannot be maintained where all surface water disappears (Jennings and Hayes 1994). CRLFs are infrequent or absent in habitats where introduced aquatic predators such as green sunfish (*Lepomis cyanellus*), Louisianan red-swamp crayfish (*Procambarus clarkii*), and bullfrogs (*Rana catesbeiana*) are present (Hayes and Jennings 1986, 1988), probably because larval stages are susceptible to predation (Jennings and Hayes 1994).

The CNDDB lists 16 records from 1993 to 2006 for CRLF within a 5-mile radius of the BSA (California Natural Diversity Database 2010) (Figure 3.3-3b). The 16 records were all associated with aquatic breeding and dispersal habitat and included adults, juveniles, and tadpoles. Two recent records in the CNDDB—occurrences 660 and 820—are on the Mangels property north of SR 12W. Occurrence 660 is associated with the intermittent drainage containing small plunge pools surrounded by grasslands adjacent to the BSA, and occurrence 820 is in the large perennial pond on the Mangels property. The remaining 14 records are from 2–5 miles west and south of the BSA at the SR 12/I-80/I-680 interchange (Figure 3.3-3b). These occurrences are 1602, 896, 228, 403, 402, 77, 290, 237, 416, 289, 917, 950, 857, and 306.).

**Affected Environment**

Monk & Associates (2003 and 2004) conducted site assessments and protocol-level surveys for CRLF in several locations within the current BSA. These assessments and surveys examined ponds, seasonal wetlands, and seasonal drainages on the Mangels property north of SR 12W, Jameson Canyon Creek, Dan Wilson Creek, and Suisun Creek. Monk & Associates found CRLF tadpoles in the pond just north of W-150 and a CRLF adult in an intermittent drainage (OW-161, which includes W-177 and W-178 on the Mangels property) (Figure 3.3-4, Sheet 5).

ICF conducted a CRLF site assessment in 2007 using aerial images and, where accessible, site visits within 1 mile of the construction footprint (ICF Jones & Stokes 2009a). The site assessment was submitted to USFWS for review on March 3, 2009. The biologists assessed habitat suitability at 17 sites within the BSA, including one creek and 14 ponds within the CRLF study area. No CRLFs were observed during the site assessment surveys.
Aquatic habitat includes creeks, ponds, marshes, and seasonal drainages which may not all be suitable for breeding but may be used for other essential behaviors including foraging, dispersing, and cover. Potential aquatic breeding habitat for CRLF is defined as still or slow-moving water more than 2.3 feet deep with emergent vegetation. The most suitable riparian vegetation is willow (Salix spp.), although cattails (Typha spp.) and bulrushes (Scirpus spp.) can also provide potential habitat (Jennings 1988). Potential upland habitat is defined to include all alkali seasonal marsh, woodlands, annual grassland, riparian woodland, upland scrub, and seasonal wetlands that are too shallow and ephemeral to provide aquatic habitat (Figure 3.3-4). Cultivated lands and developed lands do not provide potential CRLF upland habitat.

Upland habitat was defined as suitable if it was within one mile of aquatic habitat and there were no substantial barriers to CRLF movement including heavily traveled roads, development, and railroads. Suitable upland habitat includes all alkali seasonal marsh, woodlands, annual grassland, riparian woodland, upland scrub, and seasonal wetlands that were too shallow and ephemeral to provide aquatic habitat.

In an email dated July 15, 2010, USFWS contract biologist John Cleckler informed STA that USFWS considers all undeveloped habitat north of I-80 as potential CRLF habitat, comprising potential upland and aquatic (breeding and non-breeding) habitats. USFWS also stated they consider the Jameson Canyon Creek location south of I-80 (OW-8 on Figure 3.3-4, Sheet 9) as potential CRLF aquatic habitat. Mr. Cleckler stated that effects on CRLF aquatic and upland habitat at this location would likely be offset by the benefit to the species from bridging the creek. USFWS also stated that several areas considered not to be potential CRLF habitat in the 2007 CRLF site assessment conducted by ICF should be considered potential: Jameson Canyon Creek in two locations (OW-8a and OW-8) and upland habitat between the creek and I-80 (Figure 3.3-4, Sheets 3 and 7).

**Alternative B**

Suitable aquatic habitat for CRLF occurs in the following locations of the Alternative B study area (Volume 2, Figure 3.3-4a).

- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18)
- Perennial marsh (W-150) (Sheet 5)
- Four locations in Jameson Canyon Creek, including OW-8a upstream from Red Top Road, OW-8 at I-80, OW-8 upstream from I-680, and at I-80 (Sheets 4, 7)
- OW-8 tributaries (OW-8a, OW-8b, OW-8d) (Sheets 4, 7)
- Mangels pond (Sheet 5)
- Drainages 177 and 178, the unnamed drainage north of SR 12W (OW-161) (Sheet 5)
- Green Valley Creek (W-45) (Sheets 17, 18)
- Dan Wilson Creek (W-53 and OW-53) (Sheet 21)
- Suisun Creek (OW-56) (Sheet 22)
The portion of the study area in the realignment for Red Top Road north of SR 12W is within critical habitat for CRLF.

**Alternative B, Phase 1**

There are five locations for CRLF aquatic habitat under Alternative B, Phase 1: Green Valley Creek (W-45), an adjacent perennial marsh (W-45e-1), and Jameson Canyon Creek (OW-8) at I-80, and Dan Wilson Creek (W-53 and OW-53), (Volume 2, Figure 3.3-4b, Sheets 7, 17, 18, and 21).

There is no critical habitat for CRLF in the footprint of this alternative.

**Alternative C**

Suitable habitat under Alternative C is the same as that described above for Alternative B except for two locations on Jameson Canyon Creek, Jameson Canyon Creek upstream of I-680 is in Alternative C study area but will not be affected by the proposed action because the freeway will be elevated at this location. In addition, there will be no effect from Alternative C on the Jameson Canyon Creek crossing at Red Top Road.

**Alternative C, Phase 1**

Suitable aquatic habitat for CRLF occurs in the following locations of the Alternative C, Phase 1 study area (Volume 2, Figure 3.3-4d).

- A perennial marsh north of SR 12W (W-150) (Sheet 5).
- Seasonal drainages south of SR 12-W (OW-8b and OW-8d) (Sheet 3).
- A seasonal drainage (OW-161) (Sheet 5).
- Mangels pond (Sheet 5).
- Seasonal wetlands (W-177 and W-178) (Sheet 5).
- Green Valley Creek (W-45) (Sheets 17 and 18).
- Perennial marsh (W-45e-1) (Sheets 17 and 18).
- Jameson Canyon Creek in 3 locations (OW-8a, OW-8, and OW-8) (Sheet 4, 7, and 9).

Of the noted aquatic habitat locations only perennial marshes (W-150 and W-45e-1) and Mangels pond provide potential breeding habitat based on the presence of water of a duration that is long enough to support CRLF breeding.

The portion of the study area in the realignment for Red Top Road north of SR 12W is within critical habitat for CRLF (Figure 3.3-5).

**Environmental Consequences**

**Potential Loss of CRLF and its Habitat Resulting from Construction**

Both build alternatives could result in temporary and permanent effects to CRLF and its habitat from construction. In addition, both build alternatives are likely to adversely affect CRLF critical
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

The USFWS has determined that the project “may affect, likely to adversely affect” CRLF under the Section 7 FESA process. Construction activities associated with road construction and bridge widening in potential CRLF habitat in the project area could result in indirect effects on water quality downstream from the construction work area. Increased sedimentation could reduce the suitability of CRLF habitat downstream of the construction area by filling in pools and smothering eggs. Accidental spills of toxic fluids also could result in the subsequent mortality of CRLFs if these substances flow downstream from the construction area and CRLFs are present. Under Alternative B, Alternative C, and Alternative C, Phase 1, construction of the project would fill in a portion of a drainage (OW-161) that is upstream from CRLF occurrences (W-177 and W-178) (Volume 2, Figures 3.3-4a, Sheet 5; 3.3-4c, Sheet 5; and 3.3-4d, Sheet 5).

Under the No-Build Alternative, no construction activities would occur, and no impacts on CRLF or its habitat would occur.

**Alternative B**

Construction of Alternative B would result in both temporary disturbance and permanent loss of both aquatic and upland habitat for CRLF in the following locations within the project footprint (Volume 2, Figure 3.3-4a).

- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18), for a new off-ramp from westbound I-80 to Green Valley Road.
- Perennial marsh (W-150) (Sheet 5) for road widening on SR 12W.
- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (OW-8d) (Sheets 3 and 4).
- Grading and culverting of the unnamed drainage within the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Green Valley Creek for the Green Valley Creek bridge (W-45) (Sheets 17 and 18).
- Removal and replacement of the bridge over Dan Wilson Creek (W-53 and OW-53) (Sheet 21).
- Suisun Creek for the widening of I-80 (OW-56) (Sheet 22).

Construction within the potential CRLF sites identified above would result in the temporary disturbance of 2.16 acres and the permanent loss of 2.11 acres of potential CRLF aquatic habitat. Additionally, Alternative B would result in the loss of 109.23 acres and temporary disturbance of 37.58 acres of upland habitat within one mile of suitable aquatic habitat. Most of this habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction in the portion of the study area in the extension of Red Top Road north of SR 12W is within critical habitat for CRLF (Volume 2, Figure 3.3-4a, Sheets 4–7). Approximately 18.24
acres of critical habitat would be permanently affected and 1.98 acres would be temporarily affected by construction. In addition, the new road would reduce migration opportunities and increase mortality for CRLF for the approximately 65 acres of critical habitat surrounding Mangels pond. There will be an undercrossing paralleling the creek to allow cattle access. Although this undercrossing will provide a movement corridor, because CRLFs do not travel in straightline movements, there could still be substantial mortality from the new road. CRLFs could be directly affected by construction activities occurring in or adjacent to all of the locations described above. If CRLFs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, and accidental spill of toxic fluids (e.g., gasoline and other petroleum-based products). If CRLFs must be captured and relocated outside the construction work area, they could be exposed to increased risks of disease, predation, and competition that could result in increased mortality.

Alternative B, Phase 1
Construction of Alternative B, Phase 1 would affect CRLF aquatic habitat in the three locations described above in the affected environment (Volume 2, Figure 3.3-4b).

Potential upland habitat occurs within one mile of the aquatic habitat (Volume 2, Figure 3.3-4b, all sheets). Construction within the potential CRLF site identified above would result in the temporary disturbance of 0.96 acres and the permanent loss of 0.58 acre of potential CRLF aquatic habitat. Additionally, Alternative B, Phase 1 would result in the loss of 21.09 acres and temporary disturbance of 0.74 acres of upland habitat. This habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction for this alternative would not affect critical habitat.

Construction effects under Alternative B, Phase 1 would be similar to those described for Alternative B.

Alternative C
Construction of Alternative C would result in temporary disturbance and permanent loss of both aquatic and upland habitat for CRLF in the following locations within the project footprint (Volume 2, Figure 3.3-4c).

- Perennial marsh (W-150) (Sheet 5) for road widening on SR 12W.
- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (W-8d) (Sheets 3 and 4).
- Grading and culverting of the unnamed drainage for the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Green Valley Creek for the Green Valley Creek bridge (W-45) (Sheets 17 and 18).
- Removal and replacement of the bridge over Dan Wilson Creek (W-53 and OW-53) (Sheet 21).
- Suisun Creek for the widening of I-80 (OW-56) (Sheet 22).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18) for a new off-ramp from westbound I-80 to Green Valley Road.

Construction in the potential CRLF sites identified above would result in the temporary disturbance of 1.25 acre and the permanent loss of 1.68 acres of potential CRLF aquatic habitat. Additionally, Alternative C would result in the loss of 142.63 acres and temporary disturbance of 12.99 acres of upland habitat for CRLF.

Construction on the extension of Red Top Road north of SR 12W would temporarily affect 0.13 acre and permanently affect 22.89 acres of critical habitat. In addition, approximately 65 acres of critical habitat would be isolated from critical habitat to the north of the road extension.

Construction effects under Alternative C would be similar to those described for Alternative B.

**Alternative C, Phase 1**

Construction of Alternative C, Phase 1 would result in project effects of CRLF habitat in the following locations within the project footprint (Volume 2, Figure 3.3-4d).

- Grading and culverting of the unnamed drainage for the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b, W-8d) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Green Valley Creek (W-45) for the Green Valley Creek bridge (Sheets 17 and 18).

Construction in the potential CRLF habitat identified above would result in the temporary disturbance of 0 acres and the permanent loss of 2.86 acres of potential CRLF aquatic habitat. Additionally, Alternative C, Phase 1 would result in the loss of 78.48 acres and temporary disturbance of 19.32 acres of upland habitat. Most of this habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction on the extension of Red Top Road north of SR 12W would temporarily affect 0.47 acres and permanently affect 22.38 acres of critical habitat. In addition, approximately 65 acres of critical habitat would be isolated from critical habitat to the north of the road extension.

Construction effects under Alternative C, Phase 1 would be similar to those described for Alternative B.

**Indirect Effects from Habitat Fragmentation and Vehicle-Related Mortality**

Potential indirect effects on CRLF are degradation of water quality from the installation of additional impervious surfaces, increased vehicle-related mortality, isolation of the aquatic breeding site at the Mangels property from upland dispersal and aestivation habitat, and hydrologic modification to the water source feeding the Mangels pond and perennial marsh (OW-150). These indirect effects are discussed below.
- Construction activities associated with road construction and bridge widening in potential CRLF habitat could result in indirect effects on water quality downstream from the construction work area. Increased sedimentation could reduce the suitability of CRLF habitat downstream of the construction area by filling in pools and smothering eggs. Accidental spills of toxic fluids also could result in the subsequent take of CRLF if these materials enter the aquatic system from the construction area. Hydrocarbon and heavy metal pollutants associated with roadside runoff also have the potential to enter the aquatic system, affecting water quality and CRLF.

- The proposed project is not expected to degrade water quality and will adhere to the provisions of the California Regional Water Quality Control Board 401 Certification and Basin Plan to treat nonpoint source pollutants associated with the increase in impervious surface area. Permanent treatment BMPs (such as biostrips and bioswales) will be incorporated into the project, along with a SWPPP and erosion control BMPs to minimize any potential indirect effects on downstream resources from sedimentation transport or point source pollutants resulting from construction activities in the study area. Through the use of the Department standard BMPs, there will be no anticipated degradation in water quality that would indirectly affect CRLF or potential CRLF habitat.

- Roads are known to affect amphibian populations through population isolation, habitat fragmentation, and vehicle mortality. Most of the effects of the proposed project on CRLF would occur through the modification of potential CRLF upland habitat adjacent to existing highways due to grade modification related to cut-and-fill limits. The Department and STA will revegetate these locations adjacent to the highway with the appropriate plant/seed mix to facilitate use by CRLF post construction. However, the proposed Business Center Drive extension (Figure 3.3-4, Sheets 2–8) crosses through critical habitat Units SOL-2 and SOL-3 (Figure 3.3-5) and may isolate an existing CRLF breeding pond on the Mangels property from upland dispersal habitat and designated critical habitat. While all areas, except those specifically converted to local roadway use, would still be available to CRLF, the placement of the local road at this site may result in the impediment to CRLFs dispersing northwest–southeast to and from the Mangels breeding pond.

- Highways that support in excess of 26 vehicles per hour from 10 p.m. to 4 a.m. have been found to constitute barriers to the dispersal of other amphibian species (U.S. Fish and Wildlife Service 2002). Traffic counts on the new local road would likely exceed 26 vehicles per hour from 10 p.m. to 4 a.m. based on traffic studies. CRLFs are likely to disperse to potential habitat west of the Mangels pond (Figure 3.3-4, Sheet 5), potentially resulting in increased mortality if frogs attempt to disperse across the proposed Business Center Drive extension. Construction of the new road would likely present a barrier to CRLF dispersal, with indirect effects due to increased vehicle-related mortality and habitat fragmentation.

- As a measure to minimize and avoid indirect effects and potential mortality of CRLF, the Department and STA have designed the Business Center Drive extension to include an oversized culvert, two large span undercrossings, and approximately 2.5 miles of directional fencing (Figure 3.3-8) to guide CRLFs to the undercrossing locations. These features are intended to facilitate dispersal of CRLFs under the Business Center Drive extension and to minimize mortality of CRLFs attempting to disperse across the road. Because this area of
Mangels property is somewhat hilly and will have large cuts and fills, additional culverts are not a practical solution.

- The proposed Business Center Drive extension will require large areas of earth moving to accommodate the cut-and-fill requirements for this local road. The Business Center Drive extension can be described in general terms as up-gradient from the Mangels pond. Large-scale earth movement could potentially modify the water table and groundwater depth in this vicinity. The Department and STA will ensure that the water source for this CRLF breeding pond is not altered. The Department and STA will conduct a hydrologic analysis of the Mangels property and the surrounding watershed to confirm the Mangels pond is fed by surface runoff and that the project will not significantly affect water quality and hydrology of the pond.

- STA has proposed utilizing the excess barrow material from the Business Center Drive extension as fill material for earlier construction packages. The first phase of construction is scheduled for 2012–2014, while the area of borrow material and construction is scheduled for 2018–2020. There will be a period of approximately 5 years that excavated areas will be idle before construction of the roadway for Business Center Drive extension actually occurs. Currently, the Department and STA are considering all the area within the cut-and-fill lines at the location of the Business Center Drive extension as permanent effects. Consequently, the impact analysis will not change.

**Avoidance, Minimization, and/or Mitigation Measures**

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), the USFWS standardized avoidance and minimization efforts for CRLF, construction BMPs, and the compensatory mitigation identified below would minimize effects on CRLF and potential habitat that could occur in the vicinity of the aquatic and upland habitat locations identified in the study area.

**Conduct Preconstruction Surveys and Monitor Construction Occurring near Potential California Red-Legged Frog Habitat**

- No more than 20 working days prior to any ground disturbance that could reasonably affect CRLF, preconstruction CRLF surveys will be conducted by a USFWS-approved biologist. These surveys will include both day and nighttime surveys and include the project limits and adjacent areas accessible to the public to determine presence of the species. The USFWS-approved biologists will investigate potential CRLF cover sites. This includes full investigation of mammal burrows. The entrances will be collapsed following investigation.

- Wildlife exclusion fencing will be placed at the edge of active construction areas (cleared by biological surveys) to restrict wildlife access from the adjacent upland and riparian habitat. The fencing will consist of taut silt fabric: 24 inches high, staked at 10-foot intervals, with the bottom buried 6 inches below grade. The silt fencing will be maintained such that it is intact during rain events and 24 hours after any rain event.

- In addition to the silt fencing, the active construction area will be delineated with high-visibility temporary ESA-type fencing at least 4 feet in height, flagging, or other barrier to
prevent encroachment of construction personnel and equipment outside the described project footprint. Such fencing will be inspected and maintained daily by the onsite biologist until completion of the project. The fencing will be removed from areas only after all construction equipment is removed. No project activities will occur outside the delineated project construction area.

- The USFWS-approved biologist(s) shall perform a California red-legged frog clearance survey immediately prior to the initial ground disturbance. Safety permitting, the USFWS-approved biologist(s) will investigate areas of disturbed soil for signs of the listed species within 30 minutes following the initial disturbance of that given area.

- If a CRLF is encountered with the study area, the Department Resident Engineer will direct all work in the surrounding area to stop and the monitor will assess the situation to select a course of action that will minimize adverse effects to the individual and contact USFWS once the site is secure.

- CRLFs encountered that are not in danger will be left undisturbed and allowed to move out of the study area and hazardous situation on its own to a safe location. The animal should not be picked up and moved based on it not moving fast enough or an inconvenience for construction activities. This guidance applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frogs that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California red-legged frog should the frogs move outside the immediate area.

- Any CRLFs encountered that are in danger will be relocated outside the silt fence within the same riparian area or watershed by the approved biological monitor. If relocation of the CRLF outside the fence is not feasible (i.e., there are too many frogs observed per day), the approved biological monitor will relocate frogs to a preapproved location determined by the Department and USFWS. Prior to construction, the Department will obtain approval of the relocation protocol from USFWS in the event that CRLFs are encountered and need to be relocated away from the immediate project area (Caltrans 2007b).

- USFWS-approved biologist(s) will be onsite during all activities that may result in take of a CRLF. The qualifications of the biologist(s) will be presented to USFWS for review and written approval prior to groundbreaking at the project site where the project could reasonably affect CRLF. The Resident Engineer will stop work at the request of the USFWS-approved biologist(s) if activities are identified that may result in take of a CRLF. Should the biologist(s) or Resident Engineer exercise this authority, USFWS will be notified by telephone and email within 1 working day. The USFWS contact will be the Coast-Bay Branch Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600.

- The Resident Engineer will halt work immediately and contact the USFWS-approved project biologist and the USFWS in the event that a CRLF is found within the construction zone. The Resident Engineer will suspend all construction activities in the immediate construction zone until the animal leaves the site voluntarily or is removed by the biologist to a release site using USFWS-approved transportation techniques.

- A USFWS-approved biologist will conduct environmental education training for all construction employees working on ground-disturbing activities. The program will include
the following: a description of CRLF and its habitat needs, photographs of the species, an explanation of its legal status and protection under FESA, and a list of the measures that will be implemented to minimize and avoid potential effects on CRLF.

- Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

- Project-related vehicles will observe a 20 mph speed limit within construction areas, except on county roads and state and federal highways; this is particularly important at night when CRLFs are most active.

- To the maximum extent practicable, nighttime construction will be minimized.

- To eliminate attracting predators of CRLF, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the entire project site.

- To avoid injury or death of CRLFs, no firearms will be allowed on the project site except for those carried by authorized security personnel or local, state, or federal law enforcement officials.

- To prevent harassment, injury, or mortality of CRLFs or destruction of their cover sites by dogs or cats, no canine or feline pets will be permitted in the active construction area.

- To the extent practicable, in areas, or adjacent to areas, of potential CRLF habitat, initial ground-disturbing activities will be avoided between November 1 and March 31 to avoid the period when CRLFs are most likely to be moving through upland areas. When ground-disturbing activities must take place between November 1 and March 31, daily monitoring will occur for CRLF.

- If requested through the Resident Engineer or Construction Inspector before, during, or upon completion of groundbreaking and construction activities, the Department will ensure that USFWS and/or its designated agents can, immediately and without delay, access and inspect the project site for compliance with the proposed project description, conservation measures, and terms and conditions of the BO, and to evaluate project effects on CRLF and their habitat.

- To prevent inadvertent entrapment of CRLFs during construction, all excavated, steep-walled holes or trenches more than 1 feet deep will be covered at the close of each working day with plywood or similar material, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the onsite biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or USFWS will be contacted by telephone for guidance. USFWS will be notified of the incident by telephone and email within 1 working day.

- Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because CRLFs may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

- Injured CRLFs will be cared for by a licensed veterinarian or other qualified person such as the onsite biologist; dead individuals of any listed species will be preserved according to
standard museum techniques and held in a secure location. USFWS will be notified within 1 working day of the discovery of death or injury to a listed species that results from project-related activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a USGS 7.5-minute quadrangle and other maps at a finer scale, as requested by USFWS, and any other pertinent information. Dead individual animals will be placed in a sealed plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag will be frozen in a freezer located in a secure location until instructions are received from USFWS regarding the disposition of the specimen or USFWS takes custody of the specimen. The USFWS contacts are the Division Chief of the Endangered Species Program in the Sacramento Fish and Wildlife Office at (916) 414-6600 and the Resident Agent-in-Charge of USFWS’s Law Enforcement Division at (916) 414-6660.

- For onsite storage of pipes and conduits and other materials that could provide shelter for California red-legged frogs, an open-top trailer will be used to elevate the materials above ground. This is intended to reduce the potential for animals to climb into the conduits and other materials.

- Construction crews shall review the dewatering plan prior to any in-stream work within the bed and banks that requires the construction of coffer dams and/or dewatering.

- If pumping is used for dewatering, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent frogs from entering the pump.

- Removal of vegetation shall be accomplished by a progressive cutting of vegetation from the overstory level to the ground level to allow California red-legged frogs more opportunity move out of the work area under their own volition. Vegetation shall be cleared only where necessary and will be cut approximately 4 inches above soil level except in areas that will be excavated for roadway construction. This is intended to encourage plants that reproduce vegetatively to resprout after construction. All clearing and grubbing of woody vegetation shall be done using hand tools, small mechanical tools, or backhoes and excavators. All cleared vegetation shall be removed from the project footprint to prevent attracting animals to the project site.

- Materials left onsite overnight will be inspected for CRLF. All construction pipes, culverts, or similar structures; construction equipment; or construction debris left overnight in areas that may be occupied by CRLF will be inspected by the USFWS-approved biological monitor prior to the beginning of each day’s activities.

- Use of rodenticides and herbicides will be utilized in such a manner to prevent primary or secondary poisoning of listed species and depletion of prey populations on which they depend. All uses of such compounds will observe label and other restrictions mandated by EPA, the California Department of Pesticide Regulation, and other appropriate state and federal regulations, as well as additional project-related restrictions deemed necessary by USFWS or the California Department of Fish and Game.

- The USFWS-approved biologist(s) shall permanently remove, from the project site, any aquatic exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.
- Following construction, temporarily disturbed areas will be restored to preproject conditions or enhanced to compensate for the removal of vegetation.

**Compensate for Loss and Disturbance of California Red-Legged Frog Habitat**

The Department will compensate for harm resulting from adverse effects on the California red-legged frog and its habitat, and the adverse effects critical habitat for the California red-legged frog by providing appropriate habitat compensation.

The compensation will be based on the amount of permanent and temporary loss of red-legged frog habitat (Table 3.3.5-17). Temporary habitat loss will be compensated at rates based on the amount of time it takes to restore the habitat to baseline conditions following the date of initial habitat disturbance and whether the restored habitat will be subjected to ongoing Department routine maintenance activities, e.g., mowing, that may affect the species.

<table>
<thead>
<tr>
<th>Level of Effect</th>
<th>Location of Disturbance</th>
<th>Duration*</th>
<th>Compensation Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>Within or beyond maintained ROW</td>
<td>Permanent</td>
<td>3:1</td>
</tr>
<tr>
<td></td>
<td>Within maintained ROW and excluded</td>
<td>Permanent</td>
<td>2:1</td>
</tr>
<tr>
<td></td>
<td>by directional fence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>Within the maintained ROW</td>
<td>Within 1 year</td>
<td>1:1 onsite 1:1 offsite</td>
</tr>
<tr>
<td></td>
<td>Beyond the maintained ROW</td>
<td>Within 1 year</td>
<td>1:1 onsite 0.5:1 offsite</td>
</tr>
<tr>
<td></td>
<td>Within the maintained ROW</td>
<td>Within 2 year</td>
<td>1:1 onsite 1:1 offsite</td>
</tr>
<tr>
<td></td>
<td>Beyond the maintained ROW</td>
<td>Within 2 year</td>
<td>1:1 onsite 1:1 offsite</td>
</tr>
<tr>
<td></td>
<td>Within or beyond maintained ROW</td>
<td>Greater than 2 years</td>
<td>3:1 onsite OR 2:1 offsite AND 1:1 onsite</td>
</tr>
</tbody>
</table>

* period of time from the date of initial ground disturbance until the success criteria described in the restoration/revegetation plan are met.

The maintained ROW is defined as the ROW between the edge of pavement or denuded road shoulder and the Department ROW fence. Permanent effects will occur in areas of maintained ROW that include barriers to frog movement. Areas of ROW within and adjacent to retaining walls will be permanently affected by the project. The Department commits to installing a USFWS-approved frog barrier fence along the proposed Business Center Drive Extension from the existing Business Center Drive to Jameson Canyon Road in order to direct California red-legged frogs to the three proposed undercrossings. Since the barrier fence will likely prevent individuals of this threatened species from entering the maintained ROW, the entirety of the ROW within this area will be permanently affected by the proposed project. However, less compensation is necessary as the directional fence also results in a beneficial effect to California red-legged frogs by directing them to safe undercrossings. Off-site compensation is proposed to offset temporary impacts within the maintained ROW since habitat will continue to be impacted by on-going routine maintenance activities, e.g., mowing. Lastly, additional off-site compensation is necessary for temporal loss of habitat.
Compensation implemented within areas that are both California red-legged frog habitat and callippe silverspot butterfly habitat may be overlaid on common acreage as long as the area is appropriate habitat for each species. With USFWS approval, the conservation lands would receive compensation credit from the USFWS for both species.

Compensation will be implemented with in-perpetuity preservation of California red-legged frog habitat with high conservation values, consistent with the parameters described in the Draft Solano HCP (SCWA 2009) within sixty (60) calendar days prior to the date of initial ground disturbance at the project.

California red-legged frog habitat used for conservation will be: (1) preferably located within the California Red-Legged Frog Conservation Area defined in the Draft Solano HCP (SCWA 2009), (2) within 0.7 mile of unobstructed California red-legged frog breeding habitat and non-breeding aquatic habitats, (3) within a California red-legged frog critical habitat unit or within the vicinity of frog critical habitat, and (4) approval by USFWS.

The Department will provide a Funding Assurance Letter stating that sufficient funds for habitat compensation have been budgeted in the Phase 1 Project Expenditure Authorization. The Funding Assurance Letter will be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering.

### 3.3.5.7 California Tiger Salamander

The central population of CTS was federally listed as threatened on August 4, 2004 (69 FR 47212–47248). Distinct population segments in Santa Barbara and Sonoma Counties are federally listed as endangered (U.S. Fish and Wildlife Service 2005). CTS is also listed as threatened under the California Endangered Species Act.

The species is endemic to the San Joaquin–Sacramento River valleys, bordering foothills, and coastal valleys of central California (Barry and Shaffer 1994). The species’ range is from Sonoma County and the Colusa-Yolo County line south to Santa Barbara County in the Coast Ranges, and from southern Sacramento County south to Tulare County in the Central Valley (Jennings and Hayes 1994).

CTS is a lowland species restricted to grasslands and low foothill regions where its breeding habitat occurs. CTSs inhabit both aquatic and terrestrial habitats at different stages in their life cycle. Although the larval salamanders develop in vernal pools and ponds in which they were born, they are otherwise terrestrial and spend most of their lives in widely dispersed underground retreats (Trenham et al. 2001). Juveniles and adults spend the dry summer and fall months of the year in burrows of small mammals, such as California ground squirrels and pocket gophers; they may also use leaf litter or desiccation cracks in soil as refugia (Storer 1925; Loredo and Van Duren 1996; Loredo et al. 1996; Alvarez pers. comm.).

Adults move from subterranean burrow sites to breeding pools from November through February, after warm winter and spring rains (Jennings and Hayes 1994). Breeding habitat consists of temporary ponds or pools, slower portions of streams, and some permanent waters (Stebbins 2003). Permanent aquatic sites are unlikely to be used for breeding unless they lack
fish predators (Jennings and Hayes 1994). Typically, 3–6 months are needed to complete development through metamorphosis (Petranka 1998).

CTSs are known to travel large distances from breeding ponds into upland habitats. They have been observed in upland habitat approximately 0.75 mile from the nearest breeding pond (Ibis Environmental 2007). Although CTSs can travel relatively long distances, they are typically found closer to breeding ponds.

In studies at Olcott Lake and through population modeling, Trenham and Shaffer (2005) suggested a minimum protected upland area of at least 2,100 feet around a single breeding site, or approximately 328 acres. The results of this study showed increased potential for local extirpations with increasing upland loss because of reduced salamander abundance (e.g., individuals lost to the potential breeding population inhabiting lost uplands). It is also important to note that CTSs disperse in straight lines and so any barriers within the uplands surrounding potential breeding habitat can effectively eliminate the upland habitat beyond the barrier as available to the salamanders (Shaffer and Searcy 2007).

There are no known occurrences of CTS within the BSA or project footprint. There is one historic record approximately 1 mile northeast of the BSA on the north side of SR 12E and Suisun City (Figure 3.3-9). Dr. Arthur Shapiro, professor at U.C. Davis, observed CTS larvae in aquatic habitat at this location. Dr. Shapiro does not remember the year, but estimates it to have been from the late 1970s or early 1980s (Searcy pers. comm.). This sighting was not recorded in the CNDDB. Dr. Brad Shaffer and Mr. Searcy (Searcy pers. comm.) subsequently visited the site in 2008 and believed CTS to be extirpated at this location because the breeding site is no longer extant.

The nearest known occupied habitat is approximately 5 miles southeast of the BSA where there are several records for CTS from 1999 to 2006 in the Potrero Hills (California Natural Diversity Database 2011). As reported in the Vollmar study (Vollmar Consulting 2010), the Potrero Hills area is one of four areas that represent geographically distinct concentrations of documented CTS breeding occurrences that are both sufficiently isolated to limit breeding exchange and are also separated by apparent movement barriers or restrictions that would limit regular breeding exchange. Dispersal between the BSA and the nearest occupied CTS habitat in the Potrero Hills area is completely blocked by SR 12E, Peytonia Slough, Suisun Marsh, and Suisun City (Figures 3.3-9 and 3.3-10).

**Affected Environment**

Suitable upland habitat for CTS occurs in nonnative annual grassland, seasonal wetland, and alkali seasonal marsh habitats in the project area east of Ledgewood Creek and south of SR 12E (Volume 2, Figure 3.3-2a, Sheets 32, 33, and 35).

**Alternative B**

Suitable upland (non-native annual grassland) and aquatic (seasonal wetland and alkali seasonal marsh) habitat for CTS occurs in the following locations of the Alternative B study area (Volume 2, Figure 3.3-2a, Sheets 32, 33, and 35).
Alternative B, Phase 1
Suitable upland habitat for CTS occurs in non-native grassland habitat in the Alternative B study area (Volume 2, Figure 3.3-2b, Sheet 32). No aquatic habitat will be directly affected.

Alternative C
Suitable habitat under Alternative C is the same as that described above for Alternative B.

Alternative C, Phase 1
Suitable upland habitat for CTS occurs in non-native grassland habitat in the Alternative C/Phase 1 study area (Volume 2, Figure 3.3-2d, Sheets 32, 33, and 35). No aquatic habitat will be affected.

Direct Effects
Construction would affect potential CTS aquatic habitat for Alternatives C and B and would affect upland habitat for all 4 alternatives through excavation and road construction.

Indirect Effects
Indirect effects on potential CTS habitat that could result from construction include altered hydrology, soil compaction, and degradation of water quality from increased sediment loading and point source pollutants. Proper design and installation of the grading and hydrologic design will ensure that velocity and runoff volumes are maintained in the current condition. Installation of bio-swales and bio-filtration systems included in the project description as standard water quality BMPs will minimize and avoid potential indirect effects on potential CTS habitat.

Environmental Consequences
There are no known occurrences of federally listed CTS within the BSA or the project footprint. The USFWS determination in the BO for Tiger Salamander was "may affect, not likely to adversely affect". Measures will be taken to avoid and minimize effects on potential CTS upland and seasonal wetland habitat. The Department or STA will conduct protocol-level surveys in the seasonal wetland / pools south of the BSA located between SR 12E, Pennsylvania Avenue, Ledgewood Creek, and the SPRR rail line for CTS prior to construction. Should these surveys find occurrences of CTS within the study area, the Department and STA will reinitiate formal Section 7 consultation with USFWS. As appropriate, the Department would work with USFWS to develop additional measures to ensure that the proposed construction activities would minimize and avoid direct and indirect effects on CTS and potential CTS habitat.

Potential Loss of CTS and its Habitat Resulting from Construction
If CTS are found to be present during surveys project construction would affect CTS and its habitat through excavation and road construction.

Alternative B
Construction within potential CTS habitat identified above would result in the temporary disturbance of 0.95 acres and the permanent loss of 6.21 acres of potential CTS aquatic habitat. Additionally, Alternative B would result in the loss of 23.06 acres and temporary disturbance of 6.96 acres of upland habitat within the study area.
Alternative B, Phase 1
Construction within potential CTS habitat identified above would result in the temporary disturbance of no acres and the permanent loss of 0.49 acres of potential CTS upland habitat. There would be no loss or temporary disturbance on potential aquatic habitat.

Alternative C
Construction within potential CTS habitat identified above would result in the temporary disturbance of 0.49 acres and the permanent loss of 4.47 acres of potential CTS aquatic habitat. Additionally, Alternative C would result in the loss of 12.58 acres and temporary disturbance of 3.35 acres of upland habitat within the study area.

Alternative C, Phase 1
Construction within potential CTS habitat identified above would result in the temporary disturbance of no acres and the permanent loss of 0.76 acres of potential CTS upland habitat. There would be no loss or temporary or permanent disturbance of potential aquatic habitat.

Under the No-Build Alternative, no construction activities would occur, and no effects on CTS would occur.

Avoidance, Minimization, and/or Mitigation Measures
Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), the USFWS standardized avoidance and minimization efforts for CTS, and construction BMPs, and measures identified below would minimize effects on CTS and potential habitat that could occur in the vicinity of the aquatic and upland habitat locations identified in the study area.

Conduct Protocol-level Surveys for California Tiger Salamander

The Department or STA will survey the seasonal wetland/pools south of the BSA located between SR 12E, Pennsylvania Avenue, Ledgewood Creek, and the SPRR rail line for California tiger salamander prior to construction. Should these surveys find occurrences of California tiger salamander within the study area, the Department and STA will reinitiate formal Section 7 consultation with the USFWS.

Avoid and Minimize Potential Disturbance of California Tiger Salamander Habitat

- A USFWS-approved biologist will develop and conduct environmental education training for construction employees working on ground-disturbing activities. The program will include the following: a description of CTS and its habitat needs, photographs of the species, an explanation of its legal status and protection under FESA and CESA, and a list of the measures that will be implemented to minimize and avoid potential effects on CTS and its potential habitat.

- The Department will construct a retaining wall along SR 12E between Ledgewood Creek and Suisun City. This design feature will limit the roadway expansion to the existing raised...
roadbed and avoid permanent intrusion into the immediately adjacent seasonal wetland (Gentry Suisun Wetland) that provides potential CTS habitat.

- A high-visibility ESA-type fencing will be installed to protect potential CTS habitat adjacent to the defined project footprint. The ESA-type fencing will be shown on the final construction plans.

- All work will be performed in accordance with a SWPPP. BMPs will be implemented and may include the use of silt fences, sandbags, detention basins, and other means as appropriate to prevent sedimentation and degradation of water quality down-gradient from the proposed project.

- All trenches will be covered overnight with boards or metal plates placed flush to the ground.

- No pets will be allowed on the project site during construction.

- All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day and removed from the site every day.

- To the maximum extent practicable, affected potential CTS upland habitat will be restored to preconstruction conditions. Following construction, affected upland areas will be replanted with the appropriate plant palette comprised of native grasses, forbs, and small shrubs.

### 3.3.5.8 Swainson’s Hawk

Swainson’s hawk is listed as threatened under CESA and is protected under the MBTA and CFGC Section 3503.5. The MBTA and CFGC Section 3503.5 prohibit take of migratory birds, nests, and young. In the Central Valley, this species typically nests in oak or cottonwood trees in or near riparian habitats, in oak groves, in roadside trees, and in solitary trees. Swainson’s hawks prefer nesting sites that provide sweeping views of nearby foraging grounds (grasslands, irrigated pasture, alfalfa, hay, and row and grain crops). Swainson’s hawks are migratory, wintering from Mexico to Argentina and breeding in California and elsewhere in the western United States. They generally arrive in the Central Valley in mid-March and begin courtship and nest construction immediately after arrival at the breeding sites. The young fledge in early July, and most Swainson’s hawks leave their breeding territories by late August or early September.

**Affected Environment**

There is one Swainson’s hawk nest site in the study area, approximately 0.5 mile southeast of the I-80/680 interchange (California Natural Diversity Database 2010a). Large trees, suitable for nesting Swainson’s hawks, are present in riparian woodland, eucalyptus, blue oak woodland, live oak woodland, other woodland, and valley oak woodland, and eucalyptus trees in the study area. However, it is unlikely that Swainson’s hawks would nest in the study area because of the area’s proximity to I-80, I-680, and SR 12W and 12E. Foraging habitat (row crops, ruderal, and nonnative annual grasslands) occurs in portions of the study area that would be affected by the proposed project.
Environmental Consequences

Potential Loss of Swainson’s Hawk Nesting and Foraging Habitat Resulting from Construction

Both build alternatives would result in permanent and temporary effects to Swainson’s hawk nesting habitat and permanent effects to foraging habitat. Temporary effects on foraging habitat are not considered because the habitat will return to baseline conditions once construction is complete.

Although there is a low likelihood that Swainson’s hawks would nest adjacent to I-80/I-680/SR 12, tree removal or noise associated with construction activities could result in the disturbance of nesting Swainson’s hawks if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the study area. Any of the build alternatives could result in a substantial adverse effect, through loss of eggs or young, on a species listed as threatened under CESA.

Alternative B
Alternative B would result in a permanent loss of approximately 12.45 acres and temporary disturbance of 6.83 acre of potential nesting habitat in and adjacent to the study area.

Alternative B would result in a permanent loss of approximately 231.52 acres of foraging habitat that occurs in the study area: 36.16 acres within one mile of a known nest and 195.36 acres within one to five miles of a nest.

Alternative B, Phase 1
Alternative B, Phase 1 would result in a permanent loss of approximately 5.40 acre and temporary disturbance of 0.59 acre of potential nesting habitat for Swainson’s hawks.

Alternative B, Phase 1 would result in a permanent loss of approximately 53.94 acres of foraging habitat that occur in portions of the study area: 32.46 acres within one mile of a nest and 21.48 acres within one to five miles.

Alternative C
Alternative C would result in a permanent loss of approximately 21.42 acres and temporary disturbance of 7.17 acre of potential nesting habitat.

Alternative C would result in a permanent loss of approximately 224.60 acres of foraging habitat that occurs in the study area: 33.03 acres within one mile of a known nest, 191.57 acres within one to five miles of a nest, and 0.24 acre within five to ten miles of a known nest.

Alternative C, Phase 1
Alternative C, Phase 1 would result in a permanent loss of approximately 15.94 acre and temporary disturbance of 3.07 acre of potential nesting habitat.
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Alternative C, Phase 1 would result in a permanent loss of approximately 169.64 acres of foraging habitat that occur in portions of the study area: 31.30 acres within one mile of a nest and 138.34 acres within one to five miles.

Loss of a substantial amount of foraging habitat within ten miles of a known Swainson’s hawk nest is considered to be an adverse effect. This adverse effect can be offset through the acquisition of conservation lands that will preserve significant amounts of suitable foraging habitat for the species and the management and monitoring of these lands for Swainson’s hawk habitat values.

Under the No-Build Alternative, no construction activities would occur, and no effects on Swainson’s hawk would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of Standard Specification and Standard Provision measures mentioned in Section 3.3.1.1 to prohibit construction work in environmentally sensitive areas (SS 14-1.02A), to install ESA fencing (SS 14-1.03), to monitor construction activities (SSP 14-6.05) and to conduct environmental awareness training (SSP 14-6.08), the measure to conduct preconstruction nesting bird and raptor surveys and establish no-disturbance buffers if necessary, in Section 3.3.4.2 are expected to avoid disturbance of or injury to Swainson’s hawks. Therefore no 2081 ITP would be necessary. However, should it be impossible to avoid impacts to Swainson’s Hawk, the measure listed below would be implemented to reduce adverse effects on nesting Swainson’s hawks.

Compensate for Loss of Swainson’s Hawk Foraging Habitat

The CDFG requires that loss of foraging habitat for the species be replaced at different ratios depending on the habitat’s distance from a known nest. Compensatory mitigation will be completed as agreed upon with CDFG prior to construction and be based on the presence or absence of active nests.

3.3.5.9 Central California Coast Steelhead

Affected Environment

Review of available literature and data sources of species occurrence indicates that central California coast steelhead were both historically and recently present in several streams in the project area. A recent comprehensive review of existing steelhead occurrence within San Francisco Bay Estuary can be found in Leidy et al. (2005), which is the basis for some of the species occurrence information presented below. Hanson Environmental (2002) was also reviewed for information on Suisun Creek. On January 18, 2006, NMFS provided a list of threatened, endangered, and special-status fish species potentially found in the project area which included central California coast steelhead (Appendix F).

Dan Wilson Creek near the I-80 bridge has a modified channel bed and bank. Under the I-80 bridge, the channel bottom has natural substrates composed primarily of mud/silt. At the time of the survey (August 8, 2007), the channel was choked with cattails, and riparian and SRA cover vegetation was observed to be largely absent—with the exception of approximately 15 linear feet
of SRA cover vegetation on the east bank downstream of the I-80 bridge. Stream flow was visually estimated to be 0.1 cfs or less. No suitable habitat for steelhead was observed in Dan Wilson Creek in the vicinity of the I-80 bridge crossing. The relatively small size and low elevation of the watershed, combined with the general lack of riparian vegetation, extensive emergent vegetative growth in the channel, and low stream flow, further suggest that this stream in the vicinity of the I-80 stream crossing does not support steelhead migration, spawning, and rearing habitat.

American Canyon Creek near the I-680 and Ramsey Road bridges also has a modified channel bed and bank. Overall, the channel is moderately incised and numerous cattails line the channel bottom. In the vicinity of the I-680 and Ramsey Road bridges, riparian and SRA cover vegetation is absent. Stream flow is conveyed under the I-680 and Ramsey Road bridges through concrete box culverts; presently, mud substrates line the bottom of both culverts. A concrete apron on the downstream side of the box culvert is perched above the adjacent, downstream channel bed, creating a vertical drop of approximately 0.75 foot. At the time of the survey (August 8, 2007), stream flows were visually estimated to be less than 0.1 cfs. A large beaver dam was observed at the upstream end of the frontage road west of I-680 and was determined to be a barrier to fish passage at the observed stream flow conditions. No suitable habitat for steelhead was observed in American Canyon Creek in the vicinity of the I-680 bridge crossing. The relatively small size and low elevation of the watershed, combined with the general lack of riparian vegetation, extensive emergent vegetative growth in the channel, and low stream flow, further suggest that this stream in the vicinity of the I-680 stream crossing does not support suitable conditions for steelhead. Surveys conducted in 1981, 1997, and 2002 did not find any steelhead in American Canyon Creek (Leidy et al. 2005).

To the north of American Canyon Creek, Jameson Canyon Creek flows west to east and drains the adjacent watershed north of American Canyon. This creek channel is moderately incised with a high terrace floodplain and exhibits evidence of past disturbance, including channel straightening and levee construction. Substrate in the creek is predominantly sand, and gravel is present at isolated locations or in combination with sand. A stand of riparian vegetation consisting primarily of mature willows is present along both banks, creating a 50- to 75-foot-wide riparian corridor. Stream flow is conveyed under I-680 in box culverts. At the time of the survey (August 8, 2007), the creek was dry throughout the entire study area, which extends from immediately downstream of I-680 to near SR 12 upstream of the I-80 crossing. For the same reasons as those discussed for American Canyon Creek, habitat conditions in Jameson Canyon Creek in the vicinity of the I-680 stream crossing likely do not support steelhead.

Green Valley Creek flows north to south and drains the watershed area north of Cordelia. Green Valley Creek at the I-80 crossing has a concrete-lined bed and bank throughout the study area. The concrete-lined channel contains a low flow channel with concrete weirs every 20 feet for the entire length of the channel to facilitate fish passage. At the time of the surveys (July 5 and August 8, 2007), sediment deposits were observed over much of the length of channel under the I-80 bridges. Very little riparian vegetation occurs in the study area and is limited to vegetation that is growing in sediments deposited on the engineered channel. Leidy et al. (2005) indicated that steelhead were collected from Green Valley Creek from the 1950s to the present. Unpublished sampling data indicated that steelhead were collected about one mile upstream from I-80 in January 1997 (Leidy et al. 2005). Although data documenting specific occurrences of
steelhead are lacking, Leidy et al. (2005) suggests that this creek’s connection to the Suisun Marsh and its close proximity to the Suisun Creek drainage provides habitat opportunities for migratory steelhead. A fish passage assessment was conducted on the current channel configurations in Green Valley, Ledgewood, and Suisun Creeks, the results of which were compared to postproject conditions. This assessment concluded that, under existing conditions at low flows, the passage criteria related to minimum water depth for adult Chinook salmon and steelhead are not currently being met at the Green Valley Creek stream crossing because excessive sediments deposited in the constructed (i.e., concrete-lined) low-flow channel cause the water to spread out and become too shallow.

Suisun Creek flows north to south and drains the largest watershed area of any of the creeks in the study area. Although levees top the banks of Suisun Creek upstream and downstream of the I-80 crossing, riparian vegetation is dense in the study area up to the bridge. The Suisun Creek channel at the I-80 crossing is an earthen channel and consists of abutments on each bank of the creek. Two pier columns supporting the I-80 bridge spans intercept the channel at the interface between the creek and each bank. Historical evidence dating back as far as 1940 indicates that steelhead were present throughout the Suisun Creek watershed. Following the construction of Gordo Valley Dam (Lake Curry) in 1926 and subsequent water developments, steelhead populations in the watershed declined. Although the distribution and abundance of steelhead throughout Suisun Creek and its tributaries may have fluctuated over the years, recent surveys found that both adult and juvenile steelhead are still present in this system. An adult steelhead (26.5 inches) was found approximately 0.25 mile downstream of the Wooden Valley Creek confluence in March 2001, while two other adult steelhead (20.9–25.2 inches) were observed in June and early July 2001 approximately six and 11 miles downstream of Lake Curry (Leidy et al. 2005); these locations are well upstream of the I-80 stream crossing. This same survey also noted the occurrence of juvenile steelhead (6.3–6.7 inches) downstream from the dam.

Historical evidence from 1965 (Leidy et al. 2005) suggested that Wooden Valley Creek, a tributary of Suisun Creek, contained the highest concentration of steelhead in the watershed. Surveys of Wooden Valley Creek conducted in 2002 indicated that juvenile steelhead were present at both headwater and various other survey locations along the creek (Leidy et al. 2005), suggesting the possibility of an existing steelhead population. Additionally, NOAA’s NMFS believes that Suisun and Wooden Valley Creeks currently support a steelhead population and that sufficient migration, spawning, and rearing habitat exist (50 FR 52504, September 2, 2005). Hanson Environmental (2002) performed a more detailed analysis of steelhead habitat quality in Suisun Creek. The study surveyed approximately 95% of the stream from Cordelia Road to Lake Curry during summer low-flow period. Results of this study indicate that significant habitat constraints are present; these include migration barriers, limited spawning gravel availability, high summer water temperatures, and low habitat diversity. The study concluded that Suisun Creek was unlikely to consistently support self-sustaining steelhead populations. Instead, habitat would be best available during wet years when winter flows were high enough to allow upstream passage for adults and summer stream temperatures remained cool enough to support juvenile rearing. During dry years, summer rearing habitat would be constrained to upstream areas immediately below the reservoir, where temperatures would most likely remain suitable to support salmonids.
Ledgewood Creek at the SR 12E crossing is highly modified. Levees line both banks of the channel, and the channel has a trapezoidal cross section. Riparian and SRA cover vegetation is limited to areas downstream of the SR 12E bridge; no riparian or SRA cover vegetation is present in the immediate vicinity upstream of the bridge. SRA cover vegetation included six linear feet of willow on the west bank, and 15 linear feet of weeping willow and four feet of dying weeping willow along the east bank. Stream flow is conveyed through concrete-lined box culverts under the five-span bridge. At low flows, stream flow is conveyed through the second box culvert from the east bank. The concrete invert in this box culvert is notched and forms a V-shaped channel, which maximizes water depths at low flows. At the time of the survey (August 8, 2007), stream flow was measured at 0.67 cfs with a maximum depth of 0.4 foot. Based on the results of a fish passage assessment conducted as part of this proposed project, excessively shallow water depths in the box culvert under SR 12E create an impediment to migrating steelhead in Ledgewood Creek. Although specific data of steelhead occurrence in Ledgewood Creek are lacking, its connection to the Suisun Marsh and close proximity to Suisun Creek suggest that steelhead are potentially present in Ledgewood Creek.

The field survey and literature review results indicate that steelhead occur in Green Valley, Ledgewood, and Suisun Creeks. The effects discussion is limited to these creeks because they support special-status fish species in the project area.

**Environmental Consequences**

**Potential Effects on Steelhead Resulting from Construction**

Construction of either build alternative could affect water quality, fish habitat, channel morphology, water temperature, steelhead movement, and steelhead spawning habitat in streams containing steelhead. In addition, both build alternatives could result in disturbance and direct injury of steelhead. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek and would have potential impacts only on Green Valley and Ledgewood Creeks. Under the No-Build Alternative, although no construction activities would occur, existing channel morphology in Green Valley and Ledgewood Creek results in sedimentation that results in a low flow passage barrier which could have potential impacts on steelhead or its habitat.

**Water Quality**

As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Green Valley, Suisun, and Ledgewood Creeks from construction equipment. These water quality effects could increase steelhead mortality; reduce feeding opportunities, including those for rearing steelhead; and cause steelhead to avoid important habitat. Increased pollutant concentrations could limit steelhead reproduction, abundance, and distribution by direct mortality of steelhead or their prey. Steelhead in the study area require relatively clean, cold, well-oxygenated water for successful growth, reproduction, and survival and are not well adapted for survival in degraded aquatic habitats.
Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures to prevent contaminants from entering streams and to restrict in-water work to avoid the migration and spawning seasons in Section 3.3.4.10 would address this impact.

**Habitat and Channel Morphology**

As described above in Section 3.3.4.10, project construction activities would affect fish habitat and could also change the channel morphology by disturbing the streambed substrate. However, revegetation would mitigate the loss of vegetation and SRA cover, and the channel beds would be restored to a natural substrate wherever possible.

At Green Valley Creek, all existing bridges would be replaced with clear span structures under Alternative B, Alternative B, Phase 1, and Alternative C. Under Alternative C, Phase 1, the westbound off-ramp bridge would be replaced with a clear span bridge and the channel restored to a natural substrate, but the eastbound bridges would not be replaced. At Suisun Creek, the existing overcrossings would be replaced with freespan structures and the substrate restored to natural conditions under both full build alternatives. No construction would occur at Suisun Creek under Phase 1 for either alternative.

At Ledgewood Creek, the culvert would be widened under Alternative B and Alternative C, and Alternative C, Phase 1. Under all three alternatives, existing habitat and channel conditions would persist with the widened culvert. However, though fish passage impediments on Ledgewood Creek would be addressed with the implementation of the culvert retrofit described in the Avoidance, Minimization and/or Mitigation section below. No construction would occur at Ledgewood Creek under Alternative B, Phase 1.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would address this impact.

**Water Temperature**

Under existing conditions, habitat for juvenile steelhead rearing in the study area is likely marginal to unsuitable during summer (Hanson Environmental 2002). Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction, survival, and migration. This is especially true for steelhead, which have relatively narrow temperature requirements for carrying out their life history. Any increase in water temperatures could further reduce the suitability of habitat for steelhead in the study area.

As described above in Section 3.3.4.10, the proposed project would have a minor effect on SRA cover. Revegetation of the disturbed areas, combined with the shading provided by the bridge extension, would be expected to maintain existing water temperatures in the study area, and the project would not adversely affect water temperature.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would reduce water temperature effects as a result of the project.

**Interference with Movement**

As described above in Section 3.3.4.10, construction activities associated with the project alternatives would require the use of cofferdams and pipelines, which could block the migration
of adult and juvenile steelhead. However, the timing of construction activities to avoid the primary migration time of adult and juvenile steelhead and maintenance of fish passage through the construction site during stream dewatering activities would reduce the potential for impacts on fish movement. Therefore, temporary stream diversions associated with construction are not likely to adversely affect the migration of adult and juvenile steelhead.

Based on the fish passage assessment, modification of the bridge structures at Green Valley and Suisun Creeks along I-80 would not create new fish passage barriers or reduce existing fish passage conditions. The proposed modification of the bridge structure at Ledgewood Creek along SR-12 would exacerbate existing fish passage constraints associated with shallow water depths.

Implementation of measures in Section 3.3.4.10 to minimize impacts on creek channels and to maintain a migration corridor through creek channels would address this impact.

**Disturbance to Potential Spawning Habitat**

As described above in Section 3.3.4.11, a potential spawning gravel bed was observed in Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction under Alternatives B and C. It is anticipated that the gravel bed would not be disturbed by the proposed project. All construction equipment would access the construction site from the existing bridge and road. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions—using, to the extent practicable, gravel removed from the site.

Because no construction is proposed on Suisun Creek under the fundable first phase of either alternative or under the No-Build Alternative, there would be no effect on spawning habitat under these alternatives.

Implementation of measures listed in Section 3.3.4.10 to minimize impacts on creek channels and in Section 3.3.4.11 to avoid spawning habitat would address this impact.

**Disturbance and Direct Injury**

As described above in Section 3.3.4.10, noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. Under Alternative B, short-term noise disturbance caused by pile driving would occur within Ledgewood Creek. Potential direct effects of pile-driving activities include increased noise and turbidity. Researchers have suggested that salmonids can hear pile-driving noise approximately 2,000 feet from the source (Feist et al. 1992). Feist et al. (1992) observed that pile driving altered the distribution and behavior of juvenile pink and chum salmon. The potential impact on salmonids from pile-driving activities depends on the distance separating the noise-generating activity from fish and the duration of these activities. Evidence suggests that, although pile-driving noise may affect the distribution and behavior of juvenile pink and chum salmon, no significant changes occurred in their overall abundance (Feist et al. 1992).

Implementation of measures in Section 3.3.4.10 to restrict in-water activities to avoid spawning season and to minimize noise impacts on fish would address this impact.
Potential Effects on Steelhead Resulting from Operations

**Water Quality**
As described above in Section 3.3.4.10, all build alternatives would result in increased impervious surfaces and contaminated runoff. The potential increase in contaminated runoff entering the creeks could adversely affect steelhead that use the creeks for migration, spawning, and rearing. Pollutants could also cause mortality to and reduced growth of the egg, larval, and juvenile life stages of steelhead.

Implementation of the measure in Section 3.2.3 to prepare and implement a SWPPP and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would address this impact.

**Potential Interference with Movement**
As described above in Section 3.3.4.11, the proposed extension of the culvert under SR 12E would exacerbate existing shallow water conditions at Ledgewood Creek during the migration season and would worsen fish passage conditions relative to current conditions. Bridge widening would occur under both build alternatives. Implementation of ‘Implement culvert retrofit at the SR12E crossing on Ledgewood Creek’ in Section 3.3.4.11 to address shallow water depths would improve fish passage conditions at Ledgewood Creek.

In summary, effects to central California coast steelhead could occur from construction and operation. Construction effects will be temporary and include change in water quality, habitat and channel morphology, and water temperature, interference with movement, disturbance of potential spawning habitat, and disturbance and direct injury. These temporary effects will occur during construction when steelhead are not in the study area. Operational effects which are permanent include a degradation in water quality and potential interference with movement on Ledgewood Creek. Implementation of measures to address water quality and fish passage will reduce the severity of this effect.

**Avoidance, Minimization, and/or Mitigation Measures**
Implementation of the Water Pollution Control Standard Specification measures pertaining to water pollution control programs (SS 13-2), stormwater pollution prevention plans (SS 13-2), and measures in Section 3.3.4.10 to restrict in water work, minimize impacts on creek channels, provide alternate migration corridors, retain a biologist for instream construction, and minimize noise impacts and the measures provided in Section 3.3.4.11 to avoid spawing habitat and implement a culvert retrofit on Ledgewood Creek would avoid and minimize effects on Steelhead salmon related to water quality, habitat and channel morphology, interference with movement and disturbance.

**3.3.6 Invasive Species**

**Regulatory Setting**
On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material
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The text continues from the previous page:

...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.” Federal Highway Administration guidance issued August 10, 1999, directs the use of the State’s invasive species list, currently maintained by the California Invasive Species Council to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

**Affected Environment**

Table 3.3.6-1 identifies the invasive plant species located in the study area. These species occur in areas mapped as annual grassland, landscaped, riparian woodland, drainage, and seasonal wetland. The infestation of the study area by these species is limited, occurring primarily on isolated patches of ruderal vegetation on the edges of roadways or scattered in the annual grassland.

<table>
<thead>
<tr>
<th>Species</th>
<th>CDFA</th>
<th>Cal-IPC</th>
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<tbody>
<tr>
<td>Giant reed (Arundo donax)</td>
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<tr>
<td>Slender wild oat (Avena barbata)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wild oat (Avena fatua)</td>
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<td>Moderate</td>
</tr>
<tr>
<td>Mediterranean linseed (Bellardia trixago)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Black mustard (Brassica nigra)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Common mustard (Brassica rapa)</td>
<td>–</td>
<td>Limited</td>
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<tr>
<td>Rattlesnake grass (Briza maxima)</td>
<td>–</td>
<td>Limited</td>
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<tr>
<td>Ripgut brome (Bromus diandrus)</td>
<td>–</td>
<td>Moderate</td>
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<tr>
<td>Soft chess (Bromus hordeaceus)</td>
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<td>Limited</td>
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<tr>
<td>Red brome (Bromus madritensis ssp. rubens)</td>
<td>–</td>
<td>High</td>
</tr>
<tr>
<td>Italian thistle (Carduus pycnocephalus)</td>
<td>C</td>
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<tr>
<td>Iceplant (Carpobrotus edulis)</td>
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<td>High</td>
</tr>
<tr>
<td>Purple star-thistle (Centaura calcitrapa)</td>
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<td>Moderate</td>
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<tr>
<td>Yellow star-thistle (Centaura solstitialis)</td>
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<tr>
<td>Bull thistle (Cirsium vulgare)</td>
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<tr>
<td>Poison hemlock (Conium maculatum)</td>
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<tr>
<td>Bindweed (Convulvus arvensis)</td>
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<td>–</td>
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<tr>
<td>Pampas grass (Cortaderia jubata)</td>
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<tr>
<td>Silverleaf cotoneaster (Cotoneaster pannosus)</td>
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</tr>
<tr>
<td>Brass buttons (Cotula coronopifolia)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Artichoke thistle (Cynara cardunculus)</td>
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<td>Moderate</td>
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<tr>
<td>Bermuda grass (Cynodon dactylon)</td>
<td>C</td>
<td>Moderate</td>
</tr>
<tr>
<td>Orchard grass (Dactylis glomerata)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Fuller’s teasel (Dipsacus sativus)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Red-stemmed filaree (Erodium cicutarium)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Fig (Ficus carica)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fennel (Foeniculum vulgare)</td>
<td>–</td>
<td>High</td>
</tr>
<tr>
<td>Mediterranean barley (Hordeum marinum var. gussoneanum)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hare barley (Hordeum murinum ssp. leporinum)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Klamathweed (Hypericum perforatum)</td>
<td>C</td>
<td>Moderate</td>
</tr>
<tr>
<td>Smooth cat’s ear (Hypocharis glabra)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Broad-leaved pepper-grass (Lepidium latifolium)</td>
<td>B</td>
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</tr>
<tr>
<td>Italian ryegrass (Lolium multiflorum)</td>
<td>–</td>
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</tr>
<tr>
<td>Water primrose (Ludwigia peploides)</td>
<td>–</td>
<td>High</td>
</tr>
<tr>
<td>Hyssop loosestrife (Lythrum hyssopifolium)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Akali mallow (Malveia leprosa)</td>
<td>C</td>
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</table>
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<table>
<thead>
<tr>
<th>Species</th>
<th>CDFA</th>
<th>Cal-IPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>White horehound (<em>Marrubium vulgare</em>)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Bur-clover (<em>Medicago polymorpha</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Pennyroyal (<em>Mentha pulegium</em>)</td>
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<td>Moderate</td>
</tr>
<tr>
<td>Olive (<em>Olea europaea</em>)</td>
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<td>Limited</td>
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<tr>
<td>Harding grass (<em>Phalaris aquatica</em>)</td>
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<td>Moderate</td>
</tr>
<tr>
<td>Bristly ox-tongue (<em>Picris echioides</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Smilo grass (<em>Piptatherum millaceum</em>)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Narrow-leaved plantain (<em>Plantago lanceolata</em>)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Rabbit-foot grass (<em>Polypogon monspeliensis</em>)</td>
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<td>Limited</td>
</tr>
<tr>
<td>Firethorn (<em>Pyracantha angustifolia</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Wild radish (<em>Raphanus sativus</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Black locust (<em>Robinia pseudoacacia</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Himalayan blackberry (<em>Rubus discolor</em>)</td>
<td>–</td>
<td>High</td>
</tr>
<tr>
<td>Sheep sorrel (<em>Rumex acetosella</em>)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Curly dock (<em>Rumex crispus</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Russian thistle (<em>Salsola tragus</em>)</td>
<td>C</td>
<td>Limited</td>
</tr>
<tr>
<td>Milk thistle (<em>Silybum marinum</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Charlock (<em>Sinapis arvensis</em>)</td>
<td>–</td>
<td>Limited</td>
</tr>
<tr>
<td>Spanish broom (<em>Spartium junceum</em>)</td>
<td>–</td>
<td>High</td>
</tr>
<tr>
<td>Medusahead (<em>Taeniatherum caput-medusae</em>)</td>
<td>C</td>
<td>High</td>
</tr>
<tr>
<td>Saltcedar (<em>Tamarix ramosissima</em>)</td>
<td>B</td>
<td>High</td>
</tr>
<tr>
<td>Hedgeparsley (<em>Torilis arvensis</em>)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Puncture vine (<em>Tribulus terrestris</em>)</td>
<td>C</td>
<td>–</td>
</tr>
<tr>
<td>Rose clover (<em>Viburnum hirtum</em>)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Bigleaf periwinkle (<em>Vinca major</em>)</td>
<td>–</td>
<td>Moderate</td>
</tr>
<tr>
<td>Foxtail fescue (<em>Vulpia myuros</em>)</td>
<td>–</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**Notes:** 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; however, FHWA requires adherence to Executive Order 13112, which requires the use of only 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.

### Environmental Consequences

#### Potential Introduction and Spread of Invasive Plant Species Resulting from Construction

Invasive weed species in the study area are present along roadsides, which are routinely disturbed by shoulder maintenance and vegetation management activities. The proposed project would create additional disturbed area for a temporary period, but it would not substantially increase the area subject to repeated disturbance because the new road shoulders would replace existing road shoulders. Therefore, the project alternatives are not anticipated to increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species.
Implementation of the measure to conduct environmental awareness training provided in Section 3.3.1.1 and the measure below would address this impact.

Under the No-Build Alternative, no construction activities would occur, and no effects associated with the spread of invasive species would occur.

**Avoidance, Minimization, and/or Mitigation Measures**

**Avoid the Introduction and Spread of Invasive Plants**

To avoid the introduction of new invasive plants and reduce the spread of invasive plants previously documented in the study area, the following measures will be implemented during construction.

- Surface disturbance within the construction work area will be minimized to the greatest extent possible.
- All disturbed areas will be seeded with certified weed-free native mixes and mulched with certified weed-free mulch (rice straw may be used in upland areas). If seeding is not possible, the area of disturbance will be covered to the extent practicable with heavy black plastic solarization material until the end of project construction.
- Native, noninvasive species will be used in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

In the event that noxious weeds are disturbed or removed during construction-related activities, the contractor will be required to contain the plant material associated with these noxious weeds and dispose of them in a manner that will not promote the spread of the species. The contractor will be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing of materials.

### 3.3.7 Native Trees

**Regulatory Setting**

The City of Fairfield Tree Conservation ordinance (FCC 25.36) protects native trees, including native oaks, bay laurel, madrone, and California buckeye, that are greater than six inches in diameter at breast height (dbh). This ordinance protects native trees located inside the City Limit Line on public property or on private property developed or landscaped with City approval, but not those located within the Department right-of-way. Solano County has no specific tree protection requirements outside of hillsides and visually sensitive areas.

Most native trees in the study area occur in or adjacent to riparian and oak woodland communities. These trees are still considered sensitive resources because they occur in natural communities of special concern and were discussed above in Sections 3.3.1.1 and 3.3.1.2.
Affected Environment
Mature native trees (dbh of six inches or more) that are not located within riparian or oak woodland were individually mapped in the study area. The sheet and tree numbers shown in parentheses below correspond to Figures 3.3-2a, 3.3-2b, 3.3-2c, and/or 3.3-2d in Volume 2. Information for each tree is listed in Appendix G. Individually mapped native trees occur at the following locations in and adjacent to the study area.

- Along Jameson Canyon Creek near the industrial area west of I-680 (three coast live oaks) (Trees 1–3 on Sheets 9 and 14).
- Near the I-80 EB on-ramp from NB I-680 (one coast live oak and three valley oaks) (Trees 4–7 on Sheets 16 and 17).
- The intersection of Green Valley Road and Business Center Drive (17 coast live oaks and two valley oaks) (Trees 8–24 on Sheet 17).

Native trees outside the City Limit Line and outside the Department right-of-way occur at the following locations in the study area.

- Red Top Road extension (six interior live oaks) (Trees 100–105 on Sheets 2-3).
- Between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (one interior live oak, one valley oak, and an undetermined number in the area replanted after construction of the new eastbound truck scales) (Trees 34 and 35 on Sheets 21 and 22).

Environmental Consequences
Native trees are not protected under any applicable federal statute. Impacts on native trees are discussed as CEQA impacts in Chapter 4.

3.3.8 Suisun Marsh Secondary Management Area

Regulatory Setting
Pursuant to the Nejedly-Bagley-Z’berg Suisun Marsh Preservation Act of 1974, the San Francisco Bay Conservation and Development Commission (BCDC) and the CDFG prepared the Suisun Marsh Protection Plan. In 1977, the Suisun Marsh Preservation Act was enacted to incorporate the findings and policies contained in the plan into state law. The Suisun Marsh Preservation Act established two management areas within the marsh. The Primary Management Area includes tidal marshes, seasonal marshes, managed wetlands, and lowland grasslands. The Secondary Management Area is the adjacent upland grasslands and cultivated lands that serve as a buffer between the Primary Management Area and developed land. As required by the Suisun Marsh Protection Act, Solano County prepared the Suisun Marsh Local Protection Program (SMLPP), which includes policies, programs, and regulations to preserve and enhance wildlife habitat in the Suisun Marsh and retain adjacent upland areas in uses compatible with protection of the marsh. The BCDC regulates uses in the Secondary Management Area through Marsh Development Permits to ensure that proposed uses are consistent with the SMLPP.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

Affected Environment
The study area east of I-680 between the Gold Hill Road overpass and just south of Jameson Canyon Creek is within the Suisun Marsh Secondary Management Area. The location is shown in Figures 3.3-2a through 2d, Sheets 10–14 in Volume 2.

This part of the study area is primarily nonnative annual grassland, with stands of eucalyptus trees, several seasonal wetlands, seasonal drainages, and ruderal vegetation adjacent to I-680.

Environmental Consequences
The Suisun Marsh Secondary Management Area is not protected under any applicable federal statute. Effects on this resource are discussed per CEQA requirements in Chapter 4 Land Use and Planning section (4.2.1.9). Implementation of measures to protect sensitive natural communities; to protect water quality and restore wetland habitats; and to compensate for loss of Swainson’s hawk foraging habitat as described in Sections 3.3.1.1, 3.3.2.1, and 3.3.5.8 would reduce adverse effects on this area.
Table 3.3.3-1. Sensitive Plant Species with the Potential to Occur in the I-80/I-680/SR 12 Project Region

<table>
<thead>
<tr>
<th>Common Name Scientific Name</th>
<th>Legal Status* Federal/State/ CNPS</th>
<th>Geographic Distribution</th>
<th>Habitat Requirements</th>
<th>Blooming Period</th>
<th>Habitat Present in Study Area?</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris’ milk-vetch Astragalus tener var. ferrisiae</td>
<td>—/—1B.1</td>
<td>Historical range included the Central Valley from Butte to Alameda County but currently only occurs in Butte, Glenn, Colusa, and Yolo Counties.</td>
<td>Seasonally wet areas in meadows and seeps, subalkaline flats in valley and foothill grassland; 16-245 feet</td>
<td>April–May</td>
<td>Yes</td>
<td>Suitable vegetation communities, soils, and hydrologic conditions are present in nonnative annual grasslands on alkali soils the study area, but study area is outside current known range and the species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Alkali milk-vetch Astragalus tener var. tener</td>
<td>—/—1B.2</td>
<td>Merced, Solano, and Yolo Counties. Historically more widespread.</td>
<td>Grassy flats and vernal pool margins on alkali soils below 200 feet.</td>
<td>March–June</td>
<td>Yes</td>
<td><strong>Species is present in the study area.</strong> Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E between Ledgewood Creek and Pennsylvania Avenue.</td>
</tr>
<tr>
<td>Heartscale Atriplex cordulata</td>
<td>—/—1B.2</td>
<td>Western Central Valley and valleys of adjacent foothills.</td>
<td>Alkali grassland, alkali meadow, and alkali scrub below 650 feet.</td>
<td>April–October</td>
<td>Yes</td>
<td>Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali soils the study area, but the species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Brittle scale Atriplex depressa</td>
<td>—/—1B.2</td>
<td>Western Central Valley and valleys of adjacent foothills on west side of Central Valley.</td>
<td>Alkali grassland, alkali meadow, alkali scrub, chenopod scrub, playas, and valley and foothill grasslands on alkaline or clay soils below 650 feet</td>
<td>May–October</td>
<td>Yes</td>
<td>Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali and clay soils the study area, but the species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>San Joaquin spearscale Atriplex joaquiniana</td>
<td>—/—1B.2</td>
<td>West edge of Central Valley from Glenn County to Tulare County.</td>
<td>Alkali grassland, alkali meadow, alkali scrub, and saltbush scrub below 1,000 feet.</td>
<td>April–October</td>
<td>Yes</td>
<td>Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali soils the study area, but the species was not observed during blooming-period surveys.</td>
</tr>
</tbody>
</table>
### Table: Common Names, Scientific Names, and Environmental Information

<table>
<thead>
<tr>
<th>Common Name Scientific Name</th>
<th>Legal Status Federal/State/ CNPS</th>
<th>Geographic Distribution</th>
<th>Habitat Requirements</th>
<th>Blooming Period</th>
<th>Habitat Present in Study Area?</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vernal pool smallscale Atriplex persistens</td>
<td>−/−/B.2</td>
<td>Central Valley, from Glenn to Tulare County.</td>
<td>Dry beds of vernal pools on alkaline soils; 33-380 feet.</td>
<td>July–October</td>
<td>Yes</td>
<td>Suitable vernal pool habitat is present in the study area south of SR 12E, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Big-scale balsamroot Balsamorhiza macrolepis var. macrolepis</td>
<td>−/−/B.2</td>
<td>Scattered occurrences in Coast Ranges and Sierra Nevada foothills.</td>
<td>Chaparral, cismontane woodland, valley and foothill grassland, sometimes on serpentine soils, at 300–4,600 feet.</td>
<td>March–June</td>
<td>Yes</td>
<td>Suitable habitat is present in oak woodlands and nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Sonoma sunshine Blennosperma bakeri</td>
<td>E/E/B.1</td>
<td>Endemic to Sonoma County.</td>
<td>Vernal pools, mesic valley and foothill grassland; 33-360 feet.</td>
<td>March–May</td>
<td>No</td>
<td>Suitable habitat is present in nonnative annual grasslands and seasonal wetlands in the study area, but species occurs only in Sonoma County and was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Big tarplant Blepharizonia plumosa</td>
<td>−/−/B.1</td>
<td>San Francisco Bay area, with occurrences in Alameda, Contra Costa, San Joaquin 5, Stanislaus, and Solano Counties.</td>
<td>Valley and foothill grassland; 100-1,650 feet.</td>
<td>July–October</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Narrow-anthered California brodiaea Brodiaea californica var. leptandra</td>
<td>−/−/B.2</td>
<td>Lake, Napa, and Sonoma Counties.</td>
<td>Broadleaved upland forest, chaparral, and lower montane coniferous forest at 300 to 3,000 feet.</td>
<td>May–July</td>
<td>No</td>
<td>No suitable vegetation communities are present in the study area.</td>
</tr>
<tr>
<td>Mt. Diablo fairy-lantern Calochortus pulchellus</td>
<td>−/−/B.2</td>
<td>Alameda, Contra Costa, and Solano Counties.</td>
<td>Cismontane woodland and chaparral, 100–2,750 feet.</td>
<td>April–June</td>
<td>Yes</td>
<td>Suitable habitat is present in undisturbed oak woodlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Tiburon Indian paintbrush Castilleja affinis ssp. neglecta</td>
<td>E/T/B.2</td>
<td>San Francisco Bay Area. Marin, Napa, and Santa Clara Counties.</td>
<td>Serpentine grasslands, 200–1,300 feet.</td>
<td>April–June</td>
<td>No</td>
<td>No suitable vegetation communities or soils are present in the study area.</td>
</tr>
<tr>
<td>Common Name Scientific Name</td>
<td>Legal Status*</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
<td>Rationale</td>
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</tr>
<tr>
<td>Holly-leaved ceanothus Ceanothus purpureus</td>
<td>–/–/1B.2</td>
<td>Inner north Coast Ranges. Napa and Solano Counties.</td>
<td>Chaparral on volcanic, rocky substrate, 400–2,100 feet.</td>
<td>February–April</td>
<td>No</td>
<td>No suitable vegetation communities or soils are present in the study area.</td>
</tr>
<tr>
<td>Congdon's tarplant Centromadia [Hemizonia] parryi ssp. congdonii</td>
<td>–/–/1B.2</td>
<td>East San Francisco Bay Area, Salinas Valley, Los Osos Valley.</td>
<td>Annual grassland, on lower slopes, flats, and swales, sometimes on alkaline or saline soils; below 750 feet.</td>
<td>June–November</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Pappose tarplant Centromadia [Hemizonia] parryi ssp. parryi</td>
<td>–/–/1B.2</td>
<td>Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma Counties.</td>
<td>Coastal prairie, meadows and seeps, coastal salt marshes and swamps, alkaline soils in vernal mesic valley and foothill grassland; 6–1,400 feet.</td>
<td>May–November</td>
<td>Yes</td>
<td>Species is present in the study area. Suitable vegetation communities and soils are present, and the species was observed in the area north and south of SR 12E, between Beck Avenue and Pennsylvannia Avenue.</td>
</tr>
<tr>
<td>Bolander's water-hemlock Cicuta maculata var. bolanderi</td>
<td>–/–/2.1</td>
<td>Southern Sacramento Valley, Central Coast, South Coast.</td>
<td>Coastal, freshwater, or brackish marshes and swamps; below 660 feet.</td>
<td>July–September</td>
<td>Yes</td>
<td>Suitable habitat is present in perennial marsh in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Suisun thistle Cirsium hydrophilum var. hydrophilum</td>
<td>E/–/1B.1</td>
<td>Suisun Marsh. Solano County.</td>
<td>Salt marsh, 0–3 feet.</td>
<td>July–September</td>
<td>No</td>
<td>No suitable vegetation communities are present in the study area.</td>
</tr>
<tr>
<td>Hispid bird's-beak Cordylanthus mollis ssp. hispidus</td>
<td>–/–/1B.1</td>
<td>Central Valley. Alameda, Kern, Merced, Placer, and Solano Counties.</td>
<td>Meadow, grassland, and playa on alkaline soils below 500 feet.</td>
<td>June–September</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Soft bird's-beak Cordylanthus mollis ssp. mollis</td>
<td>E/R/1B.2</td>
<td>San Francisco Bay region and Suisun Marsh. Contra Costa, Marin, Napa, Solano, Sacramento, and Sonoma Counties.</td>
<td>Tidal salt marsh, 0–10 feet.</td>
<td>July–September</td>
<td>No</td>
<td>No suitable vegetation communities or hydrologic conditions are present in the study area.</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Legal Status</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
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</tr>
<tr>
<td>Subalpine</td>
<td>Cryptantha cryptantha</td>
<td>−/−/1B.3</td>
<td>Alpine, Mono, and Tuolumne Counties.</td>
<td>Subalpine coniferous forest on volcanic, rocky substrates; 8,500–10,500 feet.</td>
<td>July–August</td>
<td>No</td>
</tr>
<tr>
<td>Recurved</td>
<td>Delphinium recurvatum</td>
<td>−/−/1B.2</td>
<td>San Joaquin Valley and central valley of the south Coast Ranges. Contra Costa County to Kern County.</td>
<td>Subalkaline soils in annual grassland, saltbush scrub, cismontane woodland, and vernal pools at 100–2,000 feet.</td>
<td>March–May</td>
<td>Yes</td>
</tr>
<tr>
<td>Western</td>
<td>Dirca occidentalis</td>
<td>−/−/1B.2</td>
<td>San Francisco Bay region, Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma Counties.</td>
<td>Moist areas in broadleaved upland forest, closed-cone coniferous forest, cypress woodland, North Coast coniferous forest, riparian forest, riparian woodland; 165–1,300 feet.</td>
<td>January–April</td>
<td>No</td>
</tr>
<tr>
<td>Dwarf</td>
<td>Downingia pusilla</td>
<td>−/−/2.2</td>
<td>Central Valley.</td>
<td>Vernal pools and valley and foothill grasslands; 3–1,500 feet.</td>
<td>March–May</td>
<td>Yes</td>
</tr>
<tr>
<td>Streamside</td>
<td>Erigeron biolettii</td>
<td>−/−/3</td>
<td>North Coast, from Humboldt County to Marin County, Solano County.</td>
<td>Moist, rocky areas in broadleaved upland forest, cismontane woodland, North Coast coniferous forest, and ledges along rivers; 100–3,600 feet.</td>
<td>June–October</td>
<td>Yes</td>
</tr>
<tr>
<td>Greene’s</td>
<td>Erigeron greenei</td>
<td>−/−/1B.2</td>
<td>Lake, Napa, and Sonoma Counties.</td>
<td>On serpentine or volcanic soils in chaparral; 260–950 feet.</td>
<td>May–September</td>
<td>No</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Legal Statusa</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
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</tr>
<tr>
<td>Tiburon buckwheat</td>
<td>Eriogonum luteolum var. caninum</td>
<td>−/−/1B.1</td>
<td>Central inner north Coast Range, northern Central coast, and northern San Francisco Bay area; Alameda, Colusa, Lake, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma Counties.</td>
<td>On serpentine in chaparral, coastal prairie, valley and foothill grassland; 0–2,300 feet.</td>
<td>June–September</td>
<td>No</td>
</tr>
<tr>
<td>Mt. Diablo buckwheat</td>
<td>Eriogonum truncatum</td>
<td>−/−/1B.1</td>
<td>Historically known from Alameda, Contra Costa, and Solano counties; recently rediscovered on Mt. Diablo.</td>
<td>Coarse, sandy soils in chaparral, coastal scrub, valley and foothill grassland; elevation 10–1,150 feet.</td>
<td>April–September</td>
<td>No</td>
</tr>
<tr>
<td>Fragrant fritillary</td>
<td>Fritillaria liliacea</td>
<td>−/−/1B.2</td>
<td>Coast Ranges from Marin County to San Benito County.</td>
<td>Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentine; 10–1,345 feet.</td>
<td>February–April</td>
<td>Yes</td>
</tr>
<tr>
<td>Adobe lily</td>
<td>Fritillaria pluriflora</td>
<td>−/−/1B.2</td>
<td>Northern Sierra Nevada foothills, inner Coast Ranges foothills, and Sacramento Valley. Butte, Colusa, Glenn, Lake, Napa, Plumas, Solano, Tehama, and Yolo Counties.</td>
<td>Chaparral, cismontane woodland, valley and foothill grassland, often on adobe soils; 200–2,300 feet.</td>
<td>February–April</td>
<td>Yes</td>
</tr>
<tr>
<td>Woolly-headed gilia</td>
<td>Gilia capitata ssp. tomentosa</td>
<td>−/−/1B.1</td>
<td>Coastal California: Sonoma and Marin Counties.</td>
<td>Coastal bluff scrub; 50–510 feet.</td>
<td>May–July</td>
<td>No</td>
</tr>
<tr>
<td>Boggs Lake hedge-hyssop</td>
<td>Gratiola heterosepala</td>
<td>−/−/1B.2</td>
<td>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, and Tehama Counties; also Oregon.</td>
<td>Clay soils in areas of shallow water, lake margins and vernal pool margins, 330–7,800 feet.</td>
<td>April–August</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

<table>
<thead>
<tr>
<th>Common Name</th>
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<th>Legal Statusa</th>
<th>Geographic Distribution</th>
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<th>Blooming Period</th>
<th>Habitat Present in Study Area?</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diablo helianthella</td>
<td><em>Helianthella castanea</em></td>
<td>–/–/1B.2</td>
<td>San Francisco Bay area: Alameda, Contra Costa, Marin b, San Francisco b, and San Mateo Counties; also reported from San Diego County.</td>
<td>At chaparral/oak woodland ecotone, often in partial shade, on rocky soils, also coastal scrub, riparian woodland, grassland; 200–4,300 feet.</td>
<td>March–June</td>
<td>Yes</td>
<td>Marginally suitable habitat is present in riparian woodland in the study area, but species is not known from Solano County. Species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Pale yellow hayfield tarplant</td>
<td><em>Hemizonia congesta</em> ssp. congesta</td>
<td>–/–/1B.2</td>
<td>Coastal California: Mendocino, Sonoma and Marin Counties.</td>
<td>Coastal scrub, valley and foothill grassland, often in fallow fields; 82–1,500 feet.</td>
<td>April–October</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands and fallow row crop fields in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Brewer’s western flax</td>
<td><em>Hesperolinon breweri</em></td>
<td>–/–/1B.2</td>
<td>Southern north inner Coast Ranges, northeast San Francisco Bay region, and Mt. Diablo. Contra Costa, Napa, and Solano Counties.</td>
<td>Serpentine slopes in chaparral and grasslands at 100–2,000 feet.</td>
<td>May–July</td>
<td>No</td>
<td>No suitable soils (serpentine) are present in the study area.</td>
</tr>
<tr>
<td>Napa western flax</td>
<td><em>Hesperolinon serpentinum</em></td>
<td>–/–/1B.1</td>
<td>Alameda, Lake, Napa, and Stanislaus Counties.</td>
<td>Chaparral on serpentine; 164–2,600 feet.</td>
<td>May–July</td>
<td>No</td>
<td>No suitable vegetation communities or soils (serpentine) are present in the study area.</td>
</tr>
<tr>
<td>Santa Cruz tarplant</td>
<td><em>Holocarpha macradenia</em></td>
<td>T/E/1B.1</td>
<td>Coastal slope of the Santa Cruz Mountains, Monterey and Santa Cruz Counties.</td>
<td>Coastal terrace grasslands, coastal scrub, often on light sandy to sandy clay soils, 30–720 feet.</td>
<td>June–October</td>
<td>No</td>
<td>No suitable vegetation communities or soils (sandy or sandy clay) are present in the study area.</td>
</tr>
<tr>
<td>Carquinez goldenbush</td>
<td><em>Isocoma arguta</em></td>
<td>–/–/1B.1</td>
<td>Deltaic Sacramento Valley and Suisun Slough. Contra Costa and Solano Counties.</td>
<td>Annual grassland on alkaline soils and flats generally below 70 feet.</td>
<td>August–December</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Northern California black walnut</td>
<td><em>Juglans hindsii</em></td>
<td>–/–/1B.1</td>
<td>Last two native stands in Napa and Contra Costa Counties; historically more widespread through southern north inner Coast Range, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay region.</td>
<td>Riparian forest, riparian woodland, 0–1,450 feet.</td>
<td>April–May</td>
<td>Yes</td>
<td>No native stands present in study area.</td>
</tr>
<tr>
<td>Common Name Scientific Name</td>
<td>Legal Status&lt;sup&gt;a&lt;/sup&gt; Federal/State/ CNPS</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
<td>Rationale</td>
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</tr>
<tr>
<td>Contra Costa goldfields Lasthenia conjugens</td>
<td>E/~1B.1</td>
<td>Napa and Solano Counties.</td>
<td>Alkaline or saline vernal pools and swales, below 1,550 feet.</td>
<td>March–June</td>
<td>Yes</td>
<td>Species is present in the study area. Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E, west and east of Pennsylvania Avenue.</td>
<td></td>
</tr>
<tr>
<td>Delta tule pea Lathyrus japonicus var. japonicus</td>
<td>~~/~1B.2</td>
<td>Central Valley and San Francisco Bay region. Alameda, Contra Costa, Fresno, Marin, Napa, Sacramento, San Benito, Santa Clara, San Joaquin, and Solano Counties.</td>
<td>Coastal and estuarine marshes below 1,000 feet.</td>
<td>May–September</td>
<td>No</td>
<td>No suitable vegetation communities are present in the study area.</td>
<td></td>
</tr>
<tr>
<td>Legenere Legenere limosa</td>
<td>~~/~1B.1</td>
<td>Central Valley.</td>
<td>Vernal pools.</td>
<td>April–June</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
<td></td>
</tr>
<tr>
<td>Heckard's pepper-grass Lepidium latipes var. heckardii</td>
<td>~~/~1B.2</td>
<td>Southern Sacramento Valley, Glenn, Solano, and Yolo Counties.</td>
<td>On margins of alkali scalds in annual grassland; below 656 feet.</td>
<td>March–May</td>
<td>No</td>
<td>No suitable soil conditions (alkali scalds) present in annual grasslands in the study area.</td>
<td></td>
</tr>
<tr>
<td>Jepson's leptosiphon Leptosiphon japonicus</td>
<td>~~/~1B.2</td>
<td>Lake, Napa, and Sonoma Counties.</td>
<td>Chaparral and cismontane woodland, typically in volcanic soils, 320–1,640 feet.</td>
<td>March–May</td>
<td>No</td>
<td>No suitable soils (volcanic) are present in the study area.</td>
<td></td>
</tr>
<tr>
<td>Woolly-headed lessingia Lessingia hololeuca</td>
<td>~~/~3</td>
<td>Southern north Coast Ranges, southern Sacramento Valley, northern San Francisco Bay region, Alameda, Monterey, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo Counties.</td>
<td>Clay or serpentine soils of coastal scrub, lower montane coniferous forest, valley and foothill grassland; 49–1,000 feet.</td>
<td>June–October</td>
<td>Yes</td>
<td>Suitable habitat is present in nonnative annual grasslands on clay soils in the study area, but species was not observed during blooming-period surveys.</td>
<td></td>
</tr>
<tr>
<td>Mason's lilaeopsis Lilaeopsis masonii</td>
<td>~/R1B.1</td>
<td>Southern Sacramento Valley, Sacramento River–San Joaquin River Delta, and northeast San Francisco Bay Area. Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, and Solano Counties.</td>
<td>Freshwater or brackish marsh, in tidal zone, generally at sea level.</td>
<td>April–November</td>
<td>No</td>
<td>No suitable hydrologic conditions (tidal areas) are present in the study area.</td>
<td></td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Legal Status (^a)</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
<td>Rationale</td>
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</tr>
<tr>
<td>Sebastopol meadowfoam</td>
<td><em>Limnanthes vinculans</em></td>
<td>E/E/1B.1</td>
<td>Napa? and Sonoma Counties.</td>
<td>Vernal pools, vernally mesic grasslands and wet meadows; 50–1,000 feet.</td>
<td>April–May</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Delta mudwort</td>
<td><em>Limosella subulata</em></td>
<td>–/–/2.1</td>
<td>Deltic Central Valley: Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon.</td>
<td>Muddy or sandy intertidal flats and marshes, streambanks in riparian scrub generally at sea level; 0–10 feet.</td>
<td>May–August</td>
<td>No</td>
<td>No suitable hydrologic conditions (tidal areas) are present in the study area.</td>
</tr>
<tr>
<td>Mt. Diablo cottonweed</td>
<td><em>Micropus amphibolus</em></td>
<td>–/–/3.2</td>
<td>Coast Ranges from Lake County to Santa Barbara County.</td>
<td>Rocky sites in broadleafed upland forest, mixed evergreen forest, oak woodland, chaparral, Valley and foothill grasslands; 150–2,700 feet.</td>
<td>March–May</td>
<td>No</td>
<td>No suitable soils are present in the study area, and study area is outside known range.</td>
</tr>
<tr>
<td>Robust monardella</td>
<td><em>Monardella villosa</em> ssp. globosa</td>
<td>–/–/1B.2</td>
<td>North Coast Ranges and Eastern San Francisco Bay Area: Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma Counties.</td>
<td>Grassy openings in oak woodland and chaparral, coastal scrub and grassland, 330–3,000 feet</td>
<td>June–July</td>
<td>No</td>
<td>Study area is below known elevational range for species. Not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Little mousetail</td>
<td><em>Myosurus minimus</em> ssp.apus</td>
<td>–/–/3.1</td>
<td>Central Valley and South Coast from Butte County south to San Diego County; Baja California, Oregon.</td>
<td>Valley and foothill grassland, alkaline vernal pools at 66–2,100 feet.</td>
<td>March–June</td>
<td>Yes</td>
<td>Suitable vegetation communities and soils are present in seasonal wetlands on alkali soils the study area, but the species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Baker’s navarretia</td>
<td><em>Navarretia leucocephala</em> ssp. bakeri</td>
<td>–/–/1B.1</td>
<td>Inner North Coast Range, western Sacramento Valley: Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Tehama, and Yolo Counties.</td>
<td>Vernal pools and swales in woodland, lower montane coniferous forest, mesic meadows, and grassland; generally below 5,740 feet.</td>
<td>May–July</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
</tbody>
</table>
### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Legal Status&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Geographic Distribution</th>
<th>Habitat Requirements</th>
<th>Blooming Period</th>
<th>Habitat Present in Study Area?</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colusa grass Neostapfia</td>
<td>colusana</td>
<td>T/E/1B.1</td>
<td>Central Valley. Colusa,&quot;a&quot; Glenn, Merced, Solano, Stanislaus, and Yolo Counties.</td>
<td>Adobe soils of vernal pools generally below 660 feet.</td>
<td>May–September</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, and heavy clay soils may occur in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Antioch Dunes evening-primrose Oenothera deltoides ssp. howellii</td>
<td></td>
<td>E/E/1B.1</td>
<td>Northeast San Francisco Bay region, known from 3 native occurrences; Contra Costa and Sacramento Counties.</td>
<td>Inland dunes generally below 100 feet.</td>
<td>March–September</td>
<td>No</td>
<td>No suitable vegetation communities or soils are present in the study area.</td>
</tr>
<tr>
<td>San Joaquin Valley orcutt</td>
<td>grass Orcuttia inaequalis</td>
<td>T/E/1B.1</td>
<td>Scattered locations along east edge of the San Joaquin Valley and adjacent foothills, from Stanislaus County to Tulare County.</td>
<td>Vernal pools, 30–2,500 feet.</td>
<td>April–September</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Bearded popcorn-flower</td>
<td>Plagiobothrys hystriculus</td>
<td>–/--/1B.1</td>
<td>Endemic to Solano&lt;sup&gt;b&lt;/sup&gt; County. Last recorded in 1892 (California Natural Diversity Database 2010a); rediscovered in 2005.</td>
<td>Mesic grasslands and vernal pools, 30–165 feet.</td>
<td>April–May</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Marin knotweed Polygonum</td>
<td>marinense</td>
<td>–/--/3.1</td>
<td>Coastal Marin, Marin, Napa, Solano, and Sonoma Counties.</td>
<td>Coastal salt marsh, brackish marsh; 0–30 feet.</td>
<td>April–October</td>
<td>Yes</td>
<td>Suitable marsh habitat is present on south side of SR 12E, but not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Slender-leaved pondweed</td>
<td>Potamogeton filiformis</td>
<td>–/--/2.2</td>
<td>Scattered locations in California: Contra Costa, El Dorado, Lassen, Merced, Mono, Modoc, Mariposa, Placer, Santa Clara&lt;sup&gt;a&lt;/sup&gt;, and Sierra Counties; Arizona, Nevada, Oregon, Washington.</td>
<td>Freshwater marsh, shallow emergent wetlands and freshwater lakes, drainage channels; 980–7,050 feet.</td>
<td>May–July</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in perennial marshes in the study area, but study area is below the known elevation range and the species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>California beaked-rush</td>
<td>Rhynchospora californica</td>
<td>–/--/1B.1</td>
<td>Scattered occurrences in northern California. Butte, Mariposa, Marin, and Sonoma Counties.</td>
<td>Freshwater marshes and seeps, bogs and fens, and lower montane coniferous forest, 131–3,310 feet.</td>
<td>May–July</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in perennial marshes in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Legal Status</td>
<td>Geographic Distribution</td>
<td>Habitat Requirements</td>
<td>Blooming Period</td>
<td>Habitat Present in Study Area?</td>
<td>Rationale</td>
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</tr>
<tr>
<td>Rayless ragwort</td>
<td>Senecio aphanactis</td>
<td>–/~/2.2</td>
<td>Scattered locations in central western and southwestern California, from Alameda County to San Diego County.</td>
<td>Oak woodland, coastal scrub, open sandy or rocky areas, on alkaline soils; 50–2,600 feet.</td>
<td>January–April</td>
<td>Yes</td>
<td>Suitable habitat is present in undisturbed oak woodlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Napa checkerbloom</td>
<td>Sidalcea hickmanii ssp. napensis</td>
<td>–/~/1B.1</td>
<td>Napa county</td>
<td>Rhyolitic soils in chaparral; 1,360–2,000 feet.</td>
<td>April–June</td>
<td>No</td>
<td>No suitable vegetation communities or soils are present in the study area, and study area is below the known elevation range.</td>
</tr>
<tr>
<td>Marin checkerbloom</td>
<td>Sidalcea hickmanii ssp. viridis</td>
<td>–/~/1B.3</td>
<td>Sonoma County to San Mateo County.</td>
<td>Openings in chaparral on volcanic or serpentinite substrates, 165–1,410 feet.</td>
<td>May–June</td>
<td>No</td>
<td>No suitable vegetation communities or soils are present in the study area.</td>
</tr>
<tr>
<td>Keck’s checkerbloom</td>
<td>Sidalcea keckii</td>
<td>E/~/1B.1</td>
<td>Fresno and Tulare Counties.</td>
<td>Serpentine clay soils in cismontane woodland, valley and foothill grassland; 400–1,400 feet.</td>
<td>April–May</td>
<td>No</td>
<td>No suitable soils are present in the study area, and study area is below the known elevation range.</td>
</tr>
<tr>
<td>Suisun marsh aster</td>
<td>Symphyotrichum lentum [Aster lentus]</td>
<td>–/~/1B.2</td>
<td>Sacramento River–San Joaquin River Delta, Suisun Marsh, and Suisun Bay. Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties.</td>
<td>Tidal brackish and freshwater marsh below 500 feet.</td>
<td>May–November</td>
<td>No</td>
<td>No suitable hydrologic conditions (tidal areas) are present in the study area.</td>
</tr>
<tr>
<td>Napa bluecurls</td>
<td>Trichostema ruygii</td>
<td>–/~/1B.2</td>
<td>Lake and Napa Counties.</td>
<td>Cismontane woodland, lower montane coniferous forest, valley and foothill grassland, vernal pools; 100–200 feet.</td>
<td>June–October</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in nonnative annual grasslands and seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Showy Indian clover</td>
<td>Trifolium amoenum</td>
<td>E/~/1B.1</td>
<td>Coast Range foothills in the San Francisco Bay region, currently known from Marin County.</td>
<td>Low elevation grasslands, including swales and disturbed areas, sometimes on serpentinite soils; 13–1,360 feet.</td>
<td>April–June</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys of all areas except the area north of SR 12W. The species has potential to occur in this area, and surveys of the area will be needed prior to construction.</td>
</tr>
</tbody>
</table>
### Biological Environment

#### Final Environmental Impact Report/Environmental Impact Statement

**Interstate 80/Interstate 680/State Route 12 Interchange Project**

**October 2012**

**3.3-150**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Legal Status&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Geographic Distribution</th>
<th>Habitat Requirements</th>
<th>Blooming Period</th>
<th>Habitat Present in Study Area?</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saline clover</td>
<td><em>Trifolium depauperatum</em></td>
<td>−/−/1B.2</td>
<td>Alameda, Monterey, Napa, San Benito, Santa Clara, San Luis Obispo, San Mateo, Solano, and Sonoma Counties.</td>
<td>Salt marsh, mesic alkaline areas in grasslands, vernal pools; 0–1,000 feet.</td>
<td>April–June</td>
<td>Yes</td>
<td>Species is present in the study area. Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E, west and east of Pennsylvania Avenue.</td>
</tr>
<tr>
<td>Greene’s tuctoria</td>
<td><em>Tuctoria greenei</em></td>
<td>E/R/1B.1</td>
<td>Scattered distribution along eastern Central Valley and foothills from Shasta County to Tulare County.</td>
<td>Dry vernal pools at 100–3,510 feet.</td>
<td>May–September</td>
<td>Yes</td>
<td>Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.</td>
</tr>
<tr>
<td>Oval-leaved viburnum</td>
<td><em>Viburnum ellipticum</em></td>
<td>−/−/2.3</td>
<td>Northwest California, San Francisco Bay Area, and north and central Sierra Nevada foothills. Contra Costa, Fresno, El Dorado, Glenn, Humboldt, Mendocino, Napa, Shasta, and Sonoma Counties, as well as Oregon and Washington.</td>
<td>Chaparral, cismontane woodland, and lower montane coniferous forest; 705–4,600 feet.</td>
<td>May–June</td>
<td>No</td>
<td>No suitable habitat in the study area, and study area is below elevational range for the species.</td>
</tr>
</tbody>
</table>

**Sources:** California Natural Diversity Database (CNDDDB) 2010a and 2010b; CNPS 2010; Huffman-Broadway Group, Inc. 2007; Jones & Stokes study area surveys 2004 and 2007.

<sup>a</sup> Status explanations:

- = no listing.

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

R = listed as rare under the California Native Plant Protection Act; this category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

California Native Plant Society

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

3 = List 3 species: plants about which more information is needed to determine their status.

CNPS Code Extensions:

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

.2 = fairly endangered in California (20-80% of occurrences threatened)

.3 = not very endangered in California (<20% of occurrences threatened or not current threats known)

<sup>b</sup> Known populations believed extirpated from that county.
Table 3.3.4-1. Special-Status Wildlife and Fish Species with the Potential to Occur in the I-80/I-680/SR-12 Project Region

<table>
<thead>
<tr>
<th>Common Name, Scientific Name</th>
<th>Legal Status(^a)</th>
<th>Geographic Distribution</th>
<th>Habitat Requirements</th>
<th>Habitat Present in Study Area?</th>
<th>Comments</th>
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<tbody>
<tr>
<td></td>
<td>Federal</td>
<td>State</td>
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<tr>
<td>Invertebrates</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Conservancy fairy shrimp <em>Branchinecta conservatio</em></td>
<td>E</td>
<td>–</td>
<td>Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties.</td>
<td>Large deep vernal pools in annual grasslands.</td>
<td>Absent</td>
</tr>
<tr>
<td>Vernal pool fairy shrimp <em>Branchinecta lynchi</em></td>
<td>T</td>
<td>–</td>
<td>Central Valley and central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.</td>
<td>Common in vernal pools. Also found in sandstone rock outcrop pools.</td>
<td>Present</td>
</tr>
<tr>
<td>Vernal pool tadpole shrimp <em>Lepidurus packardi</em></td>
<td>E</td>
<td>–</td>
<td>Shasta County to Merced County.</td>
<td>Vernal pools and ephemeral stock ponds.</td>
<td>Present</td>
</tr>
<tr>
<td>Delta green ground beetle <em>Elaphrus viridus</em></td>
<td>T</td>
<td>–</td>
<td>Restricted to Olcott Lake and other vernal pools at Jepson Prairie Preserve in central Solano County.</td>
<td>Sparsely vegetated edges of vernal lakes and pools, occurring up to 250 feet from pools.</td>
<td>Absent</td>
</tr>
<tr>
<td>Valley elderberry longhorn beetle <em>Desmocerus californicus dimorphus</em></td>
<td>T</td>
<td>–</td>
<td>Streamside habitats below 915 meters (3,000 feet) above sea level throughout the Central Valley.</td>
<td>Riparian and oak savanna habitats with elderberry shrubs and streamside habitats below 915 meters (3,000 feet) above sea level. Elderberries are the host plant.</td>
<td>Present</td>
</tr>
<tr>
<td>Callippe silverspot butterfly <em>Speyeria callippe callippe</em></td>
<td>E</td>
<td>–</td>
<td>San Bruno Mountains, San Mateo County, and a single location in Alameda County.</td>
<td>Open hillside where Johnny jump-ups (<em>Viola pendunculata</em>) grows. Larvae feed on Johnny jump-up plants, whereas adults feed on native mints and non-native thistles.</td>
<td>Present</td>
</tr>
</tbody>
</table>
## Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

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<tbody>
<tr>
<td><strong>Amphibians</strong></td>
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<tr>
<td>California red-legged frog <em>Rana draytonii</em></td>
<td>T</td>
<td>SSC</td>
<td>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.</td>
<td>Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods.</td>
<td>Present</td>
</tr>
<tr>
<td>California tiger salamander <em>Ambystoma californiense</em></td>
<td>T</td>
<td>T</td>
<td>Central Valley, including Sierra Nevada foothills, up to 1,600 feet above sea level and coastal region (up to 3,900 feet) from Butte County to northeastern San Luis Obispo County.</td>
<td>Valley floor grasslands or low foothill elevations where lowland aquatic sites like large vernal pools, playa pools, sag ponds, and stock ponds are available for breeding. Upland habitat consists of small mammal burrows within approximately 2,200 feet of breeding habitat.</td>
<td>Present</td>
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<tr>
<td><strong>Reptiles</strong></td>
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<tr>
<td>Giant garter snake <em>Thamnophis gigas</em></td>
<td>T</td>
<td>T</td>
<td>Central Valley from the vicinity of Burrel in Fresno County to near Chico in Butte County. Extirpated from areas south of Fresno.</td>
<td>Sloughs, canals, low-gradient streams, and freshwater marshes where there is a prey base of small fish and amphibians. Also irrigation ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.</td>
<td>Absent</td>
</tr>
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**Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment**

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<tr>
<td><strong>Western pond turtle Actinemys marmorata</strong></td>
<td>Federal: –</td>
<td>Occurs from the Oregon border of Del Norte and Siskiyou Counties along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of the Sierra Nevada.</td>
<td>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.</td>
<td>Present</td>
<td>Suitable aquatic habitat is present within the study area. The species is present within the Dan Wilson Creek/Green Valley Creek watershed (Solano County Water Agency 2009). Western pond turtles have been observed in a pond north of SR 12W (CNDDB 2010a) and in Ledgewood Creek during a swallow nest survey in March 2008 for the I-80 HOV project (Caltrans 2007).</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
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</tr>
<tr>
<td><strong>Northern harrier Circus cyaneus</strong></td>
<td>Federal: –</td>
<td>Throughout lowland California. Has been recorded in fall at high elevations.</td>
<td>Grasslands, meadows, marshes, and seasonal and agricultural wetlands.</td>
<td>Present</td>
<td>Suitable nesting and foraging habitat is present in the study area. A northern harrier was observed in grassland habitat north of SR 12W (North Connector EIR 2007).</td>
</tr>
<tr>
<td><strong>White-tailed kite Elanus leucurus</strong></td>
<td>Federal: –</td>
<td>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.</td>
<td>Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.</td>
<td>Present</td>
<td>Riparian habitat along the perennial and seasonal drainages provides potential nesting habitat in the study area.</td>
</tr>
<tr>
<td><strong>Swainson's hawk Buteo swainsoni</strong></td>
<td>Federal: –</td>
<td>Lower Sacramento and San Joaquin Valleys, Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.</td>
<td>Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.</td>
<td>Present</td>
<td>Riparian habitat throughout the study area provides potential nesting habitat. Annual grassland, row crops, and ruderal vegetation provides suitable foraging habitat.</td>
</tr>
<tr>
<td>Common Name, Scientific Name</td>
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<tr>
<td><strong>Western burrowing owl</strong></td>
<td></td>
<td>Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.</td>
<td>Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows. Also occurs along ag ditches and abandoned lots.</td>
<td><strong>Present</strong></td>
<td>Suitable nesting habitat is present in the study area. Burrowing owls were observed in grassland habitat north of SR 12W (North Connector EIR 2007).</td>
</tr>
<tr>
<td><strong>Athene cunicularia hypugea</strong></td>
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<tr>
<td><strong>Loggerhead shrike</strong></td>
<td></td>
<td>Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter.</td>
<td>Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.</td>
<td><strong>Present</strong></td>
<td>Suitable nesting habitat is present in the study area.</td>
</tr>
<tr>
<td><strong>Lanius ludovicianus</strong></td>
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<tr>
<td><strong>California clapper rail</strong></td>
<td></td>
<td>Marshes around San Francisco Bay and east through the Sacramento River–San Joaquin River Delta to Suisun Marsh.</td>
<td>Restricted to salt marshes and tidal sloughs. Usually associated with heavy growth of pickleweed. Feeds on mollusks removed from the mud in sloughs.</td>
<td><strong>Absent</strong></td>
<td>No suitable habitat (marsh and slough) is present in the study area.</td>
</tr>
<tr>
<td><strong>Rallus longirostris oboletus</strong></td>
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<tr>
<td><strong>California black rail</strong></td>
<td></td>
<td>Known from the San Francisco Bay area and the delta of the Sacramento and San Joaquin rivers south along the coast to northern Baja California and in Yuba County.</td>
<td>Inhabits saltwater, brackish, and freshwater marshes.</td>
<td><strong>Absent</strong></td>
<td>No suitable habitat is present in the study area.</td>
</tr>
<tr>
<td><strong>Laterallus jamaicensis coturniculus</strong></td>
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<tr>
<td><strong>California least tern</strong></td>
<td></td>
<td>Nests on beaches along San Francisco Bay and along the southern California coast from southern San Luis Obispo County to San Diego County.</td>
<td>Nests on sandy, upper ocean beaches, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or the open ocean.</td>
<td><strong>Absent</strong></td>
<td>No suitable habitat (sandy beaches and mudflats) is present in the study area.</td>
</tr>
<tr>
<td><strong>Sternantillarum</strong></td>
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<tr>
<td><strong>Western Snowy plover</strong></td>
<td></td>
<td>Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County.</td>
<td>Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent</td>
<td><strong>Absent</strong></td>
<td>No suitable habitat (sandy beaches) present in the study area.</td>
</tr>
<tr>
<td><strong>Charadrius alexandrine nivosus</strong></td>
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### Common Name, Scientific Name

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<tr>
<td>Saltmarsh common yellowthroat <em>Geothlypis trichas sinuosa</em></td>
<td>– SSC</td>
<td>The breeding range of saltmarsh common yellowthroat as described by Grinnell and Miller (1944) is bounded by Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz County on the south.</td>
<td>In California, yellowthroats are found in freshwater marshes, coastal swales, swampy riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields and grasslands that border soggy habitats (Shuford 1993).</td>
<td>Absent</td>
<td>No suitable habitat is present in the study area.</td>
</tr>
<tr>
<td>Suisun song sparrow <em>Melospiza melodia maxillaris</em></td>
<td>– SSC</td>
<td>The Suisun song sparrow is a distinct subspecies completely endemic to Suisun Bay.</td>
<td>Intermixed stands of bulrush, cattail, and other emergent vegetation provide ideal habitat.</td>
<td>Absent</td>
<td>No suitable habitat is present in the study area.</td>
</tr>
<tr>
<td>Tricolored blackbird <em>Agelaius tricolor</em></td>
<td>– SSC</td>
<td>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</td>
<td>Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony</td>
<td>Present</td>
<td>Suitable nesting habitat is present in the study area.</td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
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<tr>
<td>Suisun shrew <em>Sorex ornatus sinuosus</em></td>
<td>– SSC</td>
<td>Found in the tidal marshes of the northern shores of San Pablo and Suisun bays, as far east as Grizzly Island, and as far west as Sonoma Creek and Tubbis Island. Also observed near Petaluma and north of San Rafael.</td>
<td>Occupies tidal marshes that provide dense cover, abundant food (primarily invertebrates), suitable nesting sites, and fairly continuous ground moisture.</td>
<td>Absent</td>
<td>No suitable saltmarsh habitat occurs on site.</td>
</tr>
<tr>
<td>Salt marsh harvest mouse <em>Reithrodontomys raviventris</em></td>
<td>E, E, FP</td>
<td>Vicinity of San Francisco, San Pablo, and Suisun Bays and the Sacramento River–San Joaquin River Delta.</td>
<td>Salt marshes with a dense plant cover of pickleweed and fat hen. Adjacent to an upland site.</td>
<td>Absent</td>
<td>No suitable habitat (saltmarsh) is present in the study area based on survey by Phil Leitner (letter to ICF 2007)).</td>
</tr>
<tr>
<td>Pallid bat <em>Antrozous pallidus</em></td>
<td>– SSC</td>
<td>Throughout California.</td>
<td>Day roosts include rock outcrops, mines, caves, hollow trees, buildings and bridges. Recent research suggests high reliance on tree roosts.</td>
<td>Present</td>
<td>Bridges and trees in study area provide potential roosting sites.</td>
</tr>
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### Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment

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<tr>
<td>Western red bat <em>Lasiurus blossevillii</em></td>
<td>– SSC</td>
<td>Scattered throughout much of California at lower elevations</td>
<td>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</td>
<td>Present</td>
<td>Suitable roosting habitat in riparian woodlands and orchards.</td>
</tr>
<tr>
<td>Long-eared bat <em>Myotis evotis</em></td>
<td>WBWG: Medium priority</td>
<td>Found throughout California.</td>
<td>Day roosts in hollow trees under exfoliating bark, and crevices in rock outcrops. Found roosting under bark of small black oaks in northern California.</td>
<td>Present</td>
<td>Suitable roosting habitat occurs in trees.</td>
</tr>
<tr>
<td>Fringed myotis bat <em>Myotis thysanodes</em></td>
<td>WBWG: High priority</td>
<td>Found throughout most of California.</td>
<td>Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.</td>
<td>Present</td>
<td>Suitable roosting habitat occurs in trees.</td>
</tr>
<tr>
<td>Yuma myotis <em>Myotis yumanensis</em></td>
<td>– WBWG: Low-medium priority</td>
<td>Considered common and widespread in northern California up to 5,000 feet above sea level. Colonies known from Marin and San Francisco Counties.</td>
<td>Found in desert scrub, pinyon-juniper woodlands, and other open woodlands and forests. Open water is a key habitat element for this species. Roosts colonially in a variety of natural and artificial sites, including caves, mines, buildings, bridges, and trees.</td>
<td>Present</td>
<td>Bridges and trees in study area provide potential roosting sites.</td>
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### Fish

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<tr>
<td>Delta smelt <em>Hypomesus transpacificus</em></td>
<td>T T</td>
<td>Sacramento River–San Joaquin River Delta</td>
<td>Euryhaline estuary channels.</td>
<td>Absent</td>
<td>Ledgewood Creek in the project area connects to Peytonia Slough which does not support delta smelt (Schroeter et al. 2006).</td>
</tr>
<tr>
<td>Central California coast steelhead distinct population segment (DPS) <em>Oncorhynchus mykiss</em></td>
<td>T –</td>
<td>Coastal streams from Russian River to Aptos Creek; tributaries to San Francisco, San Pablo, and Suisun Bays; Suisun Marsh; and coastal marine waters off California.</td>
<td>Coldwater anadromous streams.</td>
<td>Present</td>
<td>The project is located in inland freshwater stream habitats draining to Suisun Marsh. Species occurrence documented in Suisun, Green Valley and Ledgewood Creeks. Study area is not included in critical habitat.</td>
</tr>
<tr>
<td>Common Name, Scientific Name</td>
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<tr>
<td>Central Valley steelhead DPS <em>Oncorhynchus mykiss</em></td>
<td>T E</td>
<td>Sacramento River and tributary Central Valley rivers</td>
<td>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.</td>
<td>Absent</td>
<td>Outside of species range.</td>
</tr>
<tr>
<td>Central California coast coho <em>Oncorhynchus kisutch</em></td>
<td>E E</td>
<td>Includes naturally spawned populations from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system</td>
<td>Occur in coastal streams with water temperatures &lt; 15°C. Need cool, clear water with in-stream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean (Moyle 2002).</td>
<td>Absent</td>
<td>Outside of species range.</td>
</tr>
<tr>
<td>Sacramento River winter-run Chinook salmon <em>Oncorhynchus tshawytscha</em></td>
<td>E E</td>
<td>Mainstem Sacramento River below Keswick Dam (Moyle 2002)</td>
<td>Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C. Habitat types are riffles, runs, and pools. (Moyle 2002.)</td>
<td>Absent</td>
<td>Outside of species range.</td>
</tr>
<tr>
<td>Central Valley spring-run Chinook salmon <em>Oncorhynchus tshawytscha</em></td>
<td>T T</td>
<td>Upper Sacramento River and Feather River</td>
<td>Have the same general habitat requirements as winter-run Chinook salmon. Coldwater pools are needed for holding adults (Moyle 2002).</td>
<td>Absent</td>
<td>Outside of species range.</td>
</tr>
<tr>
<td>River lamprey <em>Lampetra ayresi</em></td>
<td>– SSC</td>
<td>Exact range unknown, but includes coastal streams from Alaska to San Francisco Bay. In California, within lower Sacramento and San Joaquin Rivers, Napa River, Sonoma Creek, Alameda Creek, Salmon Creek, Russian River tributaries, and tributaries to San Francisco Bay.</td>
<td>Habitat requirements poorly understood, but include anadromous streams with gravel riffle for spawning and soft-bottomed areas for rearing.</td>
<td>Present</td>
<td>The project is located in inland freshwater anadromous stream habitats draining within the range of the species.</td>
</tr>
<tr>
<td>Sacramento splittail <em>Pogonichthys macrolepidotus</em></td>
<td>– SSC</td>
<td>Largely confined to Sacramento River–San Joaquin River Delta, Napa River, Petaluma River, Sacramento River, and Suisun Marsh.</td>
<td>Shallow-water, low-salinity habitats throughout slow areas of rivers and sloughs; areas of flooded vegetation for spawning and rearing.</td>
<td>Present</td>
<td>Ledgewood Creek in the project area connects to Peytonia Slough which supports splittail (Schroeter et al. 2006).</td>
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### Biological Environment

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<tr>
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</thead>
<tbody>
<tr>
<td>Green sturgeon <em>Acipenser medirostris</em></td>
<td>T SSC</td>
<td>In marine waters of the Pacific Ocean from the Bering Sea to Ensenada, Mexico. In rivers from British Columbia south to the Sacramento River, primarily in the Klamath/Trinity and Sacramento Rivers.</td>
<td>Primarily marine, using large anadromous freshwater rivers and associated estuaries for spawning and rearing.</td>
<td>Absent</td>
<td>The project area does not include large rivers and is not within the primary range of the species.</td>
</tr>
<tr>
<td>Central Valley fall/late fall–run Chinook salmon <em>Oncorhynchus tshawytscha</em></td>
<td>SC</td>
<td>Sacramento and San Joaquin Rivers and their tributaries, as well as some tributaries to San Francisco Bay.</td>
<td>Lower-elevation coldwater anadromous streams.</td>
<td>Present</td>
<td>The project is located in inland freshwater anadromous stream habitats draining to Suisun Marsh, designated essential fish habitat. Species occurrence documented in Suisun, Green Valley and Ledgewood Creeks.</td>
</tr>
</tbody>
</table>

* Status explanations:

- **Federal**
  - **E** = listed as endangered under the federal Endangered Species Act.
  - **T** = listed as threatened under the federal Endangered Species Act.
  - **SC** = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
  - **P** = officially proposed (in the Federal Register) for listing as endangered or threatened.
  - **C** = candidate to become a proposed species.

- **State**
  - **E** = listed as endangered under the California Endangered Species Act.
  - **T** = listed as threatened under the California Endangered Species Act.
  - **FP** = fully protected under the California Fish and Game Code.
  - **C** = formally designated as a candidate for threatened or endangered status; extending its legal protection for 1 year (until February 2010).
  - **SSC** = species of special concern in California.
  - **WBWG** = Western Bat Working Group (http://www.wbwg.org/spp_matrix.html)

High priority = species are imperiled or at high risk of imperilment

Moderate priority = This designation indicates a level of concern that should warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species’ status and should be considered a threat

Low priority = While there may be localized concerns, the overall status of the species is believed to be secure.
Chapter 3. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Relationship between Local Short-Term Uses of the Human Environment and the Maintenance of Long-Term Productivity

3.4 Relationship between Local Short-Term Uses of the Human Environment and the Maintenance of Long-Term Productivity

Implementation of either of the project alternatives (and their fundable first phases) will result in attainment of short-term and long-term transportation, safety, and economic objectives at the expense of some long-term social, aesthetic, biological, noise, parkland, and other land use impacts. Implementation of Alternative B or Alternative C would further address the objectives as well as long-term inspection and enforcement objectives with the construction of the improved westbound truck scales facility. The attainment of these objectives (long-term productivity) comes at the expense of some short-term costs that would be incurred during construction and some long-term term losses of valuable uses of the environment. These long-term losses include impacts on biological resources, agricultural and community land uses, air quality, and noise.

3.4.1 Build Alternatives

The build alternatives would have similar impacts. Because of the magnitude of the proposed project, the fundable first phase of the alternatives would have similar impacts and the full build alternatives would have similar impacts.

**Alternative B, Phase 1 and Alternative C, Phase 1**

The fundable first phase of the alternatives would have similar impacts.

- **Short-term losses would include**: economic losses experienced by businesses that relocate; construction impacts such as noise, traffic detours or delays; access inconveniences; temporary disturbance to biological resources; visual impacts during construction.
- **Short-term benefits would include**: increase in jobs and revenue due to construction.
- **Long-term losses would include**: permanent loss of plant and wildlife resources; loss of agricultural land; noise increase; displaced businesses and a displaced residence; use of construction materials and energy; possible decreased air quality or increase in greenhouse gas emissions.
- **Long-term gains would include**: improvement of transportation network in the vicinity; reduction of congestion on local roads and highways.

**Alternative B and Alternative C**

These alternatives would have similar impacts.

- **Short-term losses would include**: economic losses experienced by businesses that relocate; construction impacts such as noise, traffic detours or delays; access inconveniences; temporary disturbance to biological resources; visual impacts during construction.
- **Short-term benefits would include**: increase in jobs and revenue due to construction.
3.4.2 No-Build Alternative

This alternative would not result in any of the gains or losses listed under the above alternatives. It would not address the issues of worsening traffic and truck congestion, increasingly unreliable freight transport, or worsening traffic safety.
3.5 Irreversible and Irretrievable Commitments of Resources

Irretrievable commitments of resources would occur as a result of implementing any of the proposed project alternatives because all of the project alternatives involve a commitment of natural, physical, human, and fiscal resources. Land converted from its present uses to a transportation facility is considered an irreversible commitment. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material would be expended in the construction of any of the alternatives. Additional building materials would be used in the construction of the westbound truck scales facility under both Alternative B and C. Additionally, extensive expenditure of labor and natural resources (e.g., woodlands, wetlands, and other natural habitat) are used in the production of construction and building materials. These materials are typically not retrievable. However, they are generally not in short supply and their use would not have an adverse effect on continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable. In addition to the costs of construction and right-of-way, costs for roadway maintenance, including pavement maintenance and resurfacing, roadside, litter/sweeping, signs and markers, electrical and storm maintenance would be incurred. However, savings in energy use, travel time, and a reduction of accidents would offset these costs.

The commitment of these resources is based on the concept that the residents in the immediate area, region, and state, as well as commuters would benefit from the improved quality of the transportation system. In the case of the ultimate alternatives, the safety of the nation would benefit from the improved security and enforcement at the new westbound truck scales facility. These benefits would consist of improved accessibility, functioning, safety, and homeland security, which are expected to outweigh the commitment of these resources.
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3.6 Cumulative Impacts

3.6.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed 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 types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and the introduction or promotion of predators. They also can contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

3.6.2 Approach to Cumulative Impact Analysis

The cumulative impacts analysis was conducted using Caltrans standard 8 step approach as presented in Guidance for Preparers of Cumulative Impact Analysis (Standard Environmental Reference, SER). The following eight steps listed below were taken from the on line SER and serve as guidelines for identifying and assessing cumulative impacts:

1. Identify the resources to consider in the cumulative impact analysis by gathering input from knowledgeable individuals and reliable information sources. This process is initiated during project scoping and continues throughout the NEPA/CEQA analysis.

2. Define the geographic boundary or RSA for each resource to be addressed in the cumulative impact analysis.

3. Describe the current health and the historical context of each resource.

4. Identify the direct and indirect impacts of the proposed project that might contribute to a cumulative impact on the identified resources.
5. Identify the set of other current and reasonably foreseeable future actions or projects and their associated environmental impacts to include in the cumulative impact analysis.

6. Assess the potential cumulative impacts.

7. Report the results of the cumulative impact analysis.

8. Assess the need for mitigation and/or recommendations for actions by other agencies to address a cumulative impact.

The cumulative analysis for the proposed project takes into consideration the other ongoing projects in the same geographic area as the proposed project, as well as planned land uses and transportation and circulation projections identified in city and county general plan and policy documents.

The existing and proposed transportation projects listed below in order of anticipated completion have been included in this analysis because they either are close to the project area or could affect regional resources. This information represents the most up-to-date information available as of the date of publication of this document.

- **North Connector Project**: The North Connector Project would construct a parallel route to the north of I-80 between Abernathy Road at I-80 on the east and SR 12 at Red Top Road on the west. This project would provide increased east/west capacity and provide an alternative to I-80 for local traffic. The East End (or the Suisun Parkway Segment of the North Connector) and the Central and Hook Segment (Business Center Drive) has been constructed and opened to traffic in November 2010.

- **Interstate 80 High-Occupancy Vehicle Lanes Project**: Eastbound and westbound high-occupancy vehicle (HOV) lanes have been constructed along an approximately 8.5-mile-long segment of I-80 from the Red Top Road interchange in Solano County to approximately 0.5 mile east of the Air Base Parkway interchange in Fairfield. This project (EA-04-0A5304) increases the overall carrying capacity of I-80 in the project area and facilitates the already high demand for ridesharing on I-80. Construction of this project was completed in November 2009.

- **Jepson Parkway**: This project would provide a route for local Vacaville-Fairfield traffic to bypass I-80 in Fairfield and instead enter Fairfield from the east on Air Base Parkway or from the south on State Route 12. The project would include widening of existing roads, and could include construction of new roadway through an existing area of grassland and wetlands. Design of the project is currently underway and should be completed in late 2012.

- **2010 State Highway Operation and Protection Program (SHOPP) Projects**: These projects include two collision reduction projects scheduled for construction in program year 2010/11 and one mobility project scheduled for construction in program year 2012/2013. One collision reduction project is to construct a concrete barrier on I-80 in Vallejo between the Redwood Street on-ramp and the Route 37 connector. The other collision reduction project is to widen the shoulder on SR 12 near Rio Vista between Azevedo Road and Liberty Island Road. The mobility project includes lengthening an on-ramp and widening a bridge on I-80 in Vacaville, from west of the Alamo Creek Bridge to the Alamo west-bound on-ramp.
• **I-80 Eastbound Cordelia Truck Scales Relocation Project:** The I-80 Eastbound Cordelia Truck Scales Relocation Project (EA-04-0A5350) would include the construction of a larger, more efficient truck scales facility on eastbound I-80, approximately 2,500 feet east of the existing facility. The project would also include the construction of on- and off-ramps to both I-80 and eastbound SR 12E. The environmental document for the project was approved in fall 2009. The anticipated construction start date is August 2014.

• **Jameson Canyon (SR 12) Widening from I-80 to SR 29:** This project would provide a continuous four-lane expressway between I-80 and SR 29. The project is currently in the final design phase and construction is planned to begin in late 2012.

• **Jameson Canyon Corridor Study:** This project is currently underway and will study how connections with the interchanger improvements can be achieved.

• **I-80 Express Lanes Projects:** Two projects are planned as part the construction of the I-80 express lanes. The I-80 Express Lanes (HOV Conversion) Project would convert the existing HOV lanes between Red Top Road and Airbase Parkway Project to express lanes. The I-80 Express Lanes (New Lanes) Project would construct new express lanes between Airbase Parkway and I-505. These improvements are in the early planning phase. No construction dates have been determined.

• **I-80 Improvements through Fairfield:** Several projects are planned between SR 12W and Air Base Parkway. They include the removal of existing hook ramps at Auto Mall Parkway and construction of westbound auxiliary lanes on I-80 between Green Valley Road and SR 12W, Waterman Boulevard and Travis Boulevard, and West Texas Street and Abernathy Road. These improvements are in the early planning phases. No construction date has been determined.

• **Transit Improvements:** To support increased transit ridership and expanded bus routes in the county, the I-80/I-680/I-780 Transit Corridor Study identifies numerous potential locations for park-and-ride lots in these major corridors, four of which could be located in the project area: Red Top Road at I-80, a surface lot at Abernathy Road between I-80 and SR 12 or an expanded parking structure at the Fairfield Multimodal Transportation Center, and Gold Hill Road at I-680. The Red Top Road park and ride lot will be constructed along Red Top Road near the westerly City limits in Fairfield, consisting of 215 spaces located on approximately 3 acres. This new park and ride lot will replace the existing park and ride lot located at the Green Valley Road interchange with I-80. The new park and ride lot received environmental clearance in April 2010 and will be constructed and opened prior to closing the existing park and ride lot located at the Green Valley Road interchange.

Additionally, local non-transportation projects currently planned and underway in the general project area are provided in Tables 3.1.1-1 and 3.1.1-2. These projects represent development covered in county and city planning documents and approved under building permits. The cumulative analysis for the individual resource areas are based on analysis of different geographic boundaries or resource study areas. The resource study area and pertinent projects are identified under each resource area.
3.6.3 Assessment of Cumulative Impacts

The project alternatives would not contribute to a cumulative impact in the following resource areas because the resources are in generally good health and the project alternatives would result in either beneficial impacts, no impacts, or minor impacts that would be fully mitigated (to a less than significant level) and the alternatives’ contribution to the cumulative impact would not be considerable.

- Land Use
- Growth
- Community Impacts
- Utilities and Emergency Services
- Visual and Aesthetic Resources
- Cultural Resources
- Hydrology and Floodplain
- Water Quality and Stormwater Runoff
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Air Quality
- Noise
- Energy
- Biological Resources (Plant Species and Animal Species)

3.6.3.1 Human Environment

Farmlands

Farmland resources are most commonly managed at the County and Statewide level. For the proposed project the study area for cumulative farmlands effects is Solano County. As discussed in Section 3.1.3, Solano County had a total of 360,562 acres of land under cultivation in 2006. Of this total, 139,536 acres were designated as Prime Farmland, 7,164 acres were designated as Farmland of Statewide Importance, 11,036 acres were designated as Unique Farmland, and 202,826 acres were used for grazing purposes (California Department of Conservation 2006). Between 1984 and 2006, 40,537 acres (1,843 acres per year) of agricultural land was converted to non-agricultural uses in Solano County. This conversion included 23,221 acres of Important Farmland at a rate of 1,056 acres per year. Approximately half of the converted acreage, or 12,689 acres, was considered Prime Farmland (California Department of Conservation 2006). During this same period, about 13,000 acres inside the cities’ (Fairfield and Suisun City) spheres of influence were converted to non-agricultural uses. This trend has caused local and regional
governments to implement measures to preserve farmland (see discussion in Section 3.1.3, County of Solano).

As discussed in Section 3.1.3, the project alternatives would result in the conversion of farmlands to non-farm uses. Alternative B would convert roughly 140 acres of agricultural land to roadway, while Alternative B, Phase 1 would not affect agricultural land. Alternative C would convert roughly 122 acres of agricultural land, while Alternative C, Phase 1 would convert roughly 77 acres of agricultural land.

The direct impact of the project alternatives is not considered adverse, as measured by its LESA score (see discussion at page 3.1.3-8).

The project alternatives in combination with other ongoing and reasonably foreseeable projects in the study area (see discussion under 3.6.2 above and Tables 3.1.1-1 and 3.1.1-2) would contribute to additional conversion of farmland to non-farm uses. The amount of farmland conversion could cause a cumulatively adverse effect. However, farmland conversion in the County of Solano is governed by the County General Plan which has strong policies and guidelines for the protection and mitigation of impacts to farmland including the following implementation measure:

“AG.I-1: Create and adopt a farmland conversion mitigation program and ordinance.”

Implementation of this measure will limit the cumulative impact on farmlands on a county wide basis. The project alternatives would also be required to mitigate farmland impacts (see discussion at page 3.1.3-9).

Given the strong policies of the Solano County General Plan to limit and mitigate impacts to farmlands and the project alternatives would also include mitigation that would preserve additional farmland within the County, the long-term health of the resource would be preserved and maintained and therefore no cumulative effect to farmlands would occur.

**Traffic and Transportation/Pedestrian and Bicycle Facilities**

The resource study area for cumulative traffic and transportation impacts is the same as that used for the traffic analysis. Projects that would contribute to potential cumulative impacts include all the transportation projects listed in section 3.6.2 and development projects included in local planning documents. These impacts are analyzed in Section 3.1.6 for each alternative in 2035. Because the project alternatives, to varying degrees, would result in net beneficial effects on traffic and transportation, they would not contribute to a cumulative impact on traffic and transportation.

The resource study area for cumulative impact to pedestrian and bicycle facilities includes those facilities within the project area and the local planning areas. Projects that may contribute to a potential cumulative impact would include the development projects in Section 3.1.1 and the transportation projects listed in Section 3.6.2. Pedestrian and bicycle facilities in the area are accounted for in local planning documents. Effects to bicycle and pedestrian facilities during construction of the project would be temporary. Project design will ensure that existing facilities
can be maintained or replaced and that planned facilities can be provided. The proposed project would not contribute to a cumulative impact on pedestrian and bicycle facilities.

3.6.3.2 Biological Environment

Natural Communities
Implementation of the project alternatives would directly impact riparian woodlands and native trees, and in combination with other local and regional projects, would contribute to the cumulative loss of riparian woodland and native trees in the project vicinity. Historic loss of riparian vegetation and native trees in Solano County has occurred from conversion of riparian and native tree habitat for agriculture and development. Although riparian vegetation and native trees remain along some of the major streams in the county and in isolated areas, including Suisun Creek, these riparian corridors are substantially narrower than historically because of development. The project alternatives would contribute incrementally to cumulative impacts on riparian woodland and native trees in Solano County by directly impacting 2.5 acres of riparian habitat, although this contribution on a regional basis is relatively small (<1% on an acreage basis). Other existing and reasonably foreseeable projects within the county, such as Fairfield Corporate Commons, Green Valley Corporate Park, and other business and residential projects in the area, have the potential to contribute to the cumulative loss of riparian habitat.

Avoidance, minimization, and/or mitigation measures identified in Section 3.3.1.1 to avoid and minimize disturbance and to compensate for loss of riparian vegetation and native trees that would be impacted by the project alternatives would reduce this impact. The proposed mitigation for this project includes creation of riparian habitat (Section 3.3.1.1) and oak woodlands (Section 3.3.1.2) to replace acreage, as well as functions and values, thus mitigating for the project’s potential contribution to cumulative impacts. However, to fully address the cumulative impact to the resource from implementation of other projects, various agencies such as Solano County, City of Fairfield and Suisun City would need to require and implement similar mitigation to protect and restore riparian woodlands impacted by other existing and reasonably foreseeable projects in the study area.

Wetlands and Other Waters
Implementation of the proposed project, in combination with other local and regional projects, without mitigation, would contribute to the cumulative loss of wetlands and drainages that are waters of the United States within the Suisun Bay hydrologic unit (HUC 18050001). Most drainages that historically occurred in the rivers in the Solano County have been modified over the last century or more to improve water transport, flood protection, and agricultural development (Solano County Water Agency 2009). Wetlands and drainages have been filled for development and agricultural improvements, including features that are waters of the United States.

California now has approximately 2.9 million acres of wetlands, which is approximately 10% of the wetland area that was present two hundred years ago. Around the San Francisco Estuary, almost 200,000 acres of tidal marshes existed historically, much of which were large marshes of 50,000 acres or more in Suisun, North Bay, and South Bay. Approximately half of the grasslands above the tidal marshes were seasonally moist. By the 1950s, there were only about 50,000 acres of tidal marshes in the entire estuary, about 25% of the historical amount. Loss has continued
more slowly since then. Currently, less than 1% of the non-saline historic wetlands and about 15% of the historic salt marsh in the San Francisco Estuary remain due to direct conversion of wetlands to other land uses and changes in watershed land use that indirectly result in wetland loss. Since the mid-1800s, moist grasslands in the Estuary have declined from about 60,000 acres to about 7,000 acres, and moist grassland/vernal pool habitat has declined from about 24,000 acres to about 15,000 acres, as a result of farming and urban uses.

In the eastern part of Suisun Marsh, wetlands were first diked in 1865 to be used for livestock grazing, and by the early 1900s, these areas were also farmed to produce various crops. Natural marsh ponds in the western portion of the marsh were established as duck clubs in the 1870s and 1880s. Today, Suisun Marsh is the largest contiguous protected area in the San Francisco Estuary, and includes a primary management area (89,000 acres of wetlands, channels, and bays) and a secondary management area (22,500 acres of adjacent uplands). (California Natural Resources Agency 2009; Goals Project 1999.)

Direct loss of waters of the United States in drainages and wetlands would be caused by the proposed project, and indirect effects on waters of the United States due to sedimentation could also occur. Additional projects proposed within the hydrologic unit, such as Fairfield Corporate Commons, Green Valley Corporate Park, and other business and residential projects in the area, have the potential to cause cumulative direct and indirect impacts on wetlands and drainages. 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 have the potential to add to the cumulative loss of wetland and drainage habitat.

The project alternatives would result in the direct and indirect loss of up to 21.55 acres of wetland habitat and 4.67 acres of drainage habitat. Indirect impacts on wetlands and drainages associated with this project would be minimized through avoidance and minimization measures in Section 3.3 and also through BMPs required under Section 404 permit conditions. Cumulative impacts of the proposed project, in combination with other existing and reasonably foreseeable projects, on wetland resources would be reduced through compliance with requirements under Section 404 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. In addition, federal policy establishes a goal of no net loss of the function or value of the nation’s wetlands. While this may not be achieved on every individual project, this goal does ensure that, on the whole, cumulative impacts to wetlands under federal jurisdiction are reduced over time. The proposed mitigation for this project includes creation of wetlands and other waters habitats (Section 3.3.2) to replace acreage, as well as functions and values, thus mitigating for the project’s potential contribution to cumulative impacts. With implementation of these mitigations, the project will be in full compliance with the state and federal no net loss policies.

### 3.6.3.3 Threatened and Endangered Species

Eight threatened or endangered species occur or have the potential to occur within the project area. These species include:

- Contra Costa goldfields
- Callippe silverspot butterfly
• Vernal pool fairy shrimp  
• Vernal pool tadpole shrimp  
• Valley elderberry longhorn beetle  
• California red-legged frog  
• Swainson’s hawk  
• Central California coastal steelhead

Project alternatives would result in both direct and indirect impacts to these species. Avoidance, minimization and/or mitigation measures have been identified in Chapter 3.3. In addition, consultation under Section 7 of the Endangered Species Act has been finalized and a Biological Opinion was issued for the project on April 16, 2012.

The proposed mitigation for this project includes a wide variety of mitigation measures (see Chapter 3.3) specific to each of the threatened and endangered species, including acquisition of existing habitat and management to enhance the existing populations, and creation of new habitat. These mitigation measures will replace acreage, as well as functions and values, of habitats impacted by the project and, along with the project’s avoidance and minimization measures, and measures identified in the project’s biological opinion, the project’s potential cumulative impacts to threatened and endangered species will be fully mitigated.
Chapter 4  California Environmental Quality Act (CEQA) Evaluation

4.1 Determining Significance under CEQA

The proposed project is a project by the California Department of Transportation (Department) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA’s responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable Federal laws for this project is being, or has been, carried out by the Department under its assignment of responsibility pursuant to 23 U.S.C. 327. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or some 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 Department to identify each “significant effect on the environment” resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the 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 findings of mandatory significance of CEQA. This chapter discusses the effects of the proposed project and CEQA significance.

4.2 Discussion of Significance of Impacts

Table 4-1 presents a summary of impact determinations under CEQA by resource area for the ultimate build alternatives. The impact determination shown reflects the most severe impact for each resource area; lesser impacts may also occur, and these are discussed in the appropriate section of this chapter.
Different agencies may use different thresholds for determining the need for mitigation. For the purpose of the impact discussions in this chapter, significance conclusions are provided in the context of CEQA and State CEQA Guidelines requirements only. The following significance conclusions are made in this chapter.

- **No impact**: This level of significance is used for impacts where there is clearly no impact.
- **Less than significant**: This level of significance is used for impacts where there would be an impact, but the degree of the impact would not meet or exceed the identified thresholds.
- **Less than significant with mitigation**: This level of significance is used for impacts that would meet or exceed the identified thresholds but would be reduced to a less-than-significant level through the implementation of mitigation measures.
- **Unavoidable Significant**: This level of significance describes significant impacts for which mitigation to reduce the significant impact to a less-than-significant level is not available or feasible.

The thresholds for determining significance of impacts for the various resource areas are derived from the State CEQA Guidelines and professional practice and the CEQA checklist provided in Appendix A of this document. Those project effects that are considered impacts under CEQA only are fully discussed here. CEQA impacts addressed in Chapter 3 (e.g., effects on state-listed and federally listed plant and wildlife species) are summarized in this chapter. However, measures presented in Chapter 3 are considered to be incorporated into the project description, and CEQA impacts are assessed accordingly.
4.2.1 Less-than-Significant Effects of the Proposed Project

4.2.1.1 Aesthetics

Would the project have a substantial adverse effect on a scenic vista?

Some scenic vistas of agricultural lands or rolling, wooded hills occur from portions of the affected roadways. Most vistas would be unaffected. In one case, the vista of wooded hills form westbound SR 12 would be disrupted by the addition of proposed elevated highway structures. In another instance, a vista from Red Top Road near I-680 that includes Suisun Marsh in the distance would be blocked by a proposed highway structure. However the structure itself would provide new opportunities for vistas of the marsh from I-680. With application of the Avoidance and Minimization measures described in Chapter 3.1.7 that include aesthetic treatment of new structures and installation of new highway planting, impacts to visual resources would be less-than-significant.

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The project involves improving an existing major highway interchange. Even so, it would cause adverse changes to existing visual conditions in some locations while improving visual conditions in others. With application of the Avoidance and Minimization measures described in Chapter 3.1.7 including implementation of corridor design guidelines, aesthetic treatment of roadway structures, and installation of new highway planting, impacts to visual resources would be less-than-significant.

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Under both build alternatives, new lighting would be part of the proposed project. The proposed lighting would be consistent with existing freeway lighting in terms of its type and placement. With implementation of measures described in Section 3.1.7 that include incorporation of light and glare screening measures into all new lighting facilities, any adverse effects would be reduced to less-than-significant levels.

4.2.1.2 Agricultural Resources

Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

There are four Williamson Act parcels within the project area. Alternative C, Phase 1 would not be able to avoid the conversion of land held in Williamson Act contracts in the vicinity of the extension of Red Top Road to Business Center Drive. Alternatives B and C would affect Williamson Act parcels north of I-80 immediately east of Suisun Creek (Valine) and east of Abernathy Road. The affected portion of the Williamson Act parcels would be removed from the Williamson Act contract by cancellation upon acquisition by the Department. The remainder of the parcels would be unaffected. This impact would be less than significant.
4.2.1.3 Air Quality

Would the project conflict with or obstruct implementation of the applicable air quality plan?

The nine-county region under the jurisdiction of the BAAQMD is currently in non-attainment for both federal and state ozone standards as well as for state PM10 and PM2.5 standards. The proposed project is listed in the most recent 2035 RTP and 2009 TIP, which were found to conform with the applicable air quality plans. In addition, the project includes measures, such as limits to diesel idling and the use of cool paving surfaces, that are consistent with the control strategies described in 2005 Ozone Strategy and proposed 2009 Clean Air Plan. These strategies as well as the Department’s Standard Specification to control dust and exhaust emissions during construction are described in Section 3.2.6. The project alternatives therefore meet the regional test and conform with the SIP. This impact is less than significant.

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction emissions would result from grubbing and land clearing, grading and excavation, drainage/utilities/subgrade activities, paving activities, and construction workers commuting to and from the job site. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and weather conditions. Construction emissions are of short duration. The design and scope of the project alternatives are the same as those in the most recent RTP and TIP, both of which were found to satisfy regional conformity requirements and are consistent with the most recent regional air quality plans. Moreover, the project alternatives are consistent at the project-level conformity analysis, as none of the project alternatives would generate elevated hot spot concentrations of CO, PM10, or PM2.5. Accordingly, the project alternatives would not violate or contribute to an existing air quality violation. Implementation of standard specifications and measures to control dust and exhaust emissions during construction and measures to reduce MSAT and criteria pollutant emissions, as described in Section 3.2.6, will occur. The impact will be less-than-significant.

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

The design and scope of the project alternatives are the same as those in the most recent RTP and TIP, both of which were found to conform with regional air quality plans. Therefore, emissions from construction and operation of the project alternatives are consistent with for regional air quality plans, and the net increase in pollutants is considered less than significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

The project alternatives would not create hotspots of CO or particulate matter and consequently would not expose sensitive receptors to substantial pollutant concentration. This impact is less than significant.
Would the project create objectionable odors affecting a substantial number of people?

Project construction and operation would not generate substantial pollutant concentrations. Consequently, the project alternatives are not expected to generate objectionable odors that would affect a substantial number of people. This impact is less than significant.

4.2.1.4 Biological Resources

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

Special-Status Plant Species

Six sensitive plant species and/or their habitat could be affected by project construction: alkali milk-vetch, pappose tarplant, Contra Costa goldfields, showy Indian clover, streamside daisy, and saline clover. Impacts on the federally listed Contra Costa goldfields and showy Indian clover are discussed in Section 3.3.5, and impacts on other non-listed special status plant species are discussed in this section.

Alkali milk-vetch and streamside daisy plants are outside the temporary and permanent impact areas for both alternatives and the fundable first phases. However, the project would not be constructed in the area of occurrences of these species for many years and updated surveys will be needed to document the extent and number of the plants. It will be necessary to update surveys for the remaining species Implementation of avoidance and minimization measures in Section 3.3.3.1, will occur. The impact will be less than significant.

Alternative B, Alternative C, and Alternative C, Phase 1 would result in direct and indirect impacts to pappose tarplant. Section 3.3.3.2 discusses these impacts in detail. Implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1 would protect pappose tarplant and wetland habitat from indirect impacts. Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 will occur. The impact will be less than significant.

Alternative B would result in temporary and permanent impacts to saline clover plants, and Alternative C would result in permanent impacts. The impacts are discussed in detail in Section 3.3.3.4. With implementation of measures designed to protect sensitive natural communities, to protect water quality, to prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1, to conduct preconstruction surveys, and to compensate for loss of special-status plants described in Section 3.3.3.1, impacts on saline clover would be less than significant.

Special-Status Animal Species

All proposed build alternatives would result in impacts on the following special-status animal species and/or their habitat: western pond turtle, white-tailed kite, western burrowing owl, northern harrier, loggerhead shrike, tricolored blackbird, nesting and migratory birds and raptors,
nesting swallows, roosting bats, callippe silverspot butterfly, California tiger salamander, vernal pool fairy shrimp/vernal pool tadpole shrimp, valley elderberry longhorn beetle, Swainson’s hawk, and California red-legged frog. Impacts on the state- and federally listed species are discussed in Section 3.3.5, and impacts on other non-listed special status animal species are discussed below.

Impacts on western pond turtles under all build alternatives may include the loss or disturbance of individuals during project construction. Section 3.3.4.1 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and the measure to conduct preconstruction surveys for western pond turtles and stop work if the species is present in Section 3.3.4.1 will occur. The impact will be less than significant.

All build alternatives may result in the disturbance of nesting white-tailed kites, loggerhead shrikes, tricolored blackbirds, and migratory birds and raptors during project construction. These impacts are discussed in detail in Sections 3.3.4.2, 3.3.4.5, 3.3.4.6, and 3.3.4.7. Implementation of avoidance and minimization measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for nesting birds and raptors and stop work if the species are present in Section 3.3.4.2 would ensure that this impact would be less than significant.

Impacts on western burrowing owls as a result of all the build alternatives may include the permanent loss and temporary disturbance of their habitat, as well as disturbance to individuals, if they are present during project construction. This impact is discussed in detail in Section 3.3.4.3. Implementation of avoidance and minimization measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for burrowing owls and stop work if the species is present and to compensate for loss of nesting habitat in Section 3.3.4.3 would ensure that this impact would be less than significant.

Impacts on nesting northern harriers are possible in the area north of SR 12W. Because there is no construction proposed for that area under Alternative B, Phase 1, there would be no impact under that alternative. This impact is discussed in detail in Section 3.3.4.4. Under Alternative B, Alternative C, and Alternative C, Phase 1, implementation of the avoidance and minimization measure to conduct preconstruction surveys (including stopping work if the species is present) discussed in Section 3.3.3.4, will occur. The impact will be less than significant.

Bridge construction associated with all build alternatives could result in disturbance to nesting swallows. Impacts on swallows are discussed in detail in Section 3.3.4.8. Implementation of the avoidance and minimization measure to prevent swallows from nesting adjacent to new bridge construction, described in Section 3.3.4.8 will occur. The impact will be less than significant.

All build alternative have the potential to disturb roosting bats as discussed in Section 3.3.4.9. This effect would be reduced with implementation of a measure to conduct preconstruction surveys for roosting bats, described in Section 3.3.4.9. The impact will be less than significant.
Special-Status Fish Species

Four special-status fish species occur in the project area: river lamprey, Sacramento splittail, fall/late fall–run Chinook salmon, and central California coast steelhead. Construction activities associated with all build alternatives could affect special-status fish species and their habitat. Additionally, water quality impacts may result from project operations. Impacts on special-status fish species and their habitat are summarized below and discussed in detail in Sections 3.3.4.10, 3.3.4.11, 3.3.4.12, and 3.3.5.7.

Impacts of construction activities on water quality could result from sediment and contaminants entering the stream. With implementation of measures to prevent discharge of contaminants into stream channels as discussed in Section 3.3.4.10, this would be a less-than-significant impact.

Direct impacts on fish habitat include removal of vegetation and shaded riverine aquatic (SRA) cover. With implementation of measures to protect riparian communities discussed in Section 3.3.1.1, this would be a less-than-significant impact.

Elements of the build alternatives could also change channel morphology and disrupt the migration corridor. However, because the channels would be restored to preproject conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks, no long-term changes to channel morphology are expected. Moreover, with implementation of measures to minimize impacts on creek channels as described in Section 3.3.4.10, this would be a less-than-significant impact.

Under Alternatives B and C, a new single-span bridge would replace the existing bridge on Suisun Creek, and a new single-span bridge would be constructed downstream of the existing bridge. A potential spawning gravel bed was observed on Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions, using, to the extent practicable, gravel removed from the site. With implementation of measures to avoid potential fish spawning habitat discussed in Section 3.3.4.11, this would be a less-than-significant impact.

Under Alternative B, a new bridge requiring piles driven into the channel would be constructed on Ledgewood Creek. With implementation of measures to minimize noise impacts on special-status fish species discussed in Section 3.3.4.10, this would be a less-than-significant impact.

The increase in new impervious surfaces combined with runoff from petroleum products and other contaminants from automobiles could potentially result in an increase of contaminated runoff. With implementation of measures to prevent discharge of contaminants into stream channels as discussed in Section 3.3.4.10, this would be a less-than-significant impact.

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
**Oak Woodland**

Both alternatives and the fundable first phases would result in permanent loss of and temporary effects on oak woodlands. Additionally, indirect impacts on oak woodland vegetation outside the temporary impact zone might occur. These impacts are discussed in detail in Section 3.3.1.2. CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of native oak trees and oak woodland habitat. The loss or disturbance of oak woodland vegetation is of concern because the habitat is declining and provides important wildlife habitat and other ecological functions and values. With implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1, this impact will be reduced. The impact will be less than significant.

**Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

**Jurisdictional Drainages and Wetlands**

Effects on jurisdictional, i.e., federally protected, drainages and wetlands are discussed in Chapter 3, and a summary of significance under CEQA for these impacts is summarized as follows.

- Permanent and temporary impacts on jurisdictional perennial drainages would occur during project construction under all build alternatives. Section 3.3.2.1 discusses this impact in detail. These effects would be considerable. However, implementation of avoidance and minimization measures in Section 3.3.1.1 and measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands would reduce this impact. The impact will be less-than-significant.

- Permanent and temporary impacts on jurisdictional seasonal drainages would occur during project construction under all build alternatives. Section 3.3.2.2 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1 and measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands would reduce this impact. The impact will be less-than-significant.

- Permanent and temporary impacts on jurisdictional perennial marsh would occur during project construction under all build alternatives. Section 3.3.2.3 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to restore temporarily disturbed perennial marsh and compensate for permanent loss of wetlands would reduce this impact. The impact will be less-than-significant.

- Permanent and temporary impacts on jurisdictional alkali seasonal wetlands would occur during project construction under Alternative B, Alternative C, and Alternative C, Phase 1, but not Alternative B, Phase 1. Section 3.3.2.4 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to compensate for permanent loss of wetlands would reduce this impact. The impact will be less-than-significant.
• Permanent and temporary impacts on jurisdictional seasonal wetlands would occur during project construction under all build alternatives. Section 3.3.2.5 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to compensate for permanent loss of wetlands would reduce this impact. The impact will be less-than-significant.

**Nonjurisdictional Wetlands and Water Features**

Effects on nonjurisdictional wetland and waters are discussed in detail in Section 3.3.2. Effects on constructed seasonal drainages (or ditches) would occur under Alternative B, Alternative C, and Alternative C, Phase 1. Temporary and permanent impacts on nonjurisdictional perennial marsh would occur under Alternative B and Alternative B, Phase 1. Temporary and permanent impacts on nonjurisdictional seasonal wetlands would occur under Alternative C and Alternative C, Phase 1.

With implementation of measures to protect sensitive natural communities described in Section 3.3.1.1, and measures designed to protect, restore, and compensate for loss of wetland and drainage habitats described in Section 3.3.2, these impacts would be less than significant.

*Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Construction activities associated with the build alternatives would require temporary redirection of the flow of water through the use of cofferdams and pipelines. These devices could block the migration of Chinook salmon and steelhead. However, construction activities would be avoided during the primary migration time of Chinook salmon and steelhead. Moreover, maintenance of fish passage through the construction site during stream dewatering activities would further reduce the potential for impacts on fish movement. The pipeline would be checked every few hours (or more often depending on conditions) to clear any debris buildup that may occur during construction. Implementation of measures discussed in Section 3.3.4.10 would reduce this impact. The impact will be less-than-significant.

A fish passage assessment was conducted on the current channel configurations in Green Valley, Ledgewood, and Suisun Creeks, the results of which were compared to post-project conditions. This assessment concluded that, under existing conditions, adult Chinook salmon and steelhead passage criteria related to minimum water depth are exceeded at the Green Valley Creek stream crossing due to excessive sediment in the constructed low-flow channel. Modification of the bridge structures at Green Valley Creek under all build alternatives would improve conditions for fish passage. The proposed modification of the Ledgewood Creek crossing along SR-12 under all build alternatives would create fish passage constraints associated with shallow water depths. With the implementation of the measures to improve the Ledgewood Creek channel downstream of the crossing discussed in Section 3.3.4.11, this impact would be less than significant.

*Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*
Although the City of Fairfield has a tree ordinance that protects native oaks and several other native tree species, the ordinance does not apply to lands within the Caltrans right-of-way. No other local policies or ordinances pertain to the project. However, native trees do occur within the project area, although they are outside areas that have been mapped as sensitive community types, including riparian and oak woodlands. SCR 17 (1989) requires all state agencies to assess effects of their projects on oak woodlands that contain blue oak (Quercus douglasii), Engelmann oak (Q. engelmannii), valley oak (Q. lobata), or coast live oak (Q. agrifolia). Oak woodlands protected under this resolution must encompass at least five acres and contain five or more oak trees per acre. State agencies must preserve and protect oak woodlands to the extent feasible and mitigate loss with replacement plantings where the protected oak species are removed. Impacts on native oak trees that occur outside the mapped sensitive community types are addressed here for each project alternative.

Construction of Alternative B would remove native trees throughout the project area. Impacts on native trees that occur in riparian and oak woodlands are addressed under the impacts for those community types. Loss of eight mature native oak trees located outside riparian or oak woodlands would occur due to construction in these areas:

- Red Top Road extension north of I-80 (Trees 100 and 105 in Volume 2, Figure 3.3-2a, Sheets 2-3).
- The new I-80 EB on-ramp from NB I-680 (Trees 4–7 in Volume 2, Figure 3.3-2a, Sheets 16 and 17).
- Widening of I-80 between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (Trees 34 and 35 in Volume 2, Figure 3.3-2a, Sheet 21).

Two of the eight affected trees (Trees 34 and 35)—one interior live oak and one valley oak—are mapped in ruderal habitat, but are adjacent to a more extensive area of live oak woodland, and protection under SCR 17 would apply. Implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1 would reduce this impact. The impact will be less-than-significant.

Two other affected trees (Trees 100 and 105) are interior live oaks in an area mapped as upland scrub and surrounded by nonnative annual grassland and development. Constructed seasonal drainages cross this area of upland scrub, so the scrub essentially functions as riparian habitat adjacent to the drainages. Because these two trees are associated with drainages, their loss can be considered an impact on riparian habitat. Implementation of measures designed to compensate for loss of sensitive natural communities described in Section 3.3.1.1 would reduce this impact. The impact will be less-than-significant.

The remaining four affected trees are three valley oaks and one coast live oak (Trees 4–7) in a developed area near buildings and are not associated with any protected habitat. These trees will be within the Caltrans right-of-way acquired for project construction, and no regulations protect them. Due to the low quality of the potential wildlife habitat and the lack of surrounding natural habitat, loss of these trees is not considered a significant impact. Impacts on migratory birds that could nest in these trees are addressed in Section 3.3.4.7.
Construction of Alternative B, Phase 1 would result in the loss of six mature native trees located outside riparian or oak woodlands (Trees 4–7 in Sheets 16 and 17; and Trees 34 and 35 in Volume 2, Figure 3.3-2b, Sheet 21). Mitigation for these trees is as described for Alternative B.

Construction of Alternative C would result in the loss of six mature native oak trees outside riparian or oak woodlands due to construction in the following areas:

- Red Top Road extension north of I-80 (Trees 100 and 105 in Volume 2, Figure 3.3-2c, Sheets 2 and 3).
- The new I-680 SB on-ramp from EB I-80 along Jameson Canyon Creek (Trees 2 and 3 in Volume 2, Figure 3.3-2c, Sheets 9 and 14).
- Widening of I-80 between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (Trees 34 and 35 in Volume 2, Figure 3.3-2c, Sheet 21).

Of these six trees, two coast live oaks (Trees 2 and 3) are within nonnative annual grassland adjacent to riparian habitat along Jameson Canyon Creek. Because these two trees are adjacent to riparian habitat, their loss can be considered an impact on riparian habitat. Implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1 would reduce this impact. The impact will be less-than-significant. Avoidance and compensatory measures for the other four trees would be as described in Section 3.3.1.1.

Construction of Alternative C, Phase 1 would result in the loss of four mature native oak trees located outside riparian or oak woodlands (Trees 100 and 105 on Sheets 2 and 3, and Trees 2 and 3 in Figure 3.3-2d, Sheets 9 and 14). Mitigation for these trees is as described above for Alternatives B and C.

Native trees provide important habitat for wildlife and other ecological functions and values. The loss or disturbance of native trees, particularly oaks, is of concern to local and state agencies. With implementation of measures to avoid and minimize disturbance of riparian communities and compensate for losses as described in Section 3.3.1.1, this impact would be less than significant.

4.2.1.5 Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

There are three historical resources located that may be affected by the build alternatives: the Suisun City Train Depot (parcel 0032-020-240), the Village of Cordelia Historic District, and the Suisun City Historic District. The Suisun City Train Depot Village and the Cordelia Historic District are listed in the NRHP, and the Suisun City Historic District is eligible for listing in the NRHP and the CRHR. All three properties are historical resources for the purposes of CEQA.

Under Alternative B, construction would occur in the southern portion of parcel 0032-020-240 (Suisun City Train Depot), in the vicinity of the Village of Cordelia Historic District, and near and within the boundary of the recommended Suisun City Historic District. Alternative B would
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not lead to the physical demolition, destruction, relocation, or alteration of the historical resources or their immediate surroundings, and character-defining features of each resource would remain intact. Moreover, proposed construction would not affect the overall setting of the resources because it would be located away from and outside the district (Suisun City Historic District) or because the setting has already been compromised by modern construction. Accordingly, this alternative would result in a less-than-significant impact.

Alternative B, Phase 1 would result in construction in the vicinity of the Village of Cordelia Historic District only. The impact to the district would be less than significant because construction would not occur on a parcel that contained a contributing resource.

Alternative C would include construction in the vicinity of the Suisun City Train Depot and the Suisun City Historic District. Like Alternative B, impacts to these resources would be less than significant.

Please refer to Section 3.1.8 for additional discussion on potential effects on cultural resources.

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Two known archaeological resources that could not be found have been reported within or adjacent to the project APE. CA-Sol-262 is located within the project footprint for Alternative C and Alternative C, Phase 1. CA-Sol-242 has two mapped locations, which are entirely or partially within the footprint for Alternative B and Alternative B, Phase 1. It is possible that these sites may be rediscovered during project construction and that they may be eligible for listing in the NRHP or the CRHR. Additionally, there is the possibility that buried archaeological resources that would be eligible for listing in the NRHP or the CRHR are located within the footprint of any of the build alternatives. Project construction could result in the disturbance or destruction of these resources. Implementation of the Department’s standard procedures for unanticipated discovery and the implementation of measures to conduct further research and enter into a Programmatic Agreement (PA) (discussed in Section 3.1.8) reduces these impacts. The impact will be less-than-significant. The execution of the project PA signifies completed compliance with Section 106 of the NHPA.

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction of Alternative B could cause damage to paleontological resources. Several units are sensitive for paleontological resources and fossils could be present in the project area. Figure 3.2.4-2, Figure 3.2.4-3a, and Figure 3.2.4-3b show the locations of the following sensitive units.

- Relatively shallow Pleistocene sediments that could be sensitive underlying Holocene alluvial fan deposits (Qhf), which range in depth from approximately 0 to 25 feet, in the central and eastern portions of the project area—the likelihood of encountering sensitive deposits increases with depth and with proximity to surficial exposures of sensitive deposits.
- Late Pleistocene alluvial fan (Qpf) deposits that are highly sensitive in the western portion of the project area—although there are no known fossils records from this deposit within Solano
County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils.

- Outcrops of Sonoma volcanics (Tsvt and Tsva) that are highly sensitive in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange—of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007a), 29 of them are from the Sonoma volcanics unit, including horse, deer, and unidentified mammals (Table 3.2.4-2).

If fossils are present in the project area, they could be damaged during project construction. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) would represent an impact.

The level of impact under Alternative C, would be the same as under Alternative B but to a greater extent (Figure 3.2.4-2, Figure 3.2.4-4a, and Figure 3.2.4-4b). Table 3.2.4-3 compares the impacts of major excavation areas for Alternatives B and C on paleontological resources based on depth and extent of excavation and the paleontological sensitivity of the unit. Only project components that differ between alternatives are included. It should be noted, however, that both alternatives involve extensive, deep grading associated with the Red Top Road expansion in the paleontologically sensitive Markley Sandstone (Eocene), Sonoma Volcanics (Pliocene and late Miocene), and alluvial fan deposits (Late Pleistocene).

The level of impact under the fundable first phase of either alternative would be the same as under full build alternative, but to a lesser extent.

For all build alternatives, implementation of avoidance, minimization, and/or mitigation measures identified in Section 3.2.4, “Paleontology,” would reduce these impacts. The impact will be less-than-significant.

**Would the project disturb any human remains, including those interred outside of formal cemeteries?**

No known human remains are located within the project area. However, there is the possibility that construction of any of the build alternatives may result in the disturbance of human remains. Implementation of the Department’s standard procedures and compliance with PRC 5097.98 and Section 7050.5[c] of the California Health and Safety Code to protect human remains in case of accidental discovery during construction (discussed in Section 3.1.8) would reduce this impact. The impact will be less-than-significant.
4.2.1.6 Geology and Soils

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

As discussed in Section 3.2.3, the risk of surface fault rupture in the project area is generally high because of its proximity to active faults. There is the potential for impacts related to fault rupture, particularly under Alternative C and Alternative C, Phase 1, as structures under these alternatives are located in the vicinity of the Green Valley fault. Compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards in addition to implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3 would reduce this impact. The impact will be less-than-significant.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

As discussed in detail in Section 3.2.3, the possibility of the project area experiencing strong ground shaking may be considered moderate to high because of its proximity to active faults. However, compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards, in addition to implementation of the recommendations from the Draft Geotechnical report noted in the avoidance, minimization, and/or mitigation measures in Section 3.2.3, would reduce this impact. The impact will be less-than-significant.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The liquefaction potential in the project area corridor is considered moderate, with the exception of areas along the eastern portion of Jameson Canyon Creek, Suisun Creek, Green Valley Creek, Ledgewood Creek, and in the eastern segment of the project area, where it is considered high. This impact is discussed in detail in Section 3.2.3.

Impacts of the proposed build alternatives related to potential structural damage and injury from development on materials prone to ground failure, including materials subject to liquefaction, would be reduced with the implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3. The impact will be less-than-significant.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

As discussed in Section 3.2.2, there are landslide deposits, elevated landslide potential, and some debris-flow potential in the southwestern portion of the project area. Impacts of the build alternatives related to potential structural damage and injury from landslides or other slope
failures would be reduced with implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3. The impact will be less-than-significant.

**Would the project result in substantial soil erosion or the loss of topsoil?**

Construction activities associated with the build alternatives could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas. See Section 3.2.3 for a detailed discussion of this impact. The development and implementation of a SWPPP (see avoidance, minimization, and/or mitigation measures in Section 3.2.2) and compliance with the County’s Grading Ordinance would reduce this impact. The impact will be less-than-significant.

Most of the project area has already been disturbed by previous road-building activities, agricultural operations, and other development. Future ground-disturbing activities such as grading, excavation, removal of vegetation cover, and loading are not expected to result in any significant removal or significant loss of topsoil in the project area.

**Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

As discussed in Section 3.2.3, in general, short-term and long-term consolidation settlements do not appear to be a reason for concern in the project area, except near Suisun Valley Road and Dan Wilson Creek, where soft clays are indicated in test borings. Consolidation settlements may pose a hazard to structures in the immediate area of these soils. This impact would be reduced with implementation of avoidance, minimization, and/or mitigation measures in Section 3.2.3. The impact will be less-than-significant.

**Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?**

As discussed in Section 3.2.3, soils in the project area have been identified as having moderate to high shrink-swell potential. Compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards, in addition to avoidance, minimization, and/or mitigation measures to implement recommendations from the Draft Geotechnical Report as described in Section 3.2.3 would reduce this impact. The impact will be less-than-significant.

### 4.2.1.7 Hazards and Hazardous Materials

**Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

All potential hazardous waste (e.g., naturally occurring asbestos, contaminated groundwater, aerially deposited lead) generated during project construction would be transported and disposed of in accordance with existing state and federal laws pertaining to the handling and disposal of hazardous materials; accordingly, this would be a less-than-significant impact.
Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Activities related to construction of the project alternatives could release hazardous materials into the environment. During the construction phase of the project alternatives, ground disturbance could release aerially deposited lead in surface soils adjacent to the edge of the existing pavement, as well as lead and other potentially toxic substances found in the yellow traffic striping and/or pavement markings. All potentially contaminated soil or hazardous materials will be tested. Lead-contaminated soil that meets variance reuse criteria would be used on site. These hazardous materials, as well as contaminated groundwater from dewatering activities, would be disposed of properly. In the event of an accident, the materials could be released into the environment. Without proper precautions, exposure to these hazardous materials could become human health hazards. Implementation of the avoidance and minimization measures discussed in Section 3.2.5, including compliance with existing state and federal laws pertaining to the handling and disposal of hazardous materials, would reduce these impacts. The impact will be less-than-significant.

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?

Three schools are located within 0.25 mile of the project area: Solano Community College at 4000 Suisun Valley Road, Rodriguez High School at 5000 Red Top Road, and Green Valley Middle School at 3630 Ritchie Road, all in Fairfield. Two sites listed in the ISA are located within 0.25 mile of two of these schools (Rodriguez High School and Green Valley Middle School). Although construction activities would be roadway related, there is the potential for a hazardous spill or accident during construction. Implementation of the avoidance and minimization measures discussed in Section 3.2.5, including compliance with existing state and federal laws pertaining to the handling and disposal of hazardous materials, would reduce these impacts. The impact will be less-than-significant.

Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

According to the ISA completed in April 2009, there are 11 known or suspected hazardous materials sites as defined by Government Code Section 65962.5 within or adjacent to the project footprint. Disturbance of these areas could result in exposure to environmental contamination that could adversely affect humans and the environment. For areas proposed for acquisition, the Department would prepare, during the design phase, site-specific Phase I environmental site assessments in accordance with the requirements of the All Appropriate Inquiries Final Rule promulgated as an amendment to Community Environmental Response, Compensation, and Liability Act. A Phase I environmental site assessment will provide information to determine if there is a reasonable expectation that the site is contaminated. If the Phase I environmental site assessment reveals that it is reasonable to expect that some contamination would be encountered, the potentially affected sites would be further investigated and sampled, the constituents of concern identified, and potential impacts delineated in a Phase II environmental site assessment.
The Department would make every effort to have the property owner or responsible party investigate and clean up the contamination prior to acquisition. If however, the responsible party does not comply with a clean-up request, and the Department subsequently acquires the property, the Department will be responsible for cleaning up contamination of the site. For those sites not proposed for acquisition where environmental contamination may occur as determined by the ISA, the construction contracts for the project alternatives would require the development and implementation of plans to safeguard human health and the environment. These plans are stipulated in existing hazardous materials regulations and include a waste management and disposal plan, a health and safety plan, and a SWPPP. Given the existence of plans and regulations to avoid or reduce hazardous materials exposure and health risks, the impact of hazardous materials exposures is considered to be less than significant.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Potential short-term impacts on emergency service providers due to by congestion during project construction and temporary lane closures may result from construction-related activities under all build alternatives. The Department would coordinate with emergency service providers (e.g., police, fire, hospital) in developing a traffic management plan to ensure that no disruptions occur to vital emergency services during project construction. Implementation of the traffic management plan would reduce these impacts. The impact will be less-than-significant. On completion, the build alternatives would not impair but would rather improve the efficiency of emergency response by alleviating congestion through the I-80/I-680/SR 12 interchange complex, enabling greater maneuverability for emergency vehicle route, and improving safety conditions. Consequently, potential impacts on emergency response plans would be beneficial. Section 3.1.6 presents more information on this topic.

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 urbanized areas or where residences are intermixed with wildlands?

Wildland fires are a seasonal hazard in northern California, accounting for more than half the fires in unincorporated areas. According to the California Department of Forestry and Fire Protection (CAL FIRE) Solano County Natural Hazard Disclosure (Fire) map (California Department of Forestry and Fire Protection 2000); the majority of the project area is not located in a fire hazard region. However, the western segment of SR 12 to its junction with I-80 is in an area identified as a “wildland area that may contain substantial forest fire risks and hazards.”

The primary risks of potential fire hazards associated with the build alternatives involve the use of vehicles and equipment during construction. Heat or sparks emitted from equipment in the area could ignite dry vegetation and cause a fire. Construction crews would use existing roads along most of the alignment corridor. In addition, the Department follows a standard practice of developing and implementing a fire risk management plan that addresses fire-suppression equipment and procedures to be used during construction and training of construction and maintenance crews. Implementation of the avoidance and minimization measures discussed in Section 3.2.5 would reduce impacts. The impact will be less-than-significant.
4.2.1.8 Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements?

The build alternatives would result in up to 470 acres of soil disturbance. Disturbed soil could cause potential erosion and sediment control impacts during construction. Construction of the project alternatives would involve the use of construction equipment and associated fuels, solvents, lubricants, and other pollutants. These substances may be released into the environment during construction and could result in adverse effects on water quality. In addition, operation of the project alternatives could affect water quality as a result of stormwater carrying potential pollutants from the roadway surfaces and shoulders. Implementation of measures specified in Section 3.2.2 would reduce impacts. The impact will be less-than-significant.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

The build alternatives entail major reconstruction over multiple waterways. Specifically, the drainage pattern of Raines Drain could be affected by placement of fill material in the floodplain. Project elements described in Section 3.2.1 specify construction of an upstream inlet and stable cavities that would allow flows to pass despite the reduction in size of the floodplain. In addition, implementation of measures described in Section 3.2.2 (i.e., preparation and implementation of a SWPPP) would protect water quality from erosion and siltation impacts. The SWPPP would also address operations-related water quality impact through permanent treatment BMPs. This impact would be less than significant.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The build alternatives entail major reconstruction over multiple waterways. Specifically, the drainage pattern of Raines Drain could be affected by placement of fill material in the floodplain. In addition, the build alternatives would increase the amount of impervious surface. However, BMPs identified in the Storm Water Data Report would be sized adequately to drain to appropriate locations. In addition, implementation of measures specified in Section 3.2.2 would ensure that flooding on or off the site would not result from project implementation. This impact would be less than significant.

Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The build alternatives would all increase the amount of impervious surface, although to varying degrees. However, BMPs identified in the Storm Water Data Report would be sized adequately to drain to appropriate locations. In addition, each build alternative has the potential to increase discharges of polluted runoff to local waterways. However, implementation of operational BMPs
identified and other measures specified in Sections 3.2.1 and 3.2.2 ensure that this would be a less-than-significant impact.

Would the project otherwise substantially degrade water quality?

In accordance with the Department’s NPDES permit and the Construction General Permit, BMPs incorporated into the project alternatives would reduce the discharge of pollutants during construction, as well as permanently to the maximum extent practicable. These BMPs fall into three categories: temporary construction site BMPs, design pollution prevention BMPs, and permanent treatment BMPs. Moreover, measures specified in Section 3.2.2 (i.e., implementation of BMPs and a SWPPP) would ensure that this impact remain less than significant.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

None of the build alternatives would place any housing or structure within the 100-year flood hazard area. However, the fill that will be used for the truck scales has the potential to redirect flows. Construction of an upstream inlet structure and stable cavities as described in Section 3.2.1 would ensure that this is a less-than-significant impact.

The proposed inlet structure and storage mitigation (through additional basins or below ground storage) at Raines Drain crossing of I-80 will mitigate for the increase in pavement elevation and the loss of storage in the floodplain. These facilities would be designed to allow flooding up to the existing overtopping elevation of I-80 and prevent an increase in flood elevation upstream of I-80 and would minimize impacts to downstream areas.

4.2.1.9 Land Use and Planning

Would the project physically divide an established community?

The established communities in the project area—Cordelia and the Cities of Fairfield and Suisun City—are currently divided by the existing I-80, I-680, and SR 12 facilities. The build alternatives would result in widening the footprint of the existing facilities, but because the existing facilities already divide the community, the build alternatives would have a less-than-significant impact.

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 the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The Department is the agency with jurisdiction over project land use by virtue of its authority to build the project alternatives. As a state agency, the Department (and properties under its control) is not subject to local land use plans and regulations of local jurisdictions. Although the Department is not bound by local government policies or regulations, the Department does consider local government policies and regulations in analyzing consistency of the project with
local land use plans. Consequently, with one exception, local land use plans and regulations are not applicable to the build alternatives.

As discussed in Section 3.1.1.1, the Suisun Marsh Protection Act delegates to Solano County the responsibility for establishing policies, regulations, programs, and operating procedures that conform to the provisions of the Act and its accompanying Suisun Marsh Protection Plan. The Department is subject to these requirements. Solano County’s Suisun Marsh Policy Addendum recognizes the need to expand SR 12, and the County’s Zoning Ordinance establishes the marsh development permit process by which an expansion would be considered and approved.

Alternative B, Alternative C, and Alternative C, Phase 1 would potentially encroach into the secondary zone of the Suisun Marsh, particularly along I-680. However, the Department would apply to the San Francisco Bay Conservation and Development Commission (BCDC) for a marsh development permit, pursuant to the Suisun Marsh Protection Act. BCDC’s review and approval will ensure consistency with the Solano County General Plan’s Suisun Marsh policies and policy addendum. No construction would occur prior to issuance of a permit. Permit approval would most likely include the key performance standards listed below.

- Public roadway construction and improvement will be subject to restrictions permitting the natural water movement necessary to sustain the marsh environment.
- All designated scenic roadways should be subject to a combination of specific policies based on the composition of each visual unit along the route. The combination of policies associated with the foreground and distant components of each visual unit (and with any special features) as noted on the plan diagram apply to all development that falls within view of the designated scenic roadway.
- Development shall minimize any impacts of earth disturbance, erosion, and water pollution.
- Riparian vegetation along significant County waterways shall be preserved in order to maintain water quality and wildlife habitat values.
- Development shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh and surrounding upland areas to maintain these unique wildlife resources.
- Development shall protect marsh waterways, managed and natural wetlands, tidal marshes, seasonal marshes and lowland grasslands which are critical habitats for marsh-related wildlife.

In view of these conditions, this impact would be less than significant.

4.2.1.10 Noise

Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
**Traffic Noise**

Traffic noise levels are predicted to exceed Department noise standards under all build alternatives at residential and recreational outdoor use areas (NAC for Activity Category B land use under the Protocol). However, because the project alternatives are not predicted to result in a substantial increase in noise (i.e., 12 dB over existing noise levels), this impact is considered to be less than significant.

**Construction Noise**

Construction would be conducted in accordance with the Department’s Standard Specifications Section 14-8 and applicable local noise standards. Construction noise would be short-term, intermittent, and masked by local traffic noise. In addition, Department’s Standard Specification 14-8.03, following measures may be implemented to further reduce noise effects from construction.

- Use of equipment with sound-control devices that are no less effective than those provided on the original equipment.
- Prohibition of the use of any equipment with an unmuffled exhaust.
- Changing the location of stationary construction equipment to maximize the distance to noise-sensitive uses.
- Turning off idling equipment.
- Rescheduling construction activity to non-sensitive hours of the day.
- Notifying adjacent residents in advance of construction work.
- Installing acoustic barriers around stationary construction noise sources.

This impact is expected to be less than significant. No mitigation is required.

**Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration and noise. However, vibration from non-impact construction activity is typically below the threshold of perception when the activity is more than about 50 feet from the receiver. Moreover, vibration from such activities is a short-term effect that ends when construction is completed. This impact is expected to be less than significant. No mitigation is required.

**Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

Traffic noise levels are expected to increase by a maximum of 8 dB under design-year with-project conditions under all alternatives, compared to existing conditions. This increase is not considered substantial under the Protocol, which defines a substantial increase as a 12 dB increase over existing traffic noise levels. Based on this, traffic noise under design year with-
project conditions is not expected to result in a substantial permanent increase in noise. This impact is considered to be less than significant. No mitigation is required.

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction activities would result in a temporary increase in noise. However, as discussed above, construction activities would be conducted in accordance with the Department’s Standard Specifications Section 14-8 and applicable local noise standards. Consequently, this impact is considered less than significant. No mitigation is required.

4.2.1.11 Population and Housing

Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Because the project alternatives would only improve existing highway facilities, it would accommodate growth but would not be growth inducing. Accordingly, this is a less-than-significant impact.

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Alternatives B and C would result in a single residential displacement associated with the relocation of the westbound truck scales. Because comparable replacement housing would be made available to the residents of the single property to be displaced, and because construction of replacement housing would not be necessary to accommodate a single displacement, this would be a less-than-significant impact.

Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Alternatives B and C would result in a single residential displacement associated with the relocation of the westbound truck scales. Because comparable replacement housing would be made available to the residents of the single property to be displaced, and because construction of replacement housing would not be necessary to accommodate a single displacement, this would be a less-than-significant impact.
4.2.1.12 Public Services

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection or police protection?

Potential short-term impacts on police, fire, and emergency service providers may result from construction-related activities under all build alternatives. Potential impacts may include increased emergency response times within the project area caused by congestion during project construction and temporary lane closures. Lane closures are expected to be of short-term and occur in off-peak hours. The effect is expected to be minimal. In addition, as part of its standard procedure, the Department will prepare a Transportation Management Plan (TMP). Before initiating construction, this TMP will be provided to all emergency service providers in the area. The TMP will serve to notify all emergency service providers in the project area of the project construction schedule and the time and location of lane closures. The TMP will identify anticipated dates and hours of construction, as well as any anticipated limits on access. Notice will be provided at least one week before construction begins. To the extent possible, emergency vehicles will be allowed through roadway segments temporarily closed for construction purposes. Accordingly, this will be a less-than-significant impact.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools or parks?

Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be affected. As part of the project, the facility would be relocated prior to construction onto agricultural land that is currently under a Williamson Act contract. This impact is addressed in greater detail in Section 4.2.3.1. The portion of the alternatives that would encroach upon Williamson Act land is a relatively small subset of the overall project effects, and would constitute a less-than-significant impact.

4.2.1.13 Recreation

Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be affected. As part of the project, the facility would be relocated prior to construction onto agricultural land. This impact will be less-than-significant.
4.2.1.14 Traffic and Transportation/Pedestrian and Bicycle Facilities

Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Under the fundable first phases of the alternatives, certain segments would operate below STA’s standard of LOS E, because the fundable first phase would not provide the full project’s traffic carrying capacity. Under Alternative B, Phase 1 in 2015, the westbound SR 12E on-ramp from Jackson Street would continue to operate unacceptably during the a.m. peak hour, but this is due to the queue backup from the SR 12E/Pennsylvania Avenue intersection.

Under Alternative C, Phase 1 in 2015, westbound SR 12E east of Beck Avenue would continue to operate unacceptably during the a.m. peak hour, due to the spillback from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, in the eastbound direction, queue spillback from the Beck Avenue and Pennsylvania Avenue intersections on SR 12E would still extend back to I-680, but the extent of queue would be less than under no-project conditions.

These impacts are considered significant and no mitigation to reduce them to a less-than-significant level is available, therefore these impacts to traffic under the fundable first phases of the alternatives are significant and unavoidable. However, under both of the ultimate alternatives, this impact would be less-than-significant.

Alternatives B and C would clear all mainline sections of deficiencies experienced in the No-Project condition in 2035 in the AM peak period. Some deficiencies would remain in the PM peak period, although these deficiencies are due to the downstream bottleneck at Air Base Parkway, outside the project limits. This impact would be less than significant.

4.2.1.15 Utilities and Service Systems

Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As discussed in Section 3.2.2, the build alternatives would increase the amount of stormwater runoff within the state right-of-way. To manage the stormwater runoff, the on-site drainage facilities would be reconfigured within the proposed right-of-way as part of the project design. The associated watersheds would be only minimally affected. Because facilities would be reconfigured in the same general area as existing facilities, there would be no entirely new facilities outside the project footprint. Preparing and implementing a SWPPP and implementing BMPs would reduce this impact. The impact will be less-than-significant.
4.2.2 Less than Significant with Mitigation Environmental Effects of the Proposed Project

Agriculture Resources

Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use?

Despite permanent protections, Solano County has had a steady erosion of its agricultural base, particularly along the I-80 corridor. Substantial amounts of prime agricultural land continue to be taken out of production every year. For example, according to statistics compiled by the Department of Conservation’s Farmland Mapping and Monitoring Program, during the period between 2004 and 2008, 5,840 acres of prime farmland were taken out of production county-wide. While most of this loss consisted of conversion to grazing land, relegating prime soils to grazing rather than the production of crops is an indicator of an adverse change in the agricultural economy.

The build alternatives would result in the direct conversion of agricultural land within their boundaries, through the widening of access-controlled freeway segments. Although the federal LESA analysis indicates that this is a less-than-significant impact, there are other considerations that lead to a different conclusion for purposes of CEQA. The project alternatives will result in the conversion of a substantial portion of the Valine Conservation Easement. The purpose of that easement is the permanent protection of farmland within the Suisun Valley, consistent with the Solano County General Plan’s emphasis on preserving the Suisun Valley Strategic Plan area for continued agricultural use. As such, it is a foundation of the County’s efforts to halt conversion of agricultural lands in the area. Loss of most of the remaining easement south of the route of the North Connector conflicts with this objective. Further, the proposed project would result in the direct conversion of from 122 (Alternative C) to 140 (Alternative B) acres of existing farmland to non-agricultural use. This further erodes the agricultural base within the Suisun Valley Strategic Plan area and conflicts with the County’s efforts to preserve the area for continued agricultural use.

This change in the environment would not likely result in the conversion of farmland outside the project boundaries, because it would not change the existing access to this thoroughfare from agricultural lands or otherwise encourage conversions.

This individual impact will be reduced below the level of significance by implementation of the mitigation measure to compensate for the conversion of important farmland.

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

The project alternatives would contribute to the steady loss of agricultural land within Solano County. While the project alternatives’ contribution to this impact is relatively small in the context of Solano County that does not mean that it is not considerable in the context of agricultural land preservation in the Suisun Valley. The project alternatives are located in a
visible portion of the county where conversions have already occurred and which Solano County has identified as one of ten areas to be strategically planned in order to preserve their agricultural character. The conversion of from 122 to 140 acres of farmland within the Suisun Valley Strategic Plan area will reduce the amount of land available to maintain the stable agricultural economy necessary to support continued agricultural use.

Agricultural land is a finite resource. However, the project mitigation will require the conservation of an equal amount of agricultural land and acquisition of a larger conservation easement; this mitigation would replace the land that is lost. For CEQA purposes, therefore, the proposed project’s impact on farmland is less than significant after mitigation considerable.

### 4.2.3 Significant Irreversible Environmental Changes

There would be no significant irreversible environmental changes other than those typically associated with a roadway improvement project. For a detailed discussion of irreversible and irretrievable commitments of resources, refer to Section 3.5.

### 4.2.4 Growth-Inducing Impacts

Both build alternatives, in varying degrees, would add capacity to the I-80/I-680/SR 12 interchange complex to accommodate existing and future projected increases in traffic. By doing so, the project alternatives would, to some extent, accommodate growth both locally and regionally. This growth in traffic is the result of local and regional land use plans, which, in turn, have been considered in regional transportation plans. Locally, the proposed project could indirectly lead to the development and intensification of land uses in the study area by improving access and roadway capacity. However, this development and intensification would most likely occur in areas already planned for such development by the County, the City of Fairfield, and Suisun City. Accordingly, growth-inducing impacts would be less than significant.

### 4.2.5 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth’s climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization’s in 1988, has led to increased efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO₂), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).
Chapter 4. California Environmental Quality Act (CEQA) Evaluation

There are typically two terms used when discussing the impacts of climate change. “Greenhouse Gas (GHG) Mitigation” is a term for reducing GHG emissions in order to reduce or “mitigate” the impacts of climate change. “Adaptation,” refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)\(^1\).

Transportation sources (passenger cars, light duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas emitting sources. Conversely, the main source of GHG emissions in the United States (U.S.) is electricity generation followed by transportation. The dominant GHG emitted is CO\(_2\), mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improve system and operation efficiencies, 2) reduce growth of vehicle miles traveled (VMT) 3) transition to lower GHG fuels and 4) improve vehicle technologies. To be most effective all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce GHG emissions from transportation sources.

**Regulatory Setting**

**State**

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level.

**Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases (AB 1493), 2002:** requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the United States Environmental Protection Agency (U.S. EPA) Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning with model year 2009. California agencies will be working with Federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger cars model years 2017–2025.

**Executive Order S-3-05:** (signed on June 1, 2005, by Governor Arnold Schwarzenegger) the goal of this Executive Order is to reduce California’s GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

**AB32 (AB 32), the Global Warming Solutions Act of 2006:** AB 32 sets the same overall GHG emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” Executive Order S-20-06 further

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\(^1\) [http://climatechange.transportation.org/ghg_mitigation/](http://climatechange.transportation.org/ghg_mitigation/)
directs state agencies to begin implementing AB 32, including the recommendations made by the State’s Climate Action Team.

**Executive Order S-01-07**: Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California’s transportation fuels is to be reduced by at least ten percent by 2020.

**Senate Bill 97 (Chapter 185, 2007)**: required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State California Environmental Quality Act (CEQA) Guidelines for addressing greenhouse gas emissions. The Amendments became effective on March 18, 2010.

**Federal**

Although climate change and GHG reduction is a concern at the federal level; currently there are, no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the “National Clean Car Program” and Executive Order 13514- Federal Leadership in Environmental, Energy and Economic Performance.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding**: The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆)—in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding**: The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA’s *Proposed Greenhouse Gas*

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.

The final combined U.S. EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (MPG) if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the U.S. EPA along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

Project Analysis
An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project’s incremental effect is “cumulatively considerable.” See CEQA Guidelines sections 15064(h)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, CARB released the GHG inventory for California (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the

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4 http://www.epa.gov/climatechange/endangerment.html
5 http://epa.gov/otaq/climate/regulations.htm
6 This approach is supported by the AEP: Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007), as well as the SCAQMD (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).
Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

![California Greenhouse Gas Emissions Forecast](http://www.arb.ca.gov/cc/inventory/data/forecast.htm)

**Figure 4-1. California Greenhouse Gas Forecast**

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California’s GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006)).

The purpose of the proposed project is to reduce congestion through the I-80/I-680/SR 12 interchange complex, encourage HOV and ridesharing, improve safety, reduce cut-through traffic on local roads, and accommodate current and future truck volumes in the project area.

For a discussion of purposes, the MTC Regional Transportation Plan EIR and subsequent findings are referenced. The Department as CEQA lead agency is responsible for determining the significance of the project’s environmental impacts, including climate change. The Department has not adopted MTC’s thresholds and will use its own independent judgment in determining CEQA significance.

**Operational Emissions**

Future-year GHG emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the interim (2015) and design (2035) years. It is important to note that CO₂ emissions are useful only for a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true CO₂ emissions will be because CO₂ emissions are dependent on factors that are not

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7 Caltrans Climate Action Program is located at the following web address:
http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf
part of the emissions model, such as the fuel mix\textsuperscript{8}, rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Future year GHG emissions associated with implementation of the project alternatives were obtained by comparing future with-project emissions to future no-project emissions for both the interim (2015) and design (2035) years. Table 4-2 presents project-level emissions and indicates that under 2015 and 2035 conditions, implementation of the build alternatives is anticipated to result in increases in CO\textsubscript{2} emissions, when compared to the future no-project conditions. These increases are directly attributed to increases in VMT between the no-project and with project conditions.

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**Comparison of Alternatives to Existing**

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<thead>
<tr>
<th>Scenario</th>
<th>VMT</th>
<th>CO\textsubscript{2}</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 Alt B Scenario 1 to Existing</td>
<td>1,492,972</td>
<td>376,683</td>
</tr>
<tr>
<td>2015 Alt C Scenario 1 to Existing</td>
<td>1,410,221</td>
<td>363,731</td>
</tr>
<tr>
<td>2035 Alt B Scenario 1 to Existing</td>
<td>2,202,586</td>
<td>520,932</td>
</tr>
<tr>
<td>2035 Alt C Scenario 1 to Existing</td>
<td>1,690,192</td>
<td>422,581</td>
</tr>
<tr>
<td>2035 Alt B - Existing</td>
<td>2,630,851</td>
<td>600,357</td>
</tr>
<tr>
<td>2035 Alt C - Existing</td>
<td>2,641,853</td>
<td>585,621</td>
</tr>
</tbody>
</table>

**Comparison of Alternatives to No Project**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>VMT</th>
<th>CO\textsubscript{2}</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 Alt B Scenario 1 to 2015 No Project</td>
<td>236,016</td>
<td>175,257</td>
</tr>
<tr>
<td>2015 Alt C Scenario 1 to 2015 No Project</td>
<td>153,265</td>
<td>162,305</td>
</tr>
<tr>
<td>2035 Alt B Scenario 1 to 2035 No Project</td>
<td>845,167</td>
<td>105,395</td>
</tr>
<tr>
<td>2035 Alt C Scenario 1 to 2035 No Project</td>
<td>332,773</td>
<td>7,043</td>
</tr>
<tr>
<td>2035 Alt B - 2035 No Project</td>
<td>1,273,433</td>
<td>184,819</td>
</tr>
<tr>
<td>2035 Alt C - 2035 No Project</td>
<td>1,284,435</td>
<td>170,084</td>
</tr>
</tbody>
</table>

Note: Emissions calculations based on CT-EMFAC.

MTC’s 2035 RTP includes performance objectives to reduce per-capita delay while improving roadway safety. As indicated in Chapter 3 of this EIR, the proposed project would help to reduce congestion by reducing vehicle hours of delay and increasing average network speed. The proposed project also includes various mitigation measures, detailed below, that will reduce the project’s GHG’s emissions.

Transportation accounts for 40% of the Bay Area’s GHG emissions. The MTC understands the urgent need to address climate change. The MTC coordinates regional planning efforts with the BAAQMD, Association of Bay Area Governments (ABAG), the Bay Conservation and

\textsuperscript{8} EMFAC model emission rates are only for direct engine-out CO\textsubscript{2} emissions, not for full fuel cycle. In addition, fuel cycle emission rates can vary dramatically depending on the amount of additives, such as ethanol, and the source of the fuel components.
Development Commission (BCDC), as part of the Joint Policy Committee (JPC). The Transportation Climate Action Campaign within the JPC seeks to enable climate-friendly behaviors, reduce the Bay Area’s carbon footprint, and lay the groundwork for ongoing future climate change initiatives (Metropolitan Transportation Commission 2009).

The EIR for MTC’s 2035 RTP states that while increases in VMT over the planning period are contributing somewhat to the significant cumulative impact of global climate change, the proposed project’s contribution to the significant cumulative impact of global climate change is not cumulatively considerable. MTC’s RTP identifies that despite feasible mitigation, this overall cumulative impact is expected to remain significant and unavoidable because of regional growth. However, the proposed project’s contribution to the overall significant cumulative impact is not cumulatively considerable.

Within the RTP are various funded regional policy efforts that address the Bay Area’s contribution to global climate change, including the Bay Area Regional Agency Climate Protection Program, the Transportation Climate Action Campaign, and the Bay Area 2009 Clean Air Plan.

MTC, as part of their mitigation, commits to working with the ABAG, BCDC, and the BAAQMD, through the JPC, to develop green construction policies and best management practices that will reduce impacts related to GHG emissions. Individual projects carried out as part of the RTP shall consider adopting appropriate measures that would minimize or eliminate cumulatively considerable impacts related to climate change. These measures may include, but are not limited to, the following:

- Adopt and implement “green building” standards for any public buildings (transit stations, ferry buildings, maintenance facilities, etc) funded by MTC to achieve a U.S Green Building Council LEED Green Building rating of Silver or better or equivalent certification.
- Use light-colored pavement for solar reflectivity and reduced heat island effects wherever construction costs are no higher than 5%-10% of the least cost alternative paving material.
- Install solar photovoltaic systems or use of renewable sources of energy for transportation buildings and maintenance facilities, wherever “feasible,” as the term is defined in CEQA.
- Plant shade trees as part of specified types of construction projects or wherever construction results in loss of tree cover, because trees have carbon sequestration capacity.
- Establish or update minimum standards for construction management, including specifying minimum content for recycled products in aggregate, concrete, etc. and construction waste management.
- Establish standards or incentives for light pollution reduction related to street lighting and lighting of transportation and parking facilities to promote low energy use for permanent as well as temporary fixtures (Metropolitan Transportation Commission 2009).

As part of the Department’s Climate Action Program to reduce GHG emissions, measures outlined within the Transportation and Air Quality chapters of this EIR further reduce GHG emissions from transportation projects.
There were 12 initial interchange alternatives considered. Project alternatives were screened based on the ability of each alternative to meet the proposed project’s defined purpose and need, potential for environmental impacts, cost, and ability to provide adequate traffic operation improvements. Transit-oriented and non-traditional alternatives were considered, but were determined insufficient to meet the proposed project’s purpose and need. A detailed description of project alternatives is discussed in Chapter 2, Project Alternatives.

In addition, there are a variety of transit services within the project study area, including intra- and inter-city bus service provided by Fairfield and Suisun Transit (FAST), Rio Vista Delta Breeze, and BayLink. Amtrak provides passenger rail service and the Capital Corridor provides commuter rail service in the study area, and FAST and the Rio Vista Delta Breeze provide transit access to and from the Suisun-Fairfield Amtrak Station. There are also existing and planned bicycle facilities within the study area, including Class I, II, and III Bikeways. Pedestrian circulation consists primarily of sidewalks along streets and crosswalks at major intersections. These transit bicycle/pedestrian facilities serve to reduce VMT and automobile trips within the region, which help to reduce GHG emissions.

A detailed description of the transit system within the project study area is discussed in Section 3.1.6, “Traffic and Transportation/Pedestrian and Bicycle Facilities Traffic.”

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC calculates CO₂ emissions from mobile sources, the model has limitations in regard to accurately reflecting CO₂ emissions. According to the National Cooperative Highway Research Program report, Development of a Comprehensive Modal Emission Model (April 2008), studies have revealed that brief but rapid accelerations can contribute significantly to a vehicle’s carbon monoxide and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model’s results when the estimated emissions of the various alternatives are compared with the baseline in an attempt to determine impacts. Although work by EPA and the CARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling. In addition, EMFAC does not include speed corrections for most vehicle classes for CO₂—for most vehicle classes emission factors are held constant, which means that EMFAC is not sensitive to the decreased emissions associated with improved traffic flows for most vehicle classes. Therefore, unless a project involves a large number of heavy-duty vehicles, the difference in modeled CO₂ emissions due to speed change will be slight.

It is interesting to note that CARB is currently not using EMFAC to create its inventory of GHG emissions. It is unclear why the CARB has made this decision. Their website only states:

REVISION: Both the EMFAC and OFFROAD Models develop CO₂ and CH₄ [methane] emission estimates; however, they are not currently used as the basis for [CARB’s] official [greenhouse gas] inventory which is based on fuel usage information…
However, [CARB] is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables
With the current science, project-level analysis of GHG emissions is limited. Although a GHG analysis is included for this project, numerous key variables are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO₂ emissions.

First, vehicle fuel economy is increasing. EPA’s annual report, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008* (http://www.epa.gov/oms/fetrends.htm), which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52% in 2004 with projections at 48% in 2008. Table 4.3 shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway Traffic Safety Administration in its Draft EIS for New Corporate Average Fuel Economy (CAFE) Standards (June 2008).

| Table 4-3. National Highway Traffic Safety Administration Model Year 2015 Required Miles Per Gallon by Alternative |
|--------------------------------------------------|--|--|--|--|--|--|--|
| No Action | 25% Below Optimized | Optimized (Preferred) | 25% Above Optimized | 50% Above Optimized | Total Costs Equal Total Benefits | Technology Exhaustion |
| Cars | 27.5 | 33.9 | 35.7 | 37.5 | 39.5 | 43.3 | 52.6 |
| Trucks | 23.5 | 27.5 | 28.6 | 29.8 | 30.9 | 33.1 | 34.7 |

Second, near-zero-carbon vehicles will come to the market during the design life of this project. According to a March 2008 report released by University of California, Davis Institute of Transportation Studies:

“Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California—several in the hands of the general public—with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.

“A number of the U.S. DOE 2010 milestones for FCV development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. DOE suggest that 10,000s of vehicles per year from 2015 to
2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles.‘‘

Third, and as previously stated, California has recently adopted a low-carbon transportation fuel standard. CARB is scheduled to come out with draft regulations for low-carbon fuels in late 2008, with implementation of the standard to begin in 2010.

Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, Effects of Gasoline Prices on Driving Behavior and Vehicle Market, (http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf) the Congressional Budget Office found the following results based on data collected from California:

1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly;

2) the market share of sports utility vehicles is declining; and

3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

Limitations and Uncertainties with Impact Assessment

Taken from pages 3-48 and 3-49 of the National Highway Traffic Safety Administration Draft EIS for New CAFE Standards (June 2008), Figure 4-2 illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

Cascade of uncertainties typical in impact assessments showing the “uncertainty explosion” as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.

![Figure 4-2. Cascade of Uncertainties](image)

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Much of the uncertainty in assessing an individual project’s impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what the modeled 7,043 to 184,819 metric ton increase in design-year CO₂ emissions, relative to no-build conditions, would mean for climate change given the overall California GHG emissions inventory of approximately 430 million tons of CO₂ equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce GHG emissions. Non-mitigation IPCC scenarios project an increase in global GHG emissions by 9.7 up to 36.7 billion metric tons CO₂ from 2000 to 2030, which represents an increase of between 25% and 90%.¹⁰

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of GHGs, rather than causing “new” GHG emissions. For example, the EMFAC model runs for this project were based on Solano County data. It is difficult to assess whether some of the trip increases on I-80 and I-680 are new versus whether they are transferred from surrounding areas such as Sacramento County. Although some of the emission increases might be new, the extent to which the modeled 7,043 to 184,819 metric ton increase in design-year CO₂ emissions, relative to no-build conditions represents a net global increase, reduction, or no change, is uncertain and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project-level impact analysis are further borne out in the recently released Draft EIS for New CAFE Standards, completed by the National Highway Traffic Safety Administration June 2008. As the text quoted below shows, even when dealing with GHG emission scenarios on a national scale for the entire passenger car and light truck fleet, the numerical differences between alternatives is very small and well within the error sensitivity of the model.

In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the MY 2011–2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO₂, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all greenhouse gases in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO₂ emissions from the United States light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

CEQA Conclusion

It is Caltrans determination that, in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding the project’s direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

AB 32 Compliance

The Department continues to be actively involved on the Governor’s Climate Action Team as CARB works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger’s Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the state’s transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today’s level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO₂ reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in Figure 4-3: The Mobility Pyramid.
The Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; the Department is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by U.S. EPA and CARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the UC Davis.

Table 4-4 summarizes the Department and statewide efforts that it is implementing in order to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

- The project will incorporate the use of energy-efficient lighting, such as LED traffic signals. LED bulbs—or balls, in the industry vernacular—cost $60 to $70 apiece but last 5–6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10% of the electricity of traditional lights, an additional reduction of the project’s CO₂ emissions.

- According to the Department’s Standard Specification Provisions, idling time for lane closure during construction is restricted to ten minutes in each direction; in addition, the contractor must comply with BAAQMD rules, ordinances, and regulations regarding air quality restrictions.

- The project will incorporate the use of reclaimed water whenever feasible. Currently, 30% of the electricity used in California is used for the treatment and delivery of water. Use of reclaimed water helps conserve this energy, reducing GHG emissions from electricity production.

- The use of lighter color surfaces, such as Portland cement, helps to reduce the albedo effect and cool the surface; in addition, the Department has been a leader in the effort to add fly ash to concrete mixes. Adding fly ash reduces the GHG emissions associated with concrete production; it also can make the pavement stronger.
### Table 4-4. Climate Change/CO₂ Reduction Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Program</th>
<th>Partnership</th>
<th>Method/Process</th>
<th>Estimated CO₂ Savings (MMT)</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td>Lead Agency</td>
<td>2010</td>
<td>2020</td>
</tr>
<tr>
<td>Smart Land Use</td>
<td>Intergovernmental Review (IGR)</td>
<td>Caltrans Local Governments</td>
<td>Review and seek to mitigate development proposals</td>
<td>Not Estimated</td>
</tr>
<tr>
<td></td>
<td>Planning Grants</td>
<td>Caltrans Local and regional agencies &amp; other stakeholders</td>
<td>Competitive selection process</td>
<td>Not Estimated</td>
</tr>
<tr>
<td></td>
<td>Regional Plans and Blueprint Planning</td>
<td>Regional Agencies Caltrans</td>
<td>Regional plans and application process</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Improvements &amp; Intelligent Trans. System (ITS) Deployment</td>
<td>Strategic Growth Plan</td>
<td>Caltrans Regions</td>
<td>State ITS; Congestion Management Plan</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainstream Energy &amp; GHG into Plans and Projects</td>
<td>Office of Policy Analysis &amp; Research; Division of Environmental Analysis</td>
<td>Interdepartmental effort</td>
<td>Policy establishment, guidelines, technical assistance</td>
<td>Not Estimated</td>
</tr>
<tr>
<td>Educational &amp; Information Program</td>
<td>Office of Policy Analysis &amp; Research</td>
<td>Interdepartmental; CalEPA, CARB, CEC</td>
<td>Analytical report, data collection, publication, workshops, outreach</td>
<td>Not Estimated</td>
</tr>
<tr>
<td>Fleet Greening &amp; Fuel Diversification</td>
<td>Division of Equipment</td>
<td>Department of General Services</td>
<td>Fleet Replacement B20 B100</td>
<td>.0045 .0065 .045 .0225</td>
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<tr>
<td>Non-vehicular Conservation Measures</td>
<td>Energy Conservation Program</td>
<td>Green Action Team</td>
<td>Energy Conservation Opportunities</td>
<td>.117 .34</td>
</tr>
<tr>
<td>Portland Cement</td>
<td>Office of Rigid Pavement</td>
<td>Cement and Construction Industries</td>
<td>2.5 % limestone cement mix 25% fly ash cement mix &gt; 50% fly ash/slag mix</td>
<td>1.2 .36 4.2 3.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>2.72</td>
</tr>
</tbody>
</table>

### Adaptation Strategies

**Adaptation strategies** refers to how The Department and others can plan for the effects of climate change on the state’s transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may,
in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Climate change adaption must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08 which directed a number of state agencies to address California’s vulnerability to sea level rise caused by climate change.

The California Resources Agency (now the Natural Resources Agency [Resources Agency]), through the interagency Climate Action Team, was directed to coordinate with local, regional, state and federal public and private entities to develop a state Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California’s vulnerability to the identified impacts and then outline solutions that can be implemented within and across state agencies to promote resiliency.

As part of its development of the Climate Adaptation Strategy, Resources Agency was directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010 to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise for California.

Furthermore, Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or have funds programmed for construction in the next five years (through 2013), or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these
planning guidelines. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. (Executive Order S-13-08 allows some exceptions to this planning requirement.)

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted as part of Governor’s Schwarzenegger’s Executive Order on Sea Level Rise and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment, which is due to be released by December 2010.

On August 3, 2009, the Natural Resources Agency, in cooperation and partnership with multiple state agencies, released the 2009 California Climate Adaptation Strategy Discussion Draft, which summarizes the best known science on climate change impacts in seven specific sectors and provides recommendations on how to manage against those threats. The release of the draft document set in motion a 45-day public comment period. Led by the California Natural Resources Agency, numerous other state agencies were involved in the creation of discussion draft, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The discussion draft focuses on sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. The strategy is in direct response to Gov. Schwarzenegger’s November 2008 Executive Order S-13-08 that specifically asked the Natural Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continues to be developed and collected, the state’s adaptation strategy will be updated to reflect current findings. A revised version of the report was posted on the Natural Resource Agency website on December 2, 2009; it can be viewed at http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

The proposed project had a Notice of Preparation filed and has funds programmed for construction in the next five years (through 2013). Therefore, no further analysis is mandated.
4.2.6 Mitigation Measures for Significant Impacts under CEQA

Table 4-5 summarizes mitigation measures for significant impacts under CEQA. Impacts mitigated under NEPA are not included in this table. Although mitigation is presented for conversion of farmland to non-agricultural use, these measures will reduce the impact to a less-than-significant level.

Table 4-5. Significant Impacts and Mitigation Measures Specific to CEQA

<table>
<thead>
<tr>
<th>Potentially Significant Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion of farmland to non-agricultural use</td>
<td>To mitigate impact to important farmland (those lands classified as “prime farmlands”), long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County at a 1:1 ratio (1 acre protected for every one acre directly affected). Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area. As such, the mitigation for the loss of lands under easement will be implemented at a higher ratio of 1.25:1.</td>
</tr>
<tr>
<td>Conflict with existing agricultural zoning or a Williamson Act contract</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5  Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for the proposed project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings, the NEPA/Section 404 Integration process, and a variety of public meetings including a public scoping meeting, property owner meeting, public informational meetings, open houses and a public meeting following release of the Draft EIR/EIS. Project information was also provided at public events and meetings for related projects in the vicinity including the I-80 Eastbound Cordelia Truck Scales and the North Connector projects. This chapter summarizes the results of Caltrans efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

5.1   Scoping Process

NEPA requires the federal lead agency to consult with federal agencies that have jurisdiction over the proposed action by law or special expertise and solicit appropriate information from the public during EIS preparation. Scoping is the process by which the lead agency conducts these activities. This process helps determine the scope of the EIS, including the extent of the action, the range of alternatives, and the types of significant adverse effects to be evaluated. The lead agency’s scoping process may include early scoping meetings that can be combined with other aspects of the federal agency planning process. As part of the scoping process, NEPA and FHWA regulations require that a Notice of Intent (NOI) to prepare an EIS be filed with the EPA and appear in the Federal Register.

CEQA specifically requires that when one or more state agencies will be a responsible or trustee agency, a notice of preparation (NOP) must be filed with the State Clearinghouse (State CEQ Guidelines Section 15082[d]). The NOP is provided to appropriate state agencies and invites them to offer comments during the scoping period, which lasts a minimum of 30 days following the filing of the NOP.

5.1.1   Notice of Intent/Notice of Preparation

The NOI for the proposed project was published in the Federal Register on May 9, 2003 and the NOP for the proposed project was published on April 28, 2003. The NOP was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties.
5.1.2 NOP Scoping Meeting

A scoping meeting for the NOP was held on May 12, 2003 from 6 to 8:30 pm at Rodriguez High School, located at 5000 Red Top Road in Fairfield. Map and graphics were available for viewing and a formal presentation explaining the proposed project was given. Prior to scoping, an informational open house was held March 6, 2003 to provide the public with an opportunity to learn about the I-80/I-680/I-780 Major Investment Study in advance of the May Scoping Meeting.

A number of means were used to inform the public of the scoping process and the scoping meeting. A public notice was distributed to the project mailing list, which included the property owners, elected officials, city staff, special interest organizations, and neighborhood groups. The Department and STA mailed a letter to agency representatives and elected officials, and phone calls were made to local organizations and neighborhood groups to announce the meeting.

5.2 NEPA/404 Integration

To streamline, standardize, and facilitate the integration of the NEPA and Clean Water Act, Section 404 processes, FHWA, the Department, the EPA, USACE, USFWS, and NOAA’s NMFS entered into the Memorandum of Understanding—National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada (NEPA/404 MOU) in April 2006. This MOU establishes a process for early coordination among departments of transportation and federal resource agencies in defining the purpose and need, establishing the criteria for evaluating and selecting alternatives, and setting the range of alternatives to be studied for surface transportation projects.

The NEPA/404 MOU applies to federal aid surface transportation projects that have five or more acres of permanent impacts to water of the U.S. and that require a NEPA EIS. The proposed project meets those criteria and complies with the NEPA/404 MOU.

The NEPA/404 MOU process was initiated with the first checkpoint meeting held on March 15, 2007. Participants invited to this process included the Department, FHWA, NOAA’s NMFS, USACE, USFWS, EPA, RWQCB, and DFG. Meeting materials and correspondence with agencies are provided in Appendix H.

The Preliminary Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project was prepared and submitted to the USACE in August 2008. A field verification was conducted in January 2009 and the final verification of the revised map occurred on July 9, 2009. Figures 3.3-2a through 3.3-2d in Volume 2 of this document reflect the results of the verified map.

The first formal checkpoint conducted on March 15, 2007 was held at the Solano County Administrative offices in Fairfield. The purpose of the March 15, 2007 meeting was to present an overview of the proposed project, discuss the purpose and need, screening criteria, and preliminary alternatives, and seek input from the signatory agencies. The summary of the meeting and request for concurrence was sent to the participating agencies on March 22, 2007.
and responses were received from the RWQCB and USACE (Appendix H). No negative comments or disagreement were received from the agencies.

The second formal checkpoint meeting was conducted on February 10, 2009 at the STA offices in Suisun City. The purpose of the meeting was to present an overview of project alternatives to be addressed in the environmental document, discuss the purpose and need, present expected impacts to biological and aquatic resources, and seek input from the signatory agencies. A table showing preliminary acreages of wetland impacts and expected impacts to biological resources, along with maps showing biological resources in the project vicinity were provided. A summary letter and request for concurrence was sent to the participating agencies on May 20, 2009. The EPA requested more information regarding potential impacts to the Green Valley Corporate wetlands mitigation site. Upon receipt of that information, both USACE and the EPA provided letters, dated August 6, 2009 and September 2, 2009, that enabled the project to move forward.

A third Checkpoint meeting was held among the signatory agencies on November 29, 2010, after the close of the comment period on the draft EIR/EIS and identification of Alternative C as the preferred alternative by the Project Development Team. The purpose of the third Checkpoint meeting is to seek concurrence that the preferred alternative is the least environmentally damaging practicable alternative (LEDPA) after considering the public and agency comments received on the draft EIR/EIS. A follow-up to the third Checkpoint meeting was held on February 9th, 2011. Supplemental materials to facilitate concurrence were submitted to the signatory agencies in September 2011, November 2011, and December 2011. Further follow-up meetings and conference calls were held on December 1st and 15th of 2011 and January 4, 2012 to discuss any additional supporting material needs from signatory agencies. Due to the complexity surrounding the Conceptual Mitigation Plan (CMP) for the project, the Department requested that the third Checkpoint be split into two separate actions: (1) concurrence on the LEDPA, and (2) concurrence on the CMP. The Project Development Team identified Alternative C, Phase 1 as the preferred alternative and concurrence from the signatory agencies regarding LEDPA was obtained by April 10, 2012. Agency concurrence documentation regarding LEDPA is provided in Appendix H.

In June 2012, the Department presented locations for mitigation to the signatory agencies for consideration in the CMP. The signatory agencies requested more information and details regarding the hydraulics of the mitigation locations considered. Concurrence from the signatory agencies on the CMP will be obtained prior to submittal of a US Army Corps of Engineers permit application(s).

5.3 Consultation and Coordination with Public Agencies

The following public agencies have been consulted regarding the proposed project to date. Contacts and consultation with agencies are included in Appendix H.

- U.S. Environmental Protection Agency.
- U.S. Fish and Wildlife Service.
- U.S. Department of Agriculture, Natural Resources Conservation Service.
The EPA and USACE were invited to be cooperating agencies. The EPA declined, but will continue to be a Responsible Agency. USACE accepted in a letter dated December 31, 2009 (Appendix H). As a cooperating agency, USACE has participated in the preparation of this document as part of their responsibility to assist the Department in this process.

Consultation with the U.S. Fish and Wildlife Service and NOAA’s NMFS is summarized in Chapter 3.3. The Department has consulted with USFWS regarding the CRLF site assessment and potential mitigation strategies and approaches. The USFWS issued a Biological Opinion on April 17, 2012 (Included in Appendix H of the Final EIR/EIS). Consultation with the USACE included field visits and verification for the wetland delineation in 2009, as well as involvement in the NEPA/404 process. The Department contacted the Office of Historic Preservation and requested concurrence with eligibility determinations made in the Historic Properties Survey Report. OHP concurred with the determinations in a letter dated March 20, 2010 (Appendix H). The PA was approved by SHPO and Caltrans HQ on November 7, 2011 and by the Caltrans District 04 Director on November 8, 2011.

Starting in 2003 Federal Highway Administration (FHWA) has been a key partner in the development and evaluation of the alternatives. The Department worked with the FHWA to gain preliminary approval on Engineering and Operational Acceptability. Further, a Draft Project Management Plan has been submitted to the FHWA.

The Department and STA have consulted with local agencies regarding pertinent issues. The CHP has been consulted regarding public safety issues. The BCDC has been consulted regarding marsh management issues. MTC has been consulted regarding air quality conformity and general transportation planning issues. The Department and STA have consulted with the City of Fairfield, Suisun City, and Solano County regarding the overall project and the needs and desires of the public they serve.
5.4 Public Participation

5.4.1 Project Outreach Meetings

There have been several previous public meetings and open houses providing information on the project including the following:

- March 2003 – Informational Open House to update the community on the status of various projects in the I-80/I-680/SR 12 interchange area. This meeting also provided details from the Major Investment Study (MIS) and the Transit Corridor Studies that STA, in conjunction with Caltrans, prepared for the I-80/680/780 freeway corridors. Approximately 100 people attended the informational open house meeting.

- May 2003 – Scoping meeting to receive input on the scope of the environmental studies. For the Interchange project, scoping was conducted to assist federal, state and local agencies involved in project in identifying a range of alternatives, potentially significant environmental effects and possible mitigation measures. There were 52 people who signed the sign-in sheet at the scoping meeting. There were 10 handwritten comments that were submitted at the meeting, and seven letters were either mailed or faxed to the STA.

- April 2007 – Property owner meeting for owners and tenants of properties and businesses in the vicinity of Alternative C (Cordelia Industrial Park). Ten people signed the sign-in sheet at the home/business-owners’ meeting.

- April 2007 – Informational Open House to provide an update on the alternatives development and screening process and plan to carry two alternatives forward into detailed technical studies (Alternatives B & C). There were 81 people who signed the sign-in sheet at the Open House meeting. There were seven written comments submitted during and following the Open House. Numerous verbal comments were expressed, and are summarized in the meeting summary report.

- March 2009 – Informational Open House to present information about the Phase 1 alternatives for each Build Alternative B and C. The Phase 1 alternatives represented the fundable first phase of each of the Build Alternatives. Sixteen people signed the sign-in sheet at the informational open house meeting. One written comment was submitted during and a second submitted after the Open House. There were numerous verbal comments summarized in the meeting summary report.

5.4.2 Related Projects

Additional meetings where information about the Interchange Project was provided include the following:

- December 2006 – North Connector Project Public Hearing
- October 2007 – North Connector Project Public Hearing
5.4.3 Project Newsletter

As part of the public outreach, a 4-page newsletter regarding the I-80/I-680/SR12 Interchange Project was distributed with project information, updates, milestones, meeting opportunities and how to learn more about the project. The newsletter has been timed to coincide with milestones, meetings or other related project milestones and as an additional means for the public to stay informed about the project’s progress. To date, seven newsletters have been distributed, conveying the following information.

- February 2004: Environmental scoping for the Interchange Project began in May 2003, and the Truck Scale Relocation Study was initiated as part of the Interchange Project to identify problem areas and possible solutions. In addition, traffic forecasting to the year 2030 will be developed using Solano County’s new travel demand model and data on existing conditions.

- October 2004: Data was collected on traffic studies to help the project team evaluate operational issues, and a number of preliminary alternatives for improving the I-80/I-680/SR12 Interchange were developed and refined based on public input and new technical information. Initial technical studies were also conducted to determine existing conditions in the project area.

- April 2006: The truck scales relocation study that recommends building replacement scales and inspection facilities was completed, and STA developed a more expansive and accountable traffic model that uses the latest land use and road network information to project traffic and travel trips through 2035. And in December of 2004, the two-lane connector from I-680 to I-80 and an additional lane on eastbound I-80 from I-680 to SR 12 east were completed.

- June 2007: In February, the Board approved $7 million in funding for SR 12 Jameson Canyon, which also received $74 million from the infrastructure bonds approved by voters in November 2006. I-80 HOV Lanes Project received $56 million from voter-approved infrastructure bonds. In March, Caltrans and STA approved the CEQA document for the I-80 HOV Lanes Project, and the Board approved preparation of the Environmental Impact Report for the North Connector Project and recommended two alternatives for the I-80/I-680/SR 12 Interchange Project to be move forward to detailed environmental study.

- May 2008: On May 14, the STA Board approved the Final Environmental Impact Report for the North Connector Project, with construction scheduled to begin on the East End in 2009.

- March 2009: The truck climbing lane on westbound SR 12, extending from I-80 to west of Red Top Road, opened on Dec. 4, 2008, and allows westbound motorists to pass slower vehicles in the truck climbing lane. The construction of the 8.7-mile segment of HOV lanes between Red Top Road and Air Base Parkway are projected to decrease morning and evening commutes for carpoolers by 39 percent and 47 percent respectively, and bids for the project came in 45 percent under budget. In January 2009, Caltrans in cooperation with STA, released the Draft Environmental Impact Report for public comment for the I-80 Eastbound...
Truck Scales Relocation Project, with construction expecting to start in 2011. Construction for the North Connector project began with work on the I-80 / Abernathy Road ramps.

- Summer 2010: Project update regarding status of the project and related projects. Description and map highlighting the common and unique features of the two proposed Alternatives, B and C. Announcement of the release and instructions on how to comment on the Draft EIR/EIS for the project, and notice of the public meeting.

### 5.4.4 Business Outreach

In Spring 2007, a property owner meeting was held to engage the owners and businesses in the vicinity of the southwest quadrant of the existing I-80/I-680 interchange where numerous potential property impacts were identified. The purpose of the meeting was to provide a project update and review maps and exhibits regarding Alternatives B and C. Property owners in the area of Alternative C were notified via mail and phone and offered an opportunity to receive additional information in the mail.

In August 2010, shortly after release of the Draft EIR/EIS, copies of the Draft EIR/EIS meeting announcement flyers, notices and posters were distributed to 35 businesses and community organizations in low-income and minority census tracts in Fairfield and Suisun City.

### 5.4.5 Public Meeting

A Public Open House Meeting was held on September 15, 2010 at the Solano County Administration Building from 6:00 – 8:00 PM. The meeting was conducted in an informational open-house format, to present and receive comment on the Draft EIR/EIS, including the Full-Build and Phase 1 plans for Alternatives B and C.

The meeting was noticed through a variety of ways. First, public announcements were mailed to the project mailing list containing over 5,500 entries for residents, property owners, homeowner associations, environmental organizations, business associations, elected officials, and key jurisdictional agencies with an interest in the project. This announcement was also posted to Caltrans and STA Websites. Second, display advertisements were placed in the main local newspapers including the Fairfield Daily Republic, Vacaville Reporter, Vallejo Times Herald, and the Cronicas Newspaper (a Spanish-language weekly).

Meeting attendees learned about the status of the project and findings in the Draft EIR/EIS by talking with project staff and reviewing handouts and informational exhibit boards on display. There were 26 people who signed the meeting sign-in sheets and all attendees were encouraged to submit written and verbal comments. A Court Reporter was present to record verbal comments and forms were provided for written comments. A total of seven comments, four written and three verbal, were submitted during the informational open house.
5.5 Public Comments on Draft EIR/EIS and Responses

The draft EIR/EIS was available for public review for 60 days and a public meeting was held during that time frame. Written and oral comments received on the draft EIR/EIS and the Department’s responses to those comments are presented in this section. Table 5-1 contains a list of individuals, organizations, and agencies that submitted comments on the draft EIR/EIS. Letters and responses are provided in Appendix L.

Table 5-1. List of Individuals, Organizations, and Agencies Commenting on the Draft EIR/EIS

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<td>Agency and Individual Comment Letters</td>
<td>1 Neal Johnson, Comment Sheet</td>
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<td>2 Woody Darnelle, SuperStore Ind. Sunnyside Farms, Comment Sheet</td>
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<td>3 Lesley Brunner, HOA Green Valley Lake, Comment Sheet</td>
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<td>4 Linda Mellor, Comment Sheet</td>
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<td>5 Walter Permann, Oral Comment</td>
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<td>6 Michelle Valine, Oral Comment</td>
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<td>7 Pam Sahni, Oral Comment</td>
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<td>Public Meeting Comments</td>
<td>1 Manoj Sahni, Comment Sheet</td>
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<td>2 Edgar V. Salire, P.E.</td>
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<td>3 Lynn J. Zhang</td>
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<td></td>
<td>4 Steven Kays</td>
<td>09/21/10</td>
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<td>5 Jessica Davenport, Coastal Planner, State of California, San Francisco Bay Conservation and Development Commission</td>
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<td>7 Nicole Byrd, Executive Director, Solano Land Trust</td>
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<td>8 Richard Wirth, Assistant Civil Engineer, Solano Irrigation District</td>
<td>10/06/10</td>
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<td>9 Justin Hopkins, E.I.T., Assistant Civil Engineer, Solano Irrigation District</td>
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<td></td>
<td>10 John Futini</td>
<td>09/11/10</td>
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<td>11 Paul Wiese, Engineering Manager, Solano County, Department of Resource Management, Public Works Engineering</td>
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<td>12 Jackie Kepley</td>
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<td></td>
<td>13 Jeff Dittmer</td>
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<td>14 Dee Swanhuysen, North Bay Trail Director, Bay Area Ridge Trail Council</td>
<td>10/11/10</td>
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<td>15 Andrea Meier, Sr. Regulatory Project Manager, San Francisco District, U.S. Army Corps of Engineers</td>
<td>10/14/10</td>
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<td>16 Cay C. Guode, Assistant Field Supervisor, Endangered Species Program, United States Department of the Interior, Fish and Wildlife Service</td>
<td>10/18/10</td>
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<tr>
<td></td>
<td>17 George R. Hicks, Public Works Director, City of Fairfield, Public Works Department</td>
<td>10/11/10</td>
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<td>18 Michael Jaeger and Bob McHugh, Jaeger McHugh &amp; Company, LLC</td>
<td>10/15/10</td>
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<td>19 Connell Dunning, Transportation Team Supervisor, Environmental Review Office, United States Environmental Protection Agency</td>
<td>10/18/10</td>
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<td>20 Kim VanGundy, Fairfield-Suisun Unified School District</td>
<td>10/26/10</td>
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<td>21 Brendan Thompson, Environmental Specialist, California Regional Water Quality Control Board</td>
<td>10/27/10</td>
</tr>
</tbody>
</table>
Chapter 6 References Cited

Chapter 1 Purpose and Need


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Chapter 2 Project Alternatives


Chapter 3 Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures

3.1 Human Environment

3.1.1 Land Use


Metropolitan Transportation Commission. 2009. Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion. April. Oakland, CA.


3.1.2 Growth

Association of Bay Area Governments. 2007. ABAG Projections. Oakland, CA.


3.1.3 Farmlands


3.1.4 Community Impacts


3.1.5 Utilities and Emergency Services


3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities


3.1.7 Visual and Aesthetic Resources


### 3.1.8 Cultural Resources


### 3.2 Physical Environment

#### 3.2.1 Hydrology and Floodplain


#### 3.2.2 Water Quality and Stormwater Runoff


#### 3.2.3 Geology/Soils/Seismic/Topography


### 3.2.4 Paleontology


### 3.2.5 Hazardous Waste/Materials


### 3.2.6 Air Quality


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3.2.7 Noise


### 3.2.8 Energy


### 3.3 Biological Environment


Bulger, J. B. 1999. *Terrestrial Activity and Conservation of California Red-Legged Frogs (Rana aurora draytonii) in Forested Habitats of Santa Cruz County, California.* Land Trust of Santa Cruz County. Santa Cruz, CA.


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———. 2010b. RareFind 3, Version 3.1.0 (October 2010). Sacramento, CA: California Department of Fish and Game. Search of Showy Indian Clover occurrences.


Escaron, Melissa. Staff Environmental Scientist. California Department of Fish and Game. June 30, 2010 email message; November 9, 2010 email message and telephone conversation. mescaron@dfg.ca.gov.


Hanson Environmental, Inc. 2002. *Suisun Creek Fishery Habitat Reconnaissance Surveys Executive Summary*. February 28. Walnut Creek, CA.


Jones, Diane. State Lands Commission. February 15, 2006—Phone call with Lisa Webber of Jones & Stokes to verify that the State Lands Commission has no leasing interest in Ledgewood, Green Valley, or Suisun Creeks in the I-80 HOV project area.


———. 2004c. *Natural Environmental Study: North Connector Project, Fairfield, Solano County*. April 8. Walnut Creek, CA.


Wickham, Sue. Project Coordinator. Solano Land Trust. March 12, 2008—Telephone conversation with Lisa Webber regarding potential for project mitigation planting on Solano Land Trust property; October 13, 2008—email; July, 19, 2010—field meeting; November .


### 3.4 Short-Term Uses and Long-Term Productivity

There are no references in this section.

### 3.5 Irreversible and Irretrievable Commitments of Resources

There are no references in this section.

### 3.6 Cumulative Impacts


California Natural Diversity Database. 2009. RareFind 3, Version 3.1.0 (February 2009). Sacramento, CA: California Department of Fish and Game. Search of Sears Point, Denverton, Honker Bay, Cuttings Wharf, Dozier, Napa, Fairfield South, Fairfield North, Benicia, Mt. Vaca, Mt. George, Mare Island, Cordelia, Elmira, Vine Hill, Birds Landing, and Allendale 7.5-minute quadrangles.


**Chapter 4 California Environmental Quality Act (CEQA) Evaluation**


Metropolitan Transportation Commission. 2009. Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion. April. Oakland, CA.


Wickham, Sue. Project coordinator, Solano Land Trust. March 12, 2008–Telephone conversation with Lisa Webber of ICF Jones & Stokes regarding potential mitigation areas. October 13, 2008—E-mail to the same recipient on same topic.

**Chapters 5–8**

There are no references in these chapters.
Chapter 7  List of Preparers

7.1  Solano Transportation Authority

- Janet Adams, Director of Projects
- Dale Dennis, Project Manager

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- Taryn Nance, ICF International, Project Coordinator
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- Jody Job, ICF International, Publications Specialist
- Larry Goral, ICF International, Lead Editor, Visual Resources
- Christine McGeever, ICF International, Technical Editor
- Chris Small, ICF International, Technical Editor
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- Mathew McFalls, ICF International, Air Quality and Energy
- Shannon Hatcher, ICF International, Air Quality and Energy peer review
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- Madeline Bowen, ICF International, Architectural History
- Stephanie Myers, ICF International, Wildlife Biology
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- Donna Maniscalco, ICF International, Fisheries Biology
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- Heidi Loeffler, CirclePoint, Visual/Aesthetics, peer review
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- Chris Giuntoli, Geocon Consultants, Inc., Hazardous Waste/Materials peer review
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- Jennifer Gallerani, CirclePoint, QA/QC
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- Howell Chan, Caltrans District 4, Environmental Analysis
- Zachary Gifford, Caltrans District 4, Environmental Analysis
- Wahida Rashid, Caltrans District 4, Environmental Analysis
- Valerie Shearer, Caltrans District 4, Environmental Analysis (NEPA review)
- Jo Ann Cullom, Caltrans District 4, Environmental Analysis (Section 4(f) review)
- Jeffrey Jensen, Caltrans District 4, Biological Sciences & Permits
- Christopher States, Caltrans District 4, Biological Sciences & Permits
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- Ahmad Hashemi, Caltrans District 4, Biological Sciences & Permits
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- Brett Rushing, Caltrans District 4, Cultural Resources Studies (archaeology)
- Andrew Hope, Caltrans District 4, Cultural Resources Studies (architectural history)
- Lissa McKee, Caltrans District 4, Cultural Resources Studies (Native American consultation)
- Jennifer Darcangelo, Caltrans District 4, Cultural Resources Studies
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- Hardeep Takhar, Caltrans District 4, Water Quality
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• Kamran Nakhjiri, Caltrans District 4, Water Quality
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• Chandana Ghanta, Caltrans District 4, Water Quality
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• Roni Boukhalil, Caltrans District 4, Design North Counties
• Beth Perrill, Caltrans District 4, Caltrans District 4, R/W Local Public Agency Services
• Laura Hameister, Caltrans District 4, Right of Way - Local Public Agency Services Utilities Oversight
• Joseph Peterson, Caltrans District 4, Engineering Services-Hydraulics
• Kathleen Reilly, Caltrans District 4, Engineering Services-Hydraulics
• Jeanne Gorham, Caltrans District 4, Landscape Architecture (visual impact assessment)
• Susan Lindsay, Caltrans District 4, Landscape Architecture
• Evelyn Gestuvo, Caltrans District 4, Highway Operations (traffic operations analysis)
• Johnny Ferdinand Villasica, Caltrans District 4, Highway Operations
• Grant Wilcox, Caltrans District 4, Geotechnical Design-West
• Anna Sojourner, Caltrans District 4, Geotechnical Design-West
• Kim Christmann, Caltrans District HQ, Hazardous Waste, Air & Noise (paleontology)
• Dale Jones, Caltrans District HQ, District Coordinator for Districts 4 & 10
• Janet Wong, Caltrans S F Legal, Deputy Attorney (Environmental)
## Chapter 8 Distribution List

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<td>San Francisco, CA 94109</td>
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<td>Amanda Jorgenson</td>
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<td>Orlando Rocha</td>
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<td>Suisun Resource Conservation District</td>
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<td>Mike O'Brien</td>
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<tr>
<td>Ron Rowlett</td>
<td>Vice Mayor</td>
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<td>650 Merchant Street</td>
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Dilenna Harris  
Councilmember  
City of Vacaville  
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- Office of Surface Mining

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<td>Don McDonald</td>
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<td>Ron Myska</td>
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<td>Gary Walker</td>
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<td>Mark Ackerman</td>
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<tr>
<td>Vince Webster</td>
<td>Fire Chief</td>
<td>Fairfield Fire Department, 1200 Kentucky Avenue, Fairfield, CA 94533</td>
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<td>Greg Baatrup</td>
<td>Director of Engineering</td>
<td>Fairfield-Suisun Sewer District, 1010 Chadbourne Road, Fairfield, CA 94533</td>
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<td>Fairlfield-Suisun Unified School District, 2490 Hilborn Road, Fairfield, CA 94534</td>
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<td>Carolyn Mulvihill</td>
<td>Chief, Airports Branch</td>
<td>Federal Aviation Administration, 831 Mitten Road, Burlingame, CA 94010</td>
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<td>Melissa Scianni</td>
<td>Environmental Protection Agency, Region IX</td>
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<td>Woodrow Goins</td>
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<td>Federal Emergency Management Agency, 1111 Broadway, Ste. 1200, Oakland, CA 94607-4052</td>
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<td>Gene Fong</td>
<td>Division Administrator</td>
<td>Federal Highway Administration, 650 Capitol Mall Suite 4-100, Sacramento, CA 95814</td>
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<td>Dale Jones</td>
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<td>Mortimore Triplett</td>
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<td>Maine Prairie Water District, P.O. Box 73, Dixon, CA 95620</td>
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<td>Milton Rayn</td>
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<td>Susan Bonilla</td>
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<td>Mariko Yamada</td>
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<td>Nancy Pelosi</td>
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<td>John Cleckler</td>
<td>Sacramento Fish and Wildlife Office</td>
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<td>Lois Wolk</td>
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<td>Noreen Evans</td>
<td>Senator</td>
<td>401 Amador Street, Vallejo, CA 94590</td>
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<td>Darrell Steinberg</td>
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<td>Leland Yee</td>
<td>Senator</td>
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<td>Joseph LaClair</td>
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<td>Birgitta Corsello</td>
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<td>Mike Reagan</td>
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<td>675 Texas Street, Solano County Board of Supervisors</td>
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<tr>
<td>Barbara Kondylis</td>
<td>Supervisor</td>
<td>675 Texas Street, Solano County Board of Supervisors</td>
<td></td>
</tr>
<tr>
<td>John Vasquez</td>
<td>Chair</td>
<td>675 Texas Street, Solano County Board of Supervisors</td>
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<tr>
<td>Linda Seifert</td>
<td>Supervisor</td>
<td>675 Texas Street, Solano County Board of Supervisors</td>
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<tr>
<td>Jim Spering</td>
<td>Chair</td>
<td>675 Texas Street, Solano County Board of Supervisors</td>
<td></td>
</tr>
<tr>
<td>Norma LaForce</td>
<td>Chair</td>
<td>2530 San Pablo Avenue, Sierra Club</td>
<td></td>
</tr>
<tr>
<td>Michael Yankovich</td>
<td>Planning Program Manager</td>
<td>675 Texas Street, Ste. 5500, Solano County</td>
<td></td>
</tr>
<tr>
<td>Jim Daniels</td>
<td>Engineering and Planning Manager</td>
<td>508 Elmira Road, Solano Irrigation District</td>
<td></td>
</tr>
<tr>
<td>Terry Riddle</td>
<td>Flood Control Advisory Committee</td>
<td>PO Box 349, Solano County Water Agency</td>
<td></td>
</tr>
<tr>
<td>Chris Rose</td>
<td>Executive Director</td>
<td>1170 Lincoln Street, Ste.110, Solano RCD</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 8. Distribution List

Daryl K. Halls
Executive Director
Solano Transportation Authority
One Harbor Center, Ste. 130
Suisun City, CA 94585

Dr. Jowel C. Laguerre
Superintendent-President
Solano Community College
4000 Suisun Valley Road, Building 600
Fairfield, CA 94534

David Okita
General Manager
Solano County Water Agency
PO Box 349
Elmira, CA 95625

Nicole Byrd
Executive Director
Solano Land Trust
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Fairfield, CA 94533

Janet Adams
Deputy Executive Director/Director of Projects
Solano Transportation Authority
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Suisun City, CA 94585

Dianne Feinstein
Senator
United States Senator
1 Post Street # 2450
San Francisco, CA 94104

Barbara Boxer
Senator
United States Senator
70 Washington Street, Suite 203
Oakland, CA 94607

Paula Gill
U.S. Army Corps of Engineers,
San Francisco District
Attn: CESPN-CO-R
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Andy Jannings
Flood Control Advisory Committee
Vallejo Sanitation and Flood Control District
450 Ryder Street
Vallejo, CA 94590

Rudolf Ohlemutz
Flood Control Advisory Committee
Vallejo Sanitation and Flood Control District
450 Ryder Street
Vallejo, CA 94590

Director
Yolo County Transportation District
350 Industrial Way
Woodland, CA 95776

Suisun City Library
601 Pintail Drive
Suisun City, CA 94585

Marshall McKay
Tribal Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606

Yolo County Transportation District
350 Industrial Way
Woodland, CA 95776

Suisun City Library
601 Pintail Drive
Suisun City, CA 94585

Marshall McKay
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601 Pintail Drive
Suisun City, CA 94585

Marshall McKay
Tribal Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606
The State Clearinghouse at 1400 10th Street, Sacramento has been asked to forward the documents to all of the following:

<table>
<thead>
<tr>
<th>Director</th>
<th>Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Water Resources</td>
<td></td>
</tr>
<tr>
<td>1416 9th Street, Room 1115-1</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 94236-0001</td>
<td></td>
</tr>
<tr>
<td>State Department of Housing and Community Development</td>
<td></td>
</tr>
<tr>
<td>MS 0000</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 997413</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95899-7413</td>
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<tr>
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<td>State Lands Commission</td>
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</tr>
<tr>
<td>100 Howe Avenue, Suite 100</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95825</td>
<td></td>
</tr>
<tr>
<td>Department of Fish and Game</td>
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</tr>
<tr>
<td>1416 Ninth Street</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
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<tr>
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<td>Department of Parks and Recreation</td>
<td></td>
</tr>
<tr>
<td>915 I Street, 5th Floor</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
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<tr>
<td>State Water Resources Control Board</td>
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</tr>
<tr>
<td>1001 I Street</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
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</table>

<table>
<thead>
<tr>
<th>Director</th>
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<tbody>
<tr>
<td>Department of Conservation</td>
<td></td>
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<tr>
<td>801 K Street, MS 24-01</td>
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<tr>
<td>Sacramento, CA 95814</td>
<td></td>
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<tr>
<td>Integrated Waste Management Board</td>
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</tr>
<tr>
<td>8800 Cal Center Drive</td>
<td></td>
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<tr>
<td>Sacramento, CA 95826</td>
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<table>
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<tr>
<th>Secretary</th>
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<td>Resources Agency</td>
<td>State Air Resources Board</td>
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<tr>
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<tr>
<td>1001 I Street</td>
<td></td>
</tr>
<tr>
<td>P.O Box 2815</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95812</td>
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<table>
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<tbody>
<tr>
<td>Energy Commission</td>
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</tr>
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<td>1516 Ninth Street</td>
<td></td>
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<tr>
<td>Sacramento, CA 95814</td>
<td></td>
</tr>
<tr>
<td>Department of Health Services</td>
<td></td>
</tr>
<tr>
<td>714/744 P Street</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
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<table>
<thead>
<tr>
<th>Chief, Bureau of School Planning</th>
<th>Executive Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Education</td>
<td>Public Utilities Commission</td>
</tr>
<tr>
<td>721 Capitol Mall</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
</tr>
<tr>
<td>505 Van Ness Avenue</td>
<td></td>
</tr>
<tr>
<td>San Francisco, CA 94102</td>
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</table>

<table>
<thead>
<tr>
<th>Executive Secretary</th>
<th>Chief, Environmental Planning</th>
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<tbody>
<tr>
<td>Native American Heritage Commission</td>
<td></td>
</tr>
<tr>
<td>915 Capitol Mall, Rm 364</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
</tr>
<tr>
<td>Office of Project Development &amp; Management</td>
<td></td>
</tr>
<tr>
<td>Department of General Services</td>
<td></td>
</tr>
<tr>
<td>400 R Street, Suite 5100</td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
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</tbody>
</table>
Appendix A  CEQA Environmental Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 3 of this Environmental Impact Report/Environmental Impact Statement. Documentation of “No Impact” determinations is provided at the beginning of Chapter 3. Discussion of all impacts, avoidance, minimization, and/or compensation measures is under the appropriate topic headings in Chapter 3.

<table>
<thead>
<tr>
<th></th>
<th>04-SOL-80</th>
<th>04-SOL-680</th>
<th>04-SOL-12W</th>
<th>04-SOL-12E</th>
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<td>Dist.-Co.-Rte.</td>
<td>10.8/17.0</td>
<td>10.0/13.1</td>
<td>1.7/2.8</td>
<td>1.8/4.8</td>
<td>E.A.</td>
</tr>
</tbody>
</table>

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included in Section VI following the checklist. The words “significant” and “significance” used throughout the following checklist are related to CEQA, not NEPA, impacts.

<table>
<thead>
<tr>
<th></th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. AESTHETICS: Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Have a substantial adverse effect on a scenic vista</td>
<td>Alternative B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Alternative C</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway</td>
<td>Alternative B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Alternative C</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>c) Substantially degrade the existing visual character or quality of the site and its surroundings?</td>
<td>Alternative B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Alternative C</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?</td>
<td>Alternative B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Alternative C</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

<table>
<thead>
<tr>
<th>Alternative B</th>
<th>Alternative C</th>
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</table>

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

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<tr>
<th>Alternative B</th>
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</table>

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

<table>
<thead>
<tr>
<th>Alternative B</th>
<th>Alternative C</th>
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</table>

d) Result in the loss of forest land or conversion of forest land to non-forest use?

<table>
<thead>
<tr>
<th>Alternative B</th>
<th>Alternative C</th>
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</thead>
<tbody>
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</table>

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

<table>
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<tr>
<th>Alternative B</th>
<th>Alternative C</th>
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<tbody>
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</tbody>
</table>

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

a) Conflict with or obstruct implementation of the applicable air quality plan?

<table>
<thead>
<tr>
<th>Alternative B</th>
<th>Alternative C</th>
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</thead>
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b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

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<tr>
<th>Alternative B</th>
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</table>
Appendix A. CEQA Environmental Checklist

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<tr>
<th>Question</th>
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<th>Alternative C</th>
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</thead>
<tbody>
<tr>
<td>c) Result in a cumulatively considerable net increase of any criteria</td>
<td></td>
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<tr>
<td>pollutant for which the project region is non-attainment under an</td>
<td></td>
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<tr>
<td>applicable federal or state ambient air quality standard (including</td>
<td></td>
<td></td>
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<tr>
<td>releasing emissions which exceed quantitative thresholds for ozone</td>
<td></td>
<td></td>
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<td>precursors)?</td>
<td></td>
<td></td>
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<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
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<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
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<tr>
<td>d) Expose sensitive receptors to substantial pollutant concentrations?</td>
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<td></td>
</tr>
<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
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<tr>
<td>e) Create objectionable odors affecting a substantial number of people?</td>
<td></td>
<td></td>
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<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
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<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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IV. BIOLOGICAL RESOURCES: Would the project:

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<th>Question</th>
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</thead>
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<td>a) Have a substantial adverse effect, either directly or through habitat</td>
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<tr>
<td>modifications, on any species identified as a candidate, sensitive, or</td>
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<tr>
<td>special status species in local or regional plans, policies, or</td>
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<td></td>
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<tr>
<td>regulations, or by the California Department of Fish and Game or U.S.</td>
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<tr>
<td>Fish and Wildlife Service?</td>
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<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
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<tr>
<td>b) Have a substantial adverse effect on any riparian habitat or other</td>
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<td></td>
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<tr>
<td>sensitive natural community identified in local or regional plans,</td>
<td></td>
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<tr>
<td>policies, regulations or by the California Department of Fish and Game</td>
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<td></td>
</tr>
<tr>
<td>or US Fish and Wildlife Service?</td>
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<td></td>
</tr>
<tr>
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<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
</tr>
<tr>
<td>c) Have a substantial adverse effect on federally protected wetlands</td>
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<tr>
<td>as defined by Section 404 of the Clean Water Act (including, but not</td>
<td></td>
<td></td>
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<tr>
<td>limited to, marsh, vernal pool, coastal, etc.) through direct removal,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>filling, hydrological interruption, or other means?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Interfere substantially with the movement of any native resident or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>migratory fish or wildlife species or with established native resident or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>migratory wildlife corridors, or impede the use of native wildlife nursery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sites?</td>
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<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
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<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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<td></td>
</tr>
<tr>
<td>e) Conflict with any local policies or ordinances protecting biological</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resources, such as a tree preservation policy or ordinance?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative B:  ☐  ☐  ☒  ☐  ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative C:  ☐  ☐  ☒  ☐  ☐</td>
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APPENDIX A. CEQA ENVIRONMENTAL CHECKLIST

INTERSTATE 80/INTERSTATE 680/STATE ROUTE 12 INTERCHANGE PROJECT

OCTOBER 2012

A-4

<table>
<thead>
<tr>
<th>f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially Significant Impact</td>
</tr>
<tr>
<td>Alternative B</td>
</tr>
<tr>
<td>Alternative C</td>
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</tbody>
</table>

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

d) Disturb any human remains, including those interred outside of formal cemeteries?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

ii) Strong seismic ground shaking?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

iii) Seismic-related ground failure, including liquefaction?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

iv) Landslides?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |

b) Result in substantial soil erosion or the loss of topsoil?

Alternative B | ☐ | ☐ | ☒ | ☐ |
Alternative C | ☐ | ☐ | ☒ | ☐ |
Appendix A. CEQA Environmental Checklist

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?</td>
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<tr>
<td>d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</td>
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<tr>
<td>e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?</td>
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</tbody>
</table>

VII. GREENHOUSE GAS EMISSIONS: Would the project:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</td>
<td>An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.</td>
</tr>
<tr>
<td>b)</td>
<td>Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</td>
<td></td>
</tr>
</tbody>
</table>

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</td>
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<td>Alternative B</td>
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<td>Alternative C</td>
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</tr>
<tr>
<td>b)</td>
<td>Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</td>
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<td>Alternative C</td>
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</tr>
<tr>
<td>c)</td>
<td>Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</td>
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<td>Alternative B</td>
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<td>Alternative C</td>
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</table>
Appendix A. CEQA Environmental Checklist

<table>
<thead>
<tr>
<th>II. POLITICAL AND SOCIAL CONTEXT: Would the project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</td>
</tr>
<tr>
<td>Alternative B</td>
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<td>Alternative C</td>
</tr>
<tr>
<td>e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?</td>
</tr>
<tr>
<td>Alternative B</td>
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<td>Alternative C</td>
</tr>
<tr>
<td>f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?</td>
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<td>Alternative B</td>
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<td>Alternative C</td>
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<tr>
<td>g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</td>
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<td>Alternative B</td>
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<td>Alternative C</td>
</tr>
<tr>
<td>h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?</td>
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<td>Alternative B</td>
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<td>Alternative C</td>
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</tbody>
</table>

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements? |
| Alternative B |
| Alternative C |

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? |
| Alternative B |
| Alternative C |

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? |
| Alternative B |
| Alternative C |
### Appendix A. CEQA Environmental Checklist

<table>
<thead>
<tr>
<th>d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tr>
<td>Alternative B</td>
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<tr>
<th>e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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<tr>
<th>f) Otherwise substantially degrade water quality?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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<td>Alternative B</td>
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<tr>
<th>g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<td>Alternative B</td>
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<table>
<thead>
<tr>
<th>h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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<table>
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<tr>
<th>i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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<td>Alternative B</td>
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<tr>
<th>j) Inundation by seiche, tsunami, or mudflow</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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<td>Alternative B</td>
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### X. LAND USE AND PLANNING: Would the project:

<table>
<thead>
<tr>
<th>a) Physically divide an established community?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
<tr>
<td>Alternative B</td>
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<tr>
<th>b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
<tr>
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<thead>
<tr>
<th>c) Conflict with any applicable habitat conservation plan or natural community conservation plan?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
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</tbody>
</table>
XI. MINERAL RESOURCES: Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
   Alternative B ☐ ☐ ☐ ☒
   Alternative C ☐ ☐ ☐ ☒

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?
   Alternative B ☐ ☐ ☐ ☒
   Alternative C ☐ ☐ ☐ ☒

XII. NOISE: Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐

XIII. POPULATION AND HOUSING: Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
   Alternative B ☐ ☐ ☒ ☐
   Alternative C ☐ ☐ ☒ ☐
<table>
<thead>
<tr>
<th>b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<thead>
<tr>
<th>c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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**XIV. PUBLIC SERVICES:**

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

<table>
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<tr>
<th>Fire protection?</th>
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<tr>
<th>Police protection?</th>
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<th>Schools?</th>
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<th>Parks?</th>
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<tr>
<th>Other public facilities?</th>
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**XV. RECREATION:**

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

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<th>Alternative B</th>
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b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

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</tbody>
</table>
### XVI. TRANSPORTATION/TRAFFIC: Would the project:

<table>
<thead>
<tr>
<th>a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?</th>
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<td>Alternative B</td>
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<tr>
<th>b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?</th>
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<td>Alternative B</td>
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<tr>
<th>c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?</th>
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<td>Alternative B</td>
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<tr>
<th>d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</th>
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<table>
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<tr>
<th>e) Result in inadequate emergency access?</th>
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<td>Alternative C</td>
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<table>
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<tr>
<th>f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?</th>
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### XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:

<table>
<thead>
<tr>
<th>a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</th>
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<table>
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<tr>
<th>b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</th>
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<td>Alternative B</td>
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<td>Alternative C</td>
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</tbody>
</table>
## Appendix A. CEQA Environmental Checklist

<table>
<thead>
<tr>
<th>c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tr>
<th>d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tr>
<th>e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tr>
<th>f) Be served by a landfill with sufficient permitted capacity to accommodate the project’s solid waste disposal needs?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<th>g) Comply with federal, state, and local statutes and regulations related to solid waste?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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### XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

<table>
<thead>
<tr>
<th>a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
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<tr>
<th>b) Does the project have impacts that are individually limited, but cumulatively considerable? (&quot;Cumulatively considerable&quot; means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tr>
<th>c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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</table>
Appendix B  Resources Evaluated Relative to the Requirements of Section 4(f)

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the California Department of Transportation (the Department) under its assumption of responsibility pursuant to 23 U.S.C. 327.

Additional guidance has been obtained from the following sources.

- The Department’s Environmental Impact Report/Environmental Impact Statement (EIR/EIS) annotated outline (June 2009).
- The FHWA’s Section 4(f) Policy Paper (2012).
- Maryland Department of Transportation; State Highway Administration Section 4(f) interactive Training (2006).

B.1  Other Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

B.1.1  Parks, Recreational Facilities, and Wildlife Refuges

Section 4(f) applies to publicly owned land of a park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance. A summary of all the parks, recreation facilities (including trails and Class I bikeways), and wildlife refuges located within 0.5 mile of the proposed project that do not trigger Section 4(f) protection are listed in Table B-1. The public parks and recreation areas considered in this evaluation include any neighborhood, city, regional, state, and/or federal resources in the project study area.
## Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

### Table B-1. Other Parks, Recreational Resources, and Wildlife Refuges Evaluated Relative to the Requirements of Section 4(f)

<table>
<thead>
<tr>
<th>Resource/Address</th>
<th>Description/Location</th>
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</thead>
<tbody>
<tr>
<td><strong>Parks</strong></td>
<td></td>
</tr>
<tr>
<td>Allen Witt Park; 1811 W Texas Street, Fairfield, CA</td>
<td>A 48-acre park owned and maintained by the City of Fairfield. Facilities include tennis courts, recreation building, picnic areas, ball fields, skate park, basketball courts, volleyball courts and horseshoe pits. The park is located approximately 1,200 feet north of the project construction activities along SR 12E between Beck and Pennsylvania Ave.</td>
</tr>
<tr>
<td>Vintage Green Valley Park; Mangels Boulevard and Vintage Valley Drive, Fairfield, CA</td>
<td>A 6-acre park owned and maintained by the City of Fairfield. Facilities include a play apparatus, picnic areas, and basketball courts. The park is located approximately 1,200 feet northeast the construction activities occurring at the Green Valley Road and Business Center Drive intersection.</td>
</tr>
<tr>
<td>Ridgeview Park; Intersection of Silver Creek Road and Oakbrook Drive, Fairfield, CA</td>
<td>An 8.42-acre park owned and maintained by the City of Fairfield. Facilities include a play apparatus, tennis courts, picnic area, ball fields and basketball courts. The park is located approximately 500 feet west of the construction activities occurring along I-680, north of Gold Hill Road.</td>
</tr>
<tr>
<td>Cordelia Community Park Gold Hill Road; Adjacent to Gold Hill Road, Fairfield, CA</td>
<td>The first phase of the park, 3 acres in size, opened in 2002, and is owned and maintained by the City of Fairfield. Current facilities include baseball fields and an open turf area. At buildout, the park will encompass 48 acres, and will include a multipurpose sports field, soccer fields, roller skate arena, tennis courts, dog park, Frisbee field, horseshoe field, volleyball field, bocce ball courts, and skateboard park. The park is located approximately 1,200 feet west of the construction activities occurring along I-680.</td>
</tr>
<tr>
<td>Reverend Clay Bon Senior Park; Josiah Circle, Suisun City, CA</td>
<td>A 1-acre park owned and maintained by Suisun City. Facilities include a turf area, picnic area and benches. The park is located south of SR 12E, approximately 2,000 feet northeast of the project activities occurring on Sacramento Street in Suisun City.</td>
</tr>
<tr>
<td>Mike Day Park; 701 Civic Center Boulevard, Suisun City, CA</td>
<td>A 3-acre park owned and maintained by Suisun City. Facilities include a playground, and picnic and turf areas. The park is located south of SR 12E, approximately 800 feet east of the project activities occurring on Sacramento Street in Suisun City.</td>
</tr>
<tr>
<td>Harbor Park; Along Breakwater Circle and Civic Center Boulevard, Suisun City, CA</td>
<td>A 1-acre park owned and maintained by Suisun City. Facilities include a turf area, pathway, and benches. The park is located south of SR 12E, approximately 1,500 feet southeast of the project activities occurring on Sacramento Street in Suisun City.</td>
</tr>
<tr>
<td>Old Town Plaza; Intersection of Main and Solano Street, Suisun City, CA</td>
<td>A 1.1-acre park owned and maintained by Suisun City. Facilities include a grass/turf area, gazebo, “singing rocks”, and a waterfront parkway. The park is located south of SR 12E, approximately 400 feet southeast of the project activities occurring on Sacramento Street in Suisun City.</td>
</tr>
<tr>
<td>Sheldon Plaza; Adjacent to the Old Town Waterfront, between Main Street and Civic Center Boulevard, along Driftwood Drive, Suisun City, CA</td>
<td>A 0.8-acre park owned and maintained by Suisun City. Facilities include an open turf area for casual use. The park is located approximately 750 feet northeast of the project activities occurring on Sacramento Street in Suisun City.</td>
</tr>
<tr>
<td><strong>Public School Playgrounds and Athletic Fields</strong></td>
<td></td>
</tr>
<tr>
<td>Rodriguez High School</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. Approximately 18 acres of the school’s grounds are available to the public for recreational use throughout the year. These available facilities include baseball fields, tennis courts, basketball courts, and a track and field. The school is located west of I-680 at the intersection of Red Top and Lopes Roads.</td>
</tr>
<tr>
<td>Armijo High School; 824 Washington Street, Fairfield, CA 94533</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. 14.05 acres of the school’s grounds are available to the public for recreational use throughout the year. These available recreation facilities include a swimming pool, tennis and basketball courts, and baseball and football fields (all-weather field). The school is located approximately 1,500 feet north of SR 12E and Civic Center Boulevard.</td>
</tr>
<tr>
<td>Fairview Elementary School; 830 First Street, Fairfield, CA 94533</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. 2.78 acres of the school's grounds are available to the public for recreational use throughout the year. These available recreation facilities include a basketball court, baseball field, and an open turf area used for soccer. The school is located approximately 2,000 feet north of the SR 12E/Pennsylvania Ave interchange.</td>
</tr>
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</table>
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

<table>
<thead>
<tr>
<th>Resource/Address</th>
<th>Description/Location</th>
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<tbody>
<tr>
<td>E Ruth Sheldon Elementary School; 1901 Woolner Avenue, Fairfield, CA</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. 1.6 acres of the school’s grounds are available to the public for recreational use. These available recreation facilities include a turf area. The school is located approximately 1,500 feet northeast of the SR 12E/Beck Ave interchange.</td>
</tr>
<tr>
<td>Nelda Mundy Elementary; 570 Vintage Valley Drive, Fairfield, CA</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. 1.57 acres of the school’s grounds are available to the public for recreational use. These available recreation facilities include a turf area and baseball fields. The school is located approximately 1,500 feet northwest of the I-80/680 interchange.</td>
</tr>
<tr>
<td>Oakbrook Elementary; 700 Oakbrook Drive, Fairfield, CA 94534</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. The existing baseball field located adjacent to the school is considered part of Ridgeview Park, and is maintained by the City of Fairfield. The school does not have other athletic fields available for public use. The school is located approximately 1,100 feet west of the I-680.</td>
</tr>
<tr>
<td>Green Valley Middle School; 1350 Gold Hill Road, Fairfield, CA 94534</td>
<td>Owned and maintained by the Fairfield-Suisun Unified School District, 6.5 acres of the school’s grounds are available to the public for recreational use. These available recreation facilities include football and baseball fields. The school is located approximately 2,000 feet southwest of the I-680 and Gold Hill Road interchange.</td>
</tr>
<tr>
<td>Solano Community College; 4000 Suisun Valley Road Solano County, CA</td>
<td>Owned and maintained by the California Community Colleges Office, 38.77 acres of the school’s grounds are available to the public for recreational use throughout the year. These available recreation facilities include a swimming pool and soccer and baseball fields. The school is located approximately 1,500 feet north of the I-680/Suisun Valley Road interchange.</td>
</tr>
<tr>
<td>Crystal Middle School; 400 Whispering Bay Lane, Suisun City, CA 94585</td>
<td>This school is owned and maintained by the Fairfield-Suisun Unified School District. 5.48 acres of the school’s grounds are available to the public for recreational use throughout the year. These available recreation facilities include football and baseball fields, and a basketball court. The school is located south of SR 12E, approximately 2,000 feet east of the project activities occurring on Sacramento Street in Suisun City.</td>
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**Wildlife Refuge/Area**

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<tr>
<th>Resource/Address</th>
<th>Description/Location</th>
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<tbody>
<tr>
<td>Grizzly Island Wildlife Complex-Gold Hills Unit; 2548 Grizzly Island Road Solano County, CA</td>
<td>Part of the larger 84,000-acre DFG-owned and maintained Grizzly Island Wildlife area, this 50-acre unit provides seasonal recreational hunting. It also serves as nesting habitat for waterfowl and birds, and provides for plant and food growth for wildlife in the area. It is located 50 feet east of the I-680/Gold Hills Road interchange.</td>
</tr>
<tr>
<td>Suisun Marsh Primary and Secondary Management Area; n/a, Solano County, CA</td>
<td>Directly east of I-680, the Suisun Marsh Primary and Secondary Management Areas are comprised of approximately 85,000 acres of tidal marsh, managed wetlands, and waterways. It provides wintering habitat for waterfowl of the Pacific Flyway and, because of its size and estuarine location, supports a diversity of plant communities, which in turn provides habitat for a variety of fish and wildlife, including several rare and endangered species. The Solano County General Plan designates lands within the Suisun Marsh as “Marsh,” with a “Resource Conservation” overlay. The Marsh designation “provides for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands.”</td>
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**Trails and Bikeways**

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<tr>
<th>Resource/Address</th>
<th>Description/Location</th>
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<tbody>
<tr>
<td>American Canyon Creek Trail; Fairfield, CA</td>
<td>A 6.87-acre-long recreational trail owned and maintained by the City of Fairfield. The trail is adjacent to Ridgeview Park and runs between on Oakbrook Drive and Lopes Road, 100 feet west of I-680.</td>
</tr>
<tr>
<td>Green Valley Trail; Fairfield, CA</td>
<td>An approximately 2-mile-long recreational trail owned and maintained by the City of Fairfield. The trail is a dedicated segment of the Bay Area Ridge Trail, and is located between Rockville Hills Park and Mangels Boulevard. The southernmost portion of this trail is approximately 1,500 feet north of I-80/I-680 interchange.</td>
</tr>
<tr>
<td>Green Valley Creek Trail; Fairfield, CA</td>
<td>Approximately 2.5 miles long, this recreational trail owned and maintained by the City of Fairfield. The trail is located along the western side of Green Valley Creek from Rockville Road to Mangels Boulevard. The southernmost portion of this trail is approximately 1,500 feet north of I-80/I-680 interchange.</td>
</tr>
<tr>
<td>Suisun Parkway Trail; Fairfield, CA</td>
<td>This recreational trail is owned and maintained by Solano County, and connects two segments of the Fairfield Linear Park. It begins in the west at Suisun Creek and extends to the west along the north side of the North Connector. It terminates where it meets the Fairfield Linear Park again at Abernathy Road.</td>
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</table>
## Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

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<tr>
<th>Resource/Address</th>
<th>Description/Location</th>
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<tbody>
<tr>
<td><strong>Cordelia Villages Trail; Fairfield, CA</strong></td>
<td>This recreational trail is owned and maintained by the City of Fairfield, and extends behind the housing subdivision, approximately 1,500 feet west of I-680. The trail is divided into two sections, and is approximately 2 miles in length. The first portion runs from Silverbrook/Oakbrook Drive intersection and terminates at Gold Hill Road. The second portion begins at Highland Circle and terminates at South Ridgefield Way.</td>
</tr>
<tr>
<td><strong>Caltrans I-80 Pathway; Fairfield CA</strong></td>
<td>This Class I bikeway facility is owned and maintained by the Department and extends 1.2 miles. Approximately 50 feet north of I-80, it parallels westbound I-80, between Red Top Road and Green Valley Road.</td>
</tr>
<tr>
<td><strong>Bay Area Ridge Trail; Fairfield CA, Solano County</strong></td>
<td>A new segment of the Bay Area Ridge Trail was dedicated by the City of Fairfield and the Bay Area Ridge Trail Council in September 2010. This segment, which lies to the south of I-80 along McGary Road from Red Top Road to Hiddenbrooke Drive, is located immediately adjacent to the western segment of the project alignment. Approximately 3.5 miles long, this trail is designated for multi-use.</td>
</tr>
<tr>
<td><strong>I-80/680/SR 12 Interchange Project—Cordelia to Napa (Proposed); Solano County</strong></td>
<td>This 3-mile-long bike path will run from the SR 12W/Red Top Road intersection to the Napa County line. Under the two alternatives, this bike path will be either a Class I (following along the California Northern Railroad Roadway) or Class III bike path. CEQA clearance still needs to be obtained to move forward with design. As such, a construction date for this bike path is not currently known.</td>
</tr>
<tr>
<td><strong>Waterfront Promenade; Suisun City, CA</strong></td>
<td>A 2.2-acre-long waterfront walkway owned and maintained by Suisun City. This lighted walkway is adjacent to the entire Old Town Waterfront, which connects Old Town Plaza to City Hall. Located approximately 700 feet south of SR 12E, it is used for recreational activities such as walking, running, biking, and fishing.</td>
</tr>
<tr>
<td><strong>Central County Bikeway; Suisun City, CA</strong></td>
<td>This Class I bikeway is owned and maintained by the City of Suisun, and is primarily used for walking, running, and biking. It is located north of SR 12E, extending from Marina Boulevard to Walters Road. 2.7 miles in length, this bikeway’s westerly terminus is approximately 2,000 feet east of the Suisun City Train Depot.</td>
</tr>
<tr>
<td><strong>Central County Bikeway Gap Closure Trail; Suisun City, CA</strong></td>
<td>Located north and south of SR 12E this Class I bikeway follows Main Street from Marina Boulevard to the Suisun City Train Depot. Used for walking, running, and biking, it is owned and maintained by the City of Suisun and is approximately 1 mile long.</td>
</tr>
<tr>
<td><strong>Marina Extension Trail (Proposed); Suisun City, CA</strong></td>
<td>This proposed Class I paved trail will be owned and maintained by the City of Suisun. Approximately 2,000 feet east of the Suisun City Train Depot, the trail will be located on the north side of SR 12E, along Marina Boulevard and Buena Vista Avenue and will serve recreational and transit purposes. It will be 0.25 mile long and 10 feet wide. Funding sources for this trail are not yet known.</td>
</tr>
<tr>
<td><strong>Grizzly Island Trail (Proposed); Suisun City, CA</strong></td>
<td>This proposed 0.75-mile-long, 10-foot wide, Class I paved recreation trail will be owned and maintained by the City of Suisun. The trail will be located on the south side of SR 12E and will run from Marina Boulevard to Grizzly Island Road. The western portion of this trail, beginning along Marina Boulevard, is approximately 2,000 feet east of Suisun City Train Depot. Partial funding for the trail has been obtained and construction is estimated to begin in the summer of 2011.</td>
</tr>
</tbody>
</table>

**Sources:**

- b. Binner pers. comm.
- d. Swearengin pers. comm.
- e. California Department of Fish and Game 2009.
- f. Pera pers. comm.
- g. City of Fairfield 1998.
- i. Hancock pers. comm.
- j. Solano Transportation Authority 2009.
- k. Majer pers. comm.
B.1.1.1 City of Fairfield

Construction activities related to the project alternatives may include traffic delays on city roads, where proposed improvements would occur, but all existing main access points to the areas discussed in this section of the document would be maintained. A Transportation Management Plan (TMP) would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses will be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of carbon monoxide (CO) National Ambient Air Quality Standards (NAAQS), are not considered a “Project of Air Quality Concern” (POAQC) for particulate matter (PM10 and PM2.5), would not exceed operational thresholds for reactive organic gases (ROG), nitrogen oxides (NOx), CO, and PM10 emissions, and would result in decreases (not increases) in all mobile source air toxics (MSAT) emissions. With implementation of measures outlined in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the project would not result in a significant increase in ROG, NOx, CO, and particulate matter emissions. Thus, no air quality-related effects on the Section 4(f) resources within the city of Fairfield discussed here would occur as a result of the proposed project.

Within the Section 4(f) resources discussed here, the project alternatives could affect potential nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures outlined in Section 3.3, “Biological Resources,” in the EIR/EIS would minimize these potential effects.

No planned project improvements would occur on the Section 4(f) properties within the city of Fairfield and listed here, no effects to existing natural communities or special-status plant or animal species would occur. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented as part of the project and best management practices would be implemented to ensure that no adverse impacts related to water quality affect these Section 4(f) resources as a result of project construction (see Section 3.2-2, “Water Quality,” in the EIR/EIS for additional information). Therefore, no adverse impacts related to biological resources or water quality would affect Section 4(f) resources within the city of Fairfield as a result of the proposed project.

Parks

The project alternatives include highway mainline, freeway-to-freeway interchange, interchange, and local roadway improvements within the city of Fairfield. As shown in Table B-1, four public parks (Allen Witt Park, Vintage Green Valley Park, Ridgeview Park, and Cordelia Community Park) within the city of Fairfield are located within 0.5 mile of the project alternatives. Ridgeview Park is the closest at approximately 500 feet. Given the distance of these four parks from the project alternatives, there would be no proximity impacts attributable to noise or visual impacts because there are homes, commercial buildings, and/or businesses between the project area and the parks. Additionally, as already noted, there would be no proximity impacts related to air quality, biological resources, or water quality on these parks as a result of the project.
alternatives. Consequently, the project alternatives would not cause a constructive use of Allen Witt Park, Vintage Green Valley Park, Ridgeview Park, or Cordelia Community Park because the proximity impacts would not substantially impair the protected activities, features, or attributes of these parks.

**Public School Playgrounds and Athletic Fields**

Seven Fairfield public schools are located within 0.5 mile of the project alternatives. Rodriguez High School is located immediately adjacent to the project area. The public ownership, public availability, and use of the school’s athletic field areas qualify this property as a potential Section 4(f) resource. Under Alternative C and Alternative C Phase 1, Lopes Road would be realigned approximately 100 feet to the west of its current location between Fermi Road and Red Top Road. This realignment would move the road closer to Rodriguez High School, but would not affect any portion of the school including its recreational fields. Further, as the areas of the Rodriguez High School immediately adjacent to the project area consists of landscaping, is outside the fenced areas of the school and is not used for recreational purposes, it is not considered a Section 4(f) resource.

Of the seven public schools located within 0.5 mile of the project alternatives, Rodriguez High School is the closest, adjacent to improvements along Lopes Road. Based on the traffic noise modeling study, noise levels taken from one prediction site located in the outfield of the softball field discussed above were calculated for existing and future conditions with and without the project alternatives. The existing traffic noise level at the loudest hour was estimated to be 53 dBA. The future levels (2035) at the noise prediction site (C15, located in the athletic field of the high school) were predicted to be 57 dBA with the project alternatives and 55 dBA under the No-Build alternative (ICF Jones & Stokes 2009). Although the alternatives would be two dBA higher under design-year conditions compared to design-year no-build conditions, noise level does not approach or exceed the noise abatement criteria (NAC) for the land use (67 dBA) under 23 CFR 772 (ICF Jones & Stokes 2009). Therefore, no noise mitigation is proposed as part of the project.

Additionally, the Department has determined that a constructive use does not occur when the proximity impacts do not substantially impair the characteristics that qualify the property for protection under Section 4(f). The proximity of the realigned road to the softball field would not preclude the use of this area for public recreational activities. It also would not affect the function of the school and the softball field would remain intact; recreation facilities would not be interrupted. Moreover, because the main entrance to the school and associated playfields is from Red Top Road and not Lopes Road, access to the school and associated fields would not change as a result of the roadway realignment. Additionally, as already noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this school’s athletic fields as a result of the project alternatives. The project alternatives would not cause a constructive use of Rodriguez High School because proximity impacts would not substantially impair the protected activities, features, or attributes of the school’s athletic fields.

The other schools offer their playgrounds and athletic fields to the public for recreational use outside of school hours, and are considered potential Section 4(f) resources. Of these six schools, Oakbrook Elementary, at 1,100 feet away, is the closest school to the project alternatives. Because these six schools are approximately 0.25 mile or more away from the project
alternatives and are separated from the project alternatives by homes, commercial buildings, and/or businesses, there would be no associated noise or visual impacts from the construction activities. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on the athletic grounds of these schools as a result of the project alternatives. The project alternatives would not cause a constructive use of Armijo High School, Fairview Elementary School, E. Ruth Sheldon Elementary School, Nelda Mundy Elementary School, Oakbrook Elementary School, or Green Valley Middle School because proximity impacts would not substantially impair the protected activities, features, or attributes of these playgrounds and athletic fields.

**Trails and Bikeways**
A review of the City of Fairfield’s Trails Master Plan (1998) and other resources identified six off-road trails within 0.5 mile of the project alternatives. All of these were evaluated as potential Section 4(f) resources. The Caltrans I-80 Pathway is currently used primarily for transportation. It does not link or connect any specific recreational facilities and is not designated as a recreational facility in any local planning documents. Additionally, it is considered by Caltrans staff, including the District 04 Bicycle Coordinator, to be a transportation facility. Therefore, it is not a Section 4(f) resource.

The American Canyon Creek Trail is closest to the project alternatives at 50 feet away from proposed improvements. This trail terminates on Lopes Road, a frontage road alongside southbound I-680. At the easterly terminus of the American Canyon Creek Trail, trail users would be exposed to construction noise associated with the project alternatives. However, given its proximity to I-680 (approximately 100 feet), trail users are already exposed to noise levels of 67 dBA at this location. The increase in noise would be temporary in nature, and would not disrupt or alter use of the trail. The future levels (2035) noise levels were predicted to be at 69 dBA with the buildout of the project alternatives and 68 dBA under the no-build alternative. While the projected noise level with the project alternatives would exceed the NAC for the land use (67 dBA), the increase in the projected noise levels, compared to the projected noise levels under no-build conditions, is barely perceptible (i.e., one dBA or less).

There would be some minor visual effects for trail users during construction. However, these effects would be temporary in nature and would occur only during the construction period. This temporary change in view would not affect access or the use of the American Canyon Creek Trail. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the proposed project. The project alternatives would not cause a constructive use of the American Canyon Creek Trail because the proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

The remaining three off-road recreational trails within 0.5 mile of the project alternatives are at least 1,500 feet away from any proposed improvements. Furthermore, these trails would be separated from the project alternatives by homes, commercial buildings, and/or businesses. Also, as noted, no proximity impacts relating to air quality, biological resources, or water quality would occur on these trails as a result of the project alternatives. The project alternatives would not cause a constructive use of the Green Valley Trail, the Green Valley Creek Trail, or the
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

Cordelia Villages Trail because the proximity impacts would not substantially impair the protected activities, features, or attributes of these trails.

Additionally, a new segment of the Bay Area Ridge Trail was dedicated by the City of Fairfield and the Bay Area Ridge Trail Council in September 2010. This segment, which lies to the south of I-80 along McGary Road from Red Top Road to Hiddenbrooke Drive, is located immediately adjacent to the western segment of the project alignment (see Figure B-1). Approximately 3.5 miles long, this trail is designated for multi-uses including hiking, biking, and equestrian uses. The proposed project’s Alternative C, Phase 1 will not cause a constructive use of the segment of the trail along McGary Road from Red Top Road to Hiddenbrooke because the proximity impacts will not substantially impair the protected activities, features, or attributes of the trail.

While more than half of the anticipated 550-mile Bay Area Ridge Trail is already open and dedicated for public use in perpetuity, some gaps remain in areas where the Bay Area Ridge Trail Council has been unable to arrange a route. Even with the new McGary Road Trail, the project area is one of the gaps in the current Bay Area Ridge Trail system (Bay Area Ridge Trail Council 2010, Solano Transportation Authority 2004). Bay Area Ridge Trail users currently traverse the project area and use existing on-street bike and pedestrian facilities located along Green Valley Road and I-80 to reach Red Top Road to access completed and open segments of the Bay Area Ridge Trail to the north and south.

Implementation of the build alternatives would beneficially open up several alternatives for completing the gap between the existing segments of the Bay Area Ridge Trail between Green Valley Road and McGary Road. There are two potential alignments considered to close the Bay Area Ridge Trail gap between Green Valley Road and McGary Road in the project area. The alignment would extend from McGary Road north along Red Top Road and the new Business Center Drive Extension to the new bike path alignment at the intersection with the existing Business Center Drive roadway. At this point, as shown as Option 1 in Figure B-1, the Bay Area Ridge Trail could continue along Business Center Drive to Green Valley Road and then run north to the existing trail segment on Green Valley Road. Alternatively, the Bay Area Ridge Trail could follow the new bike path alignment to Mangels Boulevard and then east along Mangels Boulevard to Green Valley Road and connect with the existing trail segment (Option 2 in Figure B-1).

Project alternatives could indirectly affect Bay Area Ridge Trail users if access through the project area was impeded during construction or if the project alternatives would impede or create a barrier to completing and opening new segments of the Bay Area Ridge Trail through the project area. Specifically, Alternative B, Alternative C, and Alternative C, Phase 1 include improvements that would involve widening I-80 and constructing new connector ramps to SR 12W as well as construction of a new road that would connect the I-80/Red Top Road interchange with Business Center Drive. Between I-80 and SR 12W, Red Top Road would be realigned to cross over the UPRR tracks and SR 12W approximately 0.25 mile west of the existing SR 12W/Red Top Road intersection. From SR 12W to Business Center Drive, the new road would be an extension of Business Center Drive, originally proposed as part of the North Connector project.
NOTE: The McGary Road Trail was dedicated by the City of Fairfield and the Bay Area Ridge Trail Council in September 2010.
Figure B-1, Bay Area Ridge Trails in Project Area (BACK)
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

These improvements would affect the existing Caltrans I-80 Pathway, which connects Green Valley Road to Red Top Road at SR 12W, and would be realigned and/or relocated to the extension of Business Center Drive. As a result the Caltrans I-80 Pathway, which could be used by Bay Area Ridge Trail users to access completed and open segments of the Bay Area Ridge Trail to the north and south of the project area, might be closed for several months during project construction.

To minimize potential impacts to bicycle and pedestrian users of the Caltrans I-80 Pathway, the project will provide van service during certain hours to transport cyclists and pedestrians traveling between Green Valley Road at I-80 and Red Top Road at McGary Road during construction. After construction is complete, trail users would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR 12W, the UPRR tracks and connect with Red Top and McGary Road. The project alternatives, once completed, would not impede access nor create a barrier to completing and opening segments of the planned Bay Area Ridge Trail in the project area. Thus, the provisions of Section 4(f) are not triggered.

B.1.1.2 Suisun City

Construction-related activities may include traffic delays on city roads, where project improvements would occur, but all existing main access points to the areas within Suisun City discussed here would be maintained. A TMP would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses would also be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of CO NAAQS, are not considered a POAQC for PM$_{10}$ and PM$_{2.5}$, and would not exceed operational thresholds for ROG, NO$_X$, and CO and would result in decreases (not increases) in all MSAT emissions. With implementation of measures outlined in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the proposed project would not result in significant increases in ROG, NO$_X$, CO, and particulate matter emissions. No air quality-related impacts on the Section 4(f) resources within Suisun City listed below would occur as a result of the project alternatives.

Within the Section 4(f) resources located in the Suisun City portion of the project vicinity, the project alternatives could have effects on potential nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures in Section 3.3, “Biological Resources,” of the EIR/EIS would minimize these potential effects. Also, because no planned project improvements would occur on the Section 4(f) properties located within Suisun City listed below, no effects to existing natural communities or special-status plant species would occur. A SWPPP would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality would occur on these Section 4(f) resources as a result of project construction (see Section 3.2-2 “Water Quality” in the EIR/EIS for additional information). Therefore, there would be no impacts related to biological resources or water quality on the Section 4(f) resources located in the Suisun City portion of the project vicinity as a result of the project alternatives.
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

Parks
In Suisun City the project alternatives includes highway mainline, interchange, and local roadway improvements. As shown in Table B-1, five public parks within Suisun City are located within 0.5 mile of the project alternatives. Old Town Plaza is the closest in proximity, approximately 400 feet away from the project alternatives. The other parks range from 750 to 2,000 feet away from the project alternatives, and are separated from the project alternatives by homes and businesses. At such proximity, there would be no associated noise or visual impacts from construction activities on these five public parks. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on these parks as a result of the project alternatives. The project alternatives would not cause a constructive use of Reverend Clay Bon Senior Park, Mike Day Park, Harbor Park, Old Town Plaza, or Sheldon Plaza because the proximity impacts would not substantially impair the protected activities, features, or attributes of these parks.

Public School Playgrounds and Athletic Fields
One public school, Crystal Middle School, is located within 0.5 mile of the project area. Located 2,000 feet away from the project alternatives, this school offers its playgrounds and athletic fields to the public for recreational use outside of school hours. Thus, it is considered a potential Section 4(f) resource. However, because this school is almost 0.5 mile away from the project alternatives and is separated from the project alternatives by homes, commercial buildings, and/or businesses, there would be no associated noise or visual impacts from construction activities. Additionally, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on Crystal Middle School as a result of the project alternatives. The project alternatives would not cause a constructive use of Crystal Middle School because the proximity impacts would not substantially impair the protected activities, features, or attributes of the playgrounds and athletic fields.

Trails and Bikeways
Five off-road Class I bikeways are located within 0.5 mile of the project alternatives within Suisun City. They are all considered potential Section 4(f) resources. Three of these trails are currently in use and two are future planned facilities (Majer pers. comm.). The Central County Bikeway Gap Closure Trail is the closest at approximately 200 feet away from the project alternatives. Vegetation and commercial buildings separate this trail from the project area. Trail users could be exposed to construction noise associated with the project alternatives, but because this trail follows and travels underneath SR 12E, trail users would already be exposed to noise levels of 61 dBA at this location. The increase in noise due to construction of the project alternatives would be temporary in nature and would not disrupt or alter use of the trail.

Although both full-build alternatives would be one to two dBA higher under design-year conditions compared to design-year no-build conditions, noise levels would not approach or exceed the NAC for the land use (67 dBA) under 23 CFR 772 (ICF Jones & Stokes 2009). There would be no impacts attributable to noise. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. Therefore, the project alternatives would not cause a constructive use of the Central County Bikeway Gap Closure Trail because proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.
The remaining four (two existing and two proposed) off-road recreational trails within 0.5 mile of the project alternatives range from approximately 700 to 2,000 feet away from any proposed improvements. Furthermore, these trails would be separated from the project alternatives by homes, commercial buildings, and/or businesses. Additionally, as noted above, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. The project alternatives would not cause a constructive use of the Waterfront Promenade, the Central County Bikeway, the Marina Extension Trail (Proposed), or the Grizzly Island Trail (Proposed) because the proximity impacts would not substantially impair the protected activities, features, or attributes of these trails.

B.1.1.3 Solano County

Construction-related activities may include traffic delays on county roads, where project alternatives would occur, but all existing main access points to the areas discussed below would be maintained. A TMP would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses would be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of CO NAAQS, are not considered a POAQC for PM$_{10}$ and PM$_{2.5}$, and would not exceed operational thresholds for ROG, NO$_X$, CO, and would result in decreases (not increases) in all MSAT emissions. With implementation of measures described in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the project would not result in a significant increase in ROG, NO$_X$, CO, and particulate matter emissions. No air quality-related effects on the Section 4(f) resources within Solano County would occur as a result of the proposed project.

With regard to the Section 4(f) resources discussed here, the project alternatives have the potential to affect nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures in Section 3.3, “Biological Resources,” of the EIR/EIS would minimize these potential effects. Because no planned project improvements would occur on the Section 4(f) properties located within Solano County, no effects to existing natural communities or special-status plant species would occur. A SWPPP would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality would occur on these Section 4(f) resources as a result of project construction (see Section 3.2-2, “Water Quality,” of the EIR/EIS for additional information). There would be no adverse impacts related to biological resources, or water quality on the Section 4(f) resources within Solano County as a result of the proposed project.

Public School Playgrounds and Athletic Fields

The project alternatives include highway mainline, interchange, and local roadway improvements within unincorporated portions in Solano County. As shown in Table B-1, one public school is within 0.5 mile of the proposed project. Solano Community College is located 1,500 feet north of the project alternatives. Because the college offers its athletic fields to the public for recreational use outside of school hours, it is considered a potential Section 4(f) resource. However, the college is further than 0.25 mile away from the project alternatives and is
separated from the project alternatives improvements by commercial buildings and/or businesses. There would be no associated noise or visual impacts from construction activities. Additionally, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on Solano Community College as a result of the proposed project. The project alternatives would not cause a constructive use of Solano Community College because proximity impacts would not substantially impair the protected activities, features, or attributes of the playgrounds and athletic fields.

**Trails and Bikeways**

A review of the Solano Transportation Authority’s Solano Countywide Bicycle Plan (2004) and other resources identified one proposed and one existing bikeway within 0.5 mile of the project alternatives. The proposed bikeway, known as the 80/680/SR 12 Interchange Project—Cordelia to Napa, would parallel SR 12W from Red Top Road into Napa County. This bike path will be a Class II facility, is expected to be used for transportation equally as for recreation, and will not be considered a Section 4(f) resource. The provisions of Section 4(f) are not triggered.

The Suisun Parkway Trail, which is being constructed as part of the Suisun Parkway project, connects two segments of the Fairfield Linear Park Trail between Suisun Creek and Abernathy Road. The trail is owned and operated by Solano County and extends along the north side of the Suisun Parkway (formerly referred to as the North Connector) north of I-80. The Suisun Parkway Trail connects with the Fairfield Linear Park trail at Suisun Creek on the west and Abernathy Road on the east. The Suisun Parkway Trail is a Class I trail that would not be used primarily for transportation or part of a local transportation system. As such, it would be considered a Section 4(f) resource.

The trail is located on the north side of Suisun Parkway. Trail users would not be exposed to construction or long-term operational noise associated with the project alternatives because the trail is separated from the project area by Suisun Parkway (a four-lane roadway). Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. Therefore, the project alternatives would not cause a constructive use of the Suisun Parkway Trail because proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

**Wildlife Refuge/Area**

**Grizzly Island Wildlife Complex—Gold Hills Unit**

Maintained by the California Department of Fish and Game (DFG), the 50-acre Gold Hills Unit of the Grizzly Island Wildlife Complex serves as a refuge area and nesting habitat for waterfowl and birds, and provides for plant and food growth for wildlife in the area (California Department of Fish and Game 2009). As such, the unit meets the criteria for a Section 4(f) resource. As shown in Table B-1, the unit is 50 feet east of the project alternatives. Although proposed construction activities would occur adjacent to the wildlife area, the activities would be minor and temporary in nature, and would not disrupt use, or alteration of, the refuge area. The future noise levels (2035) with the full-build alternatives would be only one dBA higher than the design-year no-build conditions (ICF Jones & Stokes 2009). This increase in noise level would be barely perceptible. Waterfowl, migratory birds, and other wildlife which are present within the Gold Hills Unit are already exposed to the existing noise volumes along I-680. Thus, there
would be no noise-related impacts on this Section 4(f) resource due to implementation of project alternatives. Additionally, as noted above, there would be no air quality, vegetation, wildlife or water quality related proximity impacts on this refuge as a result of the project alternatives. Consequently, the project alternatives would not cause a constructive use of the Gold Hills Unit because the proximity impacts would not substantially impair the protected activities, features, or attributes of the refuge area.

**Suisun Marsh Management Area**

Lands within the Suisun Marsh, to the south of the city of Fairfield and east of I-680, are protected by strict limitations on development within the primary and secondary management areas of the Suisun Marsh Protection Plan under the Solano County General Plan (Solano County 2008). Specifically, portions of the Suisun Marsh Secondary Management Area are located east of I-680 from the Gold Hill Road overpass and north to Jameson Canyon Creek. Although, the Suisun Marsh Secondary Management Area provides habitat for marsh-related wildlife and insulates the habitats in the primary management area, only those portions of the secondary management area that are publicly owned qualify as a Section 4(f) resource. Construction of Alternative B, Alternative C, and Alternative C, Phase 1 would involve improvements within the Suisun Marsh Secondary Management Area. However, as these improvements occur on land which is privately owned, this portion of the management area is not a Section 4(f) resource.

Other publicly owned portions of the Suisun Marsh Primary and Secondary Management Areas are located in the vicinity of the proposed project. Although proposed construction activities would occur near the Suisun Marsh Primary and Secondary Management Areas, the activities would not disrupt or alter use of the management areas. The future noise levels (2035) with the project alternatives would be only one dBA higher than no-build conditions within this portion of the project site (ICF Jones & Stokes 2009). This increase in noise level would be barely perceptible to humans. Wildlife species present within the management areas are already exposed to the existing noise volumes along I-680. There would be no noise-related impacts on this Section 4(f) resource due to implementation of project alternatives. As noted, there would also be no proximity impacts related to air quality, biological resources, or water quality on the management areas as a result of the project alternatives. Consequently, the project alternatives would not cause a constructive use of the Suisun Marsh Primary and Secondary Management Areas because proximity impacts would not substantially impair the protected activities, features, or attributes of the refuge area.

**B.1.2 Historic and Archaeological Sites**

Section 4(f) applies to lands of a historic site of national, state, or local significance. The Neitzel Farm parcel, which originally contained National Register of Historic Places-eligible\(^1\) (NRHP) structures, is located within the area of potential effects (APE)\(^2\) for the project alternatives. Both alternatives (Alternative B and Alternative C) include improvements occurring within the

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\(^1\) The National Register of Historic Places (NRHP) is the official list of the Nation’s historic places, including districts, sites, buildings, structures, and objects that are significant to American history, architecture, archeology, engineering, and culture that are worth of preservation. To be NRHP-eligible, a resource must possess a quality of significant in American history per the criteria for evaluation under 36 CFR Part 60.

\(^2\) The area of potential effects (APE) is defined as the study area for historic resources affected by the project.
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)

boundaries of the Neitzel Farm parcel. However, the historic Neitzel Farm has been removed by the Fairfield Corporate Commons project, which is currently under construction and will be complete prior to the construction of the proposed project.

Three eligible historic resources are located adjacent to the proposed project: the Suisun City Train Depot, the Village of Cordelia Historic District, and the Suisun City Historic District. Under both alternatives, construction would occur in the southern portion of the Suisun City Train Depot parcel, however, the depot is located on the northern portion of the parcel and the construction would not result in an adverse effect. Under Alternative B and Alternative B, Phase 1, construction would bring the highway closer to the Village of Cordelia Historic District, but this would not constitute an adverse effect because none of the contributing properties would be affected. There would be a visual impact to the district, but it would not be considered adverse because the setting of the district has already been affected by the existing facility. Under Alternative C, and Alternative C, Phase 1 the highway would be moved further from the district and there would be no effect. Similarly, both alternatives would result in a visual impact to the Suisun City Historic District but it would not be an adverse effect because it would not alter the district’s overall sense of place and time. As indicated in Stipulation II.B.4 of the 80/680/12 Programmatic Agreement (See Appendix H of the EIR/EIS) the project, as currently proposed, will result in no adverse effect on eligible built environment properties. The SHPO’s signature on the PA constitutes agreement with that determination.

If the historic or archaeological site is not listed on or eligible for listing on the NRHP, the provisions of Section 4(f) do not apply (23 CFR 774.11[e]). In all, 42 non-eligible historic properties, two non-eligible archaeological sites, and 29 bridges are located within the proposed project’s APE.

B.2 Printed References


3 The terms “adverse effect” and “no effect” are defined under the National Historic Preservation Act. Had there been an adverse effect under the National Historic Preservation Act, it would have constituted as a “use” under Section 4(f).
Appendix B. Resources Evaluated Relative to the Requirements of Section 4(f)


City of Fairfield 1998. Master Trails Plan. Prepared by the Department of Community Services, Department of Planning and Development, City of Fairfield.


B.3 Personal Communications

Majer, Alysa. Management Analyst, Public Works Department, City of Suisun City. Telephone conversation with Beth Eggerts of ICF International on June 29, 2009 and November 9, 2009, regarding the trail facilities within Suisun City.

Miller, Brian. City Planner, Community Development Department, City of Fairfield. Telephone conversation with Beth Eggerts of ICF International on February 17, 2010, regarding the designation of the Bay Area Ridge Trail within the City of Fairfield.
Concurrence from City of Fairfield Regarding Impacts to City of Fairfield Linear Park

VIA REGULAR MAIL AND FACSIMILE (510-285-5600)

November 22, 2010

Melanie Brent
District Office Chief
Department of Transportation
P.O. Box 23680
Oakland, CA 94623-0660

Re: Concurrence Regarding Impacts to City of Fairfield Linear Park

Dear Ms. Brent:

I am writing in response to your November 5, 2010 letter seeking concurrence on the finding of minimal impact upon the City of Fairfield Linear Park from the proposed Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR12) Interchange project.

The City of Fairfield confirms that the proposed project’s impacts would be minimal and that these impacts will be temporary in nature and addressed through the realigned trail. We look forward to continue to work with you during the final design phases to ensure that proper measures are utilized to avoid and minimize any impacts.

Sincerely,

ERIN L. BEAVERS
Director of Community Development

ELB:ccs
c: Janet Adams, Solano Transportation Authority
George Hicks, City of Fairfield Public Works Department
Section 4(f) Memorandum for the
Interstate 80/Interstate 680/State Route 12 Interchange Project
District 4-SOL-80 (PM 10.8/17.0); SOL-680 (PM 10.0/13.1);
SOL-SR 12 (PM1.7/L2.8); and SOL-SR 12 (PM L1.8/4.8)
EA # 0a5300, Project #04-0000-0150

REASON FOR THIS MEMORANDUM

Since the publication the Draft Environmental Impact Report/Environmental Impact Statement
(EIR/EIS) for the Interstate 80/Interstate 680/State Route 12 Interchange Project in August 2010,
a change has been incorporated into the project description by the Solano Transportation Authority
(STA) and the Department.

This revision includes the relocation of a Pacific Gas & Electric (PG&E) valve lot to an alternate site
than previously analyzed. PG&E has indicated that the site currently identified is not ideal for their
long term needs; PG&E has thus identified an alternate site for relocating their facilities. The
alternate site would be located on property to the east of I-680 along Central Way. This proposed
site is owned by the Fairfield-Suisun Unified School District (FSUSD). See Figure 1 of Attachment A.

The purpose of this memorandum is to document any changes in the Section 4(f) analysis presented
in the Draft EIR/EIS that results from the change to the project description described above.

PROJECT DESCRIPTION

Please refer to Attachment A of this addendum for a description of the setting and activities
associated with the relocation of the PG&E valve lot to the alternate site.

ANALYSIS

The closest Section 4(f) resource to the alternate PG&E valve lot site is the Cordelia Historic District,
located approximately 0.2 mile to the south (see Figure 3.1.1-1, Sheet 4 of the Draft EIR/EIS).
Relocation of the valve lot to this alternate site would not directly impact this Section 4(f) resource.
Construction and operation involved with the valve lot would be concentrated on the northerly
portion of the FSUSD property (those portions of the site furthest from the Cordelia Historic District),
thereby reducing any potential for indirect effects to occur.

Thus, activities associated with relocating to this alternate location would not create any new
additional Section 4(f) impacts beyond what was already analyzed.

CONCLUSION

For the reasons described above, relocating the PG&E valve lot to the alternate site would not
change the findings, recommendation or conclusions of the Section 4(f) analysis in the Draft EIR/EIS.
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ATTACHMENT A:
RELOCATION DESCRIPTION
ATTACHMENT A:

PACIFIC GAS & ELECTRIC (PG&E) VALVE LOT RELOCATION DESCRIPTION

Project Location, Setting and Description:

The existing valve lot would be relocated within a 7.69 acre site, owned by the Fairfield Suisun Unified School District (APN 045-300-070) (see Figure 1), located at 3630 Ritchie Road in the City of Fairfield within Solano County. The relocated valve lot would occupy a 1.32-acre portion of the school district parcel (northwestern portion of the property). The 7.69 acre parcel would be divided into two separate parcels: 1) one 1.32-acre parcel for the relocated PG&E valve lot and portions of the pipelines leading to the valve lot which would be acquired by STA; and, 2) the remainder of the parcel (6.37 acres) for future development (development of which is not part of this project).

The project site for the valve lot is currently vacant, but was previously occupied by the Green Valley Middle School. The school has been relocated, the buildings demolished and the site has remained vacant since 2004. A portable classroom unit which is no longer used is located on the western portion of the project site, which would be removed as part of the project prior to construction.

The 7.69 acre site is bound by Ritchie Road to the west, commercial/industrial businesses to the north, and Grobric Court to the east. Cordelia Automotive, a mechanical automotive service business, and Classic Powder Coating, a metal refinishing business is immediately north of the project site. Inserv Company, a water treatment product and equipment business, is east of the project site. Vacant areas are immediately south of the project site. I-680 and I-80 are located 0.15 miles to the west and north of the project site, respectively. Green Valley Creek is 0.1 miles northeast of the project site. The Village of Cordelia Historic District is 0.2 miles south of the project site.

The existing PG&E valve lot is located between I-680 and I-80, to the east of Lopes Road (See Figure 1). The project would relocate the existing valve lot to a new location on the east side of I-80 (the project site) 0.2 mile (approximately 1,000 feet) east of its current location. All activities on the existing valve lot would cease as the lot would be deactivated and all pipeline maintenance equipment on site would be removed once the new valve lot is operational. Relocation of the valve lot is necessary to make way for the proposed improvements to the Green Valley overcrossing.

Figure 2 shows the plan for relocating the valve lot and pipelines. As shown in the figure, all major piping and valves would be installed below ground with the exception of aboveground pipeline extensions with valve/hand wheels to regulate gas flow. The installation of pipelines and the valve/hand wheels aboveground on the project site would require excavations of approximately 5 to 10 feet, depending on the location. The final height of the aboveground equipment would be at ground level. Additionally, a pipeline inspection gauge (pig) launcher would be installed at the project site. Pig launchers are pipeline maintenance equipment used to clean the pipeline or assess corrosion along a pipeline. Piping associated with the pig launcher would be approximately 4 to 5 feet above ground.

The finished valve lot would be approximately 1 foot above grade with an aggregate base (gravel). Maintenance equipment and pipelines installed would be enclosed with a 7-feet high chain-linked fence.
Five new underground gas pipelines would be installed to connect the existing natural gas system to the relocated valve lot (see Figure 3). Of the five pipelines, two pipelines would route gas to the valve lot and three pipelines would route gas from the valve lot to PG&E’s existing gas distribution system. Table 1 lists the diameter and length of the project pipelines. The capacity of the natural gas pipelines or PG&E’s gas delivery system would not increase as a result of the project.

**Table 1: Project Pipeline Details**

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Diameter</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pipelines Routing Gas to the Valve Lot</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-210A</td>
<td>32 inches</td>
<td>100 feet</td>
</tr>
<tr>
<td>L-210B</td>
<td>16 inches</td>
<td>350 feet</td>
</tr>
<tr>
<td><strong>Pipelines Routing Gas from the Valve Lot</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-210A</td>
<td>24 inches</td>
<td>1,650 feet</td>
</tr>
<tr>
<td>L-210B</td>
<td>16 inches</td>
<td>1,650 feet</td>
</tr>
<tr>
<td>L-210C</td>
<td>24 inches</td>
<td>650 feet</td>
</tr>
</tbody>
</table>

Source: GTS, 2011; Circlepoint, 2011.

Construction to install pipelines under roadways, including I-680, I-80, and Central Way would utilize trenchless construction methods, such as the guided boring method\(^1\) or horizontal directional drilling\(^2\), to limit surface ground disturbances. In other areas, trenching and open-cut methods would be used to install the pipelines. The direct buried sections of the pipelines would be excavated to a maximum depth of 8 feet; the new pipelines would be located at a minimum depth of 5 feet. At pipeline tie-in areas, bell holes\(^3\) would be excavated to maximum depth of 18 feet.

Figure 4 shows the areas of surface disturbances and subsurface disturbances related to project construction. All of these areas with the exception of the 7.69 acre site owned by the Fairfield Suisun Unified School District, occur within areas already identified for ground disturbance as part of the Alternative C, Phase 1 project.

The valve lot relocation would require the acquisition of 1.32 acres from the Fairfield Suisun Unified School District, and secure permanent and temporary easements needed for operation/maintenance and construction staging purposes. Table 2 lists the Assessor Parcel Numbers (APN) and acreages associated with the acquisition and permanent easements. Figure 5 shows the location of the fee acquisition and easements.

---

1. The guided boring method of pipeline installation is a 3-step process. First, a pilot tube is pushed through the ground from a jacking shaft to a reception shaft at the end location. Second, the pilot bore is enlarged from the jacking shaft to the reception shaft using augers inside a steel casing. Lastly, the pipe is pushed behind the steel casing, and the steel casing is extracted at the reception shaft simultaneously.

2. Horizontal directional drilling (HDD) is a surface-launched process whereby a pilot bore is drilled by pushing a drill pipe and drill bit from the entry point along a curved pathway to the exit point. When the pilot bore is complete, the bore is reamed in one or more passes to enlarge the bore to the diameter that can accommodate the pipe. The steel pipe is then pulled into the bore back to the entry point.

3. Bell holes are excavations made at the section joints of a pipeline. PG&E would excavate the soils to make it safe for construction employees to work.
### Table 2: Project Acquisition and Permanent Easements

<table>
<thead>
<tr>
<th>APN</th>
<th>Owner</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fee Acquisition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0045-3000-070</td>
<td>Fairfield Suisun Unified School District</td>
<td>1.32 acres</td>
</tr>
<tr>
<td></td>
<td><strong>Total Acreages under Fee Acquisition</strong></td>
<td>1.32 acres</td>
</tr>
<tr>
<td><strong>Permanent Easements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0045-300-040</td>
<td>James L. &amp; Cheryl C. Campi</td>
<td>0.12 acres</td>
</tr>
<tr>
<td>0045-300-070</td>
<td>Fairfield Suisun Unified School District</td>
<td>0.07 acres</td>
</tr>
<tr>
<td></td>
<td><strong>Total Acreages under Permanent Easement</strong></td>
<td>0.19 acres</td>
</tr>
</tbody>
</table>
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PG&E Valve Lot Relocation Project

Figure 1

Project Location Map

Source: Google Earth Pro; Circlepoint, 2011.
Figure 2: Project Site Plan

Source: GTS, 2011.
Legend

EXISTING PIPELINES

Existing Transmission System to Remain
Existing Pipelines and Valve Lot
(To be deactivated)

PROJECT PIPELINES

PIPES ROUTING GAS TO THE VALVE LOT
- L-210 A
- L-210 B

PIPES ROUTING GAS FROM THE VALVE LOT
- L-210 A
- L-210 B
- L-210 C

Off-Site Pipelines

Figure 3

Source: GTS, 2011.

PG&E Valve Lot Relocation Project
Figure 4

Legend

Areas of Disturbance

- Construction Impact Areas (Temporary Construction Easements)
- Soil Disturbance Area

Project Pipeline
- Existing Pipeline
- Existing Pipeline (To be abandoned)

* Areas of disturbance include permanent and temporary disturbances.
Figure 5

Legend

- Permanent Easement (PE)
- Project Valve Lot Location (Fee Acquisition)
- Temporary Construction Easement (TCE)
- APN Parcel

Legend

- Project Pipeline
- Existing Pipeline
- Existing Pipeline (To be abandoned)

Legend

* Areas of disturbance include permanent and temporary disturbances.

July 20, 2010

TITLE VI
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Charles Wahnon, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353 or toll free 1-866-810-6346 (voice), TTY 711, fax (916) 324-1869, or via email: charles_wahnon@dot.ca.gov.

CINDY McKIM
Director
California Department of Transportation Relocation Assistance Program

RELOCATION ASSISTANCE ADVISORY SERVICES

The California Department of Transportation (the Department) will provide relocation advisory assistance to any person, business, farm or non-profit organization displaced as a result of the Department’s acquisition of real property for public use. The Department will assist residential displacees in obtaining comparable decent, safe and sanitary replacement housing by providing current and continuing information on sales price and rental rates of available housing. Non-residential displacees will receive information on comparable properties for lease or purchase.

Residential replacement dwellings will be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, displaces will be offered comparable replacement dwellings that are open to all persons regardless of race, color, religion, sex or national origin, and are consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance will also include supplying information concerning federal and state assisted housing programs, and any other known services being offered by public and private agencies in the area.

ADDITIONAL INFORMATION

No relocation payment received will be considered as income for the purpose of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under the Social Security Act or any other federal law (except for any federal law providing low-income housing assistance).

Persons who are eligible for relocation payments and who are legally occupying the property required for the project will not be asked to move without being given at least 90 days advance notice, in writing. Occupants of any type of dwelling eligible for relocation payments will not be required to move unless at least one comparable “decent, safe and sanitary” replacement residence, open to all persons regardless of race, color, religion, sex or national origin, is available or has been made available to them by the state.

Any person, business, farm or non-profit organization, which has been refused a relocation payment by the Department, or believes that the payments are inadequate, may appeal for a hearing before a hearing officer or the Department’s Relocation Assistance Appeals Board. No legal assistance is required; however, the displacee may choose to obtain legal council at his/her expense. Information about the appeal procedure is available from the Department’s Relocation Advisors.

The information above is not intended to be a complete statement of all of the Department’s laws and regulations. At the time of the first written offer to purchase, owner-occupants are given a more detailed explanation of the state’s relocation services. Tenant occupants of properties to be acquired are contacted immediately after the first written offer to purchase, and also given a more detailed explanation of the Department’s relocation programs.
IMPORTANT NOTICE

To avoid loss of possible benefits, no individual, family, business, farm or non-profit organization should commit to purchase or rent a replacement property without first contacting a Department of Transportation relocation advisor at:

State of California
Department of Transportation, District 04
111 Grand Avenue
Oakland, CA  94623-0660
Your Rights and Benefits as a Displacee Under the Uniform Relocation Assistance Program (Residential) 2007

California Department of Transportation
Introduction

In building a modern transportation system, the displacement of a small percentage of the population is often necessary. However, it is the policy of Caltrans that displaced persons shall not suffer unnecessarily as a result of programs designed to benefit the public as a whole.

Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and payments.

This brochure provides information about available relocation services and payments. If you are required to move as the result of a Caltrans transportation project, a Relocation Agent will contact you. The Relocation Agent will be able to answer your specific questions and provide additional information.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 As Amended "The Uniform Act"

The purpose of this Act is to provide for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs and to establish uniform and equitable land acquisition policies for federal and federally assisted programs.

49 Code of Federal Regulations Part 24 implements the "Uniform Act" in accordance with the following relocation assistance objective:

To ensure that persons displaced as a direct result of federal or federally-assisted projects 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.

While every effort has been made to assure the accuracy of this booklet, it should be understood that it does not have the force and effect of law, rule, or regulation governing the payment of benefits. Should any difference or error occur, the law will take precedence.
Some Important Definitions...

Your relocation benefits can be better understood if you become familiar with the following terms:

**Comparable Replacement**: means a dwelling which is:

(1) Decent, safe, and sanitary. (See definition below)

(2) Functionally equivalent to the displaced dwelling.

(3) Adequate in size to accommodate the family being relocated.

(4) In an area not subject to unreasonable adverse environmental conditions.

(5) In a location generally not less desirable than the location of your displacement dwelling with respect to public utilities and commercial and public facilities, and reasonably accessible to the place of employment.

(6) On land that is typical in size for residential development with typical improvements.

**Decent, Safe and Sanitary (DS&S)**: Replacement housing must be decent, safe, and sanitary...which means it meets all of the minimum requirements established by federal regulations and conforms to applicable housing and occupancy codes. The dwelling shall:

(1) Be structurally sound, weather tight, and in good repair.

(2) Contain a safe electrical wiring system adequate for lighting and other devices.
(3) Contain a heating system capable of sustaining a healthful temperature (of approximately 70 degrees) for a displaced person, except in those areas where local climatic conditions do not require such a system.

(4) Be adequate in size with respect to the number of rooms and area of living space needed to accommodate the displaced person. The Caltrans policy is that there will be no more than 2 persons per room unless the room is of adequate size to accommodate the normal bedroom furnishings for the occupants.

(5) Have a separate, well-lighted and ventilated bathroom that provides privacy to the user and contains a sink, bathtub or shower stall, and a toilet, all in good working order and properly connected to appropriate sources of water and to a sewage drainage system.

Note: In the case of a housekeeping dwelling, there shall be a kitchen area that contains a fully usable sink, properly connected to potable hot and cold water and to a sewage drainage system, and adequate space and utility service connections for a stove and refrigerator.

(6) Contains unobstructed egress to safe, open space at ground level. If the replacement dwelling unit is on the second story or above, with access directly from or through a common corridor, the common corridor must have at least two means of egress.

(7) For a displaced person who is handicapped, be free of any barriers which would preclude reasonable ingress, egress, or use of the dwelling by such displaced person.

Displaced Person or DisPLACEe: Any person who moves from real property or moves personal property from real property as a result of the acquisition of the real property, in whole or in part, or as the result of a written notice from the agency to vacate the real property needed for a transportation project. In the case of a partial acquisition, Caltrans shall determine if a person is displaced as a direct result of the acquisition.

Residents not lawfully present in the United States are not eligible to receive relocation payments and assistance.

Relocation benefits will vary, depending upon the type and length of occupancy. As a residential displacee, you will be classified as either a:
- An owner occupant of a residential property (includes mobile homes)
- A tenant occupant of a residential property (includes mobile homes and sleeping rooms)

**Dwelling:** The place of permanent or customary and usual residence of a person, according to local custom or law, including a single family house; a single family unit in a two-family, multi-family, or multi-purpose property; a unit of a condominium or cooperative housing project; a non-housekeeping unit; a mobile home; or any other residential unit.

**Owner:** A person is considered to have met the requirement to own a dwelling if the person purchases or holds any of the following interests in real property:

1. Fee title, a life estate, a land contract, a 99-year lease, oral lease including any options for extension with at least 50 years to run from the date of acquisition; or

2. An interest in a cooperative housing project which includes the right to occupy a dwelling; or

3. A contract to purchase any interests or estates; or

4. Any other interests, including a partial interest, which in the judgment of the agency warrants consideration as ownership.

**Tenant:** A person who has the temporary use and occupancy of real property owned by another.
Moving Expenses

If you qualify as a displaced person, you are entitled to reimbursement of your moving costs and certain related expenses incurred in moving. The methods of moving and the various types of moving cost payments are explained. Below.

Displaced individuals and families may choose to be paid on the basis of actual, reasonable moving costs and related expenses, or according to a fixed moving cost schedule. However, to ensure your eligibility and prompt payment of moving expenses, you should contact your Relocation Agent before you move.

You Can Choose Either:

Actual Reasonable Moving Costs - You may be paid for your actual reasonable moving costs and related expenses when a commercial mover performs the move. Reimbursement will be limited to a move of 50 miles or less. Related expenses may include:

- Transportation
- Packing and unpacking personal property.
- Disconnecting and reconnecting household appliances.
- Temporary storage of personal property.
- Insurance while property is in storage or transit.

OR

Fixed Moving Cost Schedule - You may be paid on the basis of a fixed moving cost schedule. Under this option, you will not be eligible for reimbursement of related expenses listed above. The fixed schedule is designed to cover such expenses.
Examples (Year 2005 Rate):
4 Rooms - $ 950
7 Rooms - $1,550

If the furniture is moved with the mobile home, the amount of the fixed payment is based on Schedule B.

Examples (Year 200 Rate):
4 Rooms - $1,175
7 Rooms - $1,900

Under the Fixed Move Schedule for a furnished unit (e.g. you are a tenant of an apartment that is furnished by your landlord) is based on Schedule B.

Example (Year 2005 Rate):
1 Room - $400

Under the Fixed Move Schedule, you will not receive any additional payments for temporary storage, lodging, transportation or utility hook-ups.

**Replacement Housing Payments**

The type of Replacement Housing Payment (RHP) depends on whether you are an owner or a tenant, and the length of occupancy in the property being acquired.

If you are a qualified **owner occupant** of more than 180 days prior to the initiation of negotiations for the acquisition of your property, you may be entitled to a RHP that consists of:

- Price Differential, and
- Mortgage Differential, and
- Incidental Expenses;
- OR
- Rent Differential
If you are a qualified **owner occupant** of more than 90 days but less than 180 days, OR you are a qualified **tenant occupant** of at least 90 days, you may be entitled to a RHP as follows:

**Rent Differential**

**OR**

**Downpayment Option**

Length of occupancy simply means counting the number of days that you actually occupied a dwelling before the date of initiation of negotiations by Caltrans for the purchase of the property. The term "initiation of negotiations" means the date Caltrans makes the first personal contact with the owner of real property, or his/ her representative, to give him/her a written offer for the property to be acquired.

*Note: If you have been in occupancy less than 90 days before the initiation of negotiations and the property is subsequently acquired, or if you move onto the property after the initiation of negotiations and you are still in occupancy on the date of acquisition, you may or may not be eligible for a Replacement Housing Payment. Check with your Relocation Agent before you make any decision to vacate your property.*

**For Owner Occupants of 180 Days or More**

If you qualify as a 180-day owner occupant, you may be eligible — in addition to the fair market value of your property — for a Replacement Housing Payment that consists of a Price Differential, Mortgage Differential and/or Incidental Expenses.

The **Price Differential** payment is the amount by which the cost of a replacement dwelling exceeds the acquisition cost of the displacement dwelling. This payment will assist you in purchasing a comparable decent, safe, and sanitary (DS&S) replacement dwelling. Caltrans will compute the maximum payment you may be eligible to receive.

In order to receive the full amount of the calculated price differential, you must spend at least the amount calculated by Caltrans on a replacement property
The **Mortgage Differential** payment will reimburse your for any increased mortgage interest costs you might incur because the interest rate on your new mortgage exceeds the interest rate on the property acquired by Caltrans. The payment computation is complex as it is based on prevailing rates, your existing loan and your new loan. Also, a part of this payment may be prorated such as reimbursement for a portion of your loan origination fees and mortgage points.

To be eligible to receive this payment, the acquired property must have been encumbered by a bona fide mortgage which was a valid lien for at least 180 days prior to the initiation of negotiations.

You may also be reimbursed for any actual and necessary **Incidental Expenses** that you incur in relation to the purchase of your replacement property. These expenses may be those costs for title search, recording fees, credit report, appraisal report, and certain other closing costs associated with the purchase of property. You will not be reimbursed for any recurring costs such as prepaid real estate taxes and property insurance.

If the total amount of your **Replacement Housing Payment** (Price Differential, Mortgage Differential and Incidental Expenses) exceeds $22,500, the payment must be deposited directly into an escrow account or paid directly to the mortgage company.
EXAMPLES OF PRICE DIFFERENTIAL PAYMENT COMPUTATION:

Assume that Caltrans purchases your property for $98,000. After a thorough study of available, decent, safe and sanitary dwellings on the open market, Caltrans determines that a comparable replacement property will cost you $100,000. If your purchase price is $100,000, you will receive $2,000 (see Example A).

If your actual purchase price is more than $100,000, you pay the difference (see Example B). If your purchase price is less than $100,000, the differential payment will be based on actual costs (see Example C).

How much of a differential payment you receive depends on how much you actually spend on a replacement dwelling as shown in these examples:

**Caltrans' Computation**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparable Replacement Property and Mobile Home</td>
<td>$100,000</td>
</tr>
<tr>
<td>Acquisition Price of Your Property and Mobile Home</td>
<td>-$ 98,000</td>
</tr>
<tr>
<td>Maximum Price Differential</td>
<td>$ 2,000</td>
</tr>
</tbody>
</table>

**Example A**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Price of Replacement</td>
<td>$100,000</td>
</tr>
<tr>
<td>Comparable Replacement Property</td>
<td>$100,000</td>
</tr>
<tr>
<td>Acquisition Price of Your Property</td>
<td>-$ 98,000</td>
</tr>
<tr>
<td>Maximum Price Differential</td>
<td>$ 2,000</td>
</tr>
</tbody>
</table>

**Example B**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Price of Replacement</td>
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<tr>
<td>Comparable Replacement Property</td>
<td>$100,000</td>
</tr>
<tr>
<td>Acquisition Price of Your Property</td>
<td>-$ 98,000</td>
</tr>
<tr>
<td>Maximum Price Differential</td>
<td>$ 2,000</td>
</tr>
<tr>
<td>You Must Pay the Additional</td>
<td>$ 5,000</td>
</tr>
</tbody>
</table>

**Example C**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparable Replacement Property</td>
<td>$100,000</td>
</tr>
<tr>
<td>Purchase Price of Replacement</td>
<td>$ 99,000</td>
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<tr>
<td>Acquisition Price of Your Property</td>
<td>-$ 98,000</td>
</tr>
<tr>
<td>Price Differential</td>
<td>$ 1,000</td>
</tr>
</tbody>
</table>

*In Example C you will only receive $1,000 - not the full amount of the Caltrans "Comparable Replacement Property" because of the "Spend to Get" requirements.*
IN ORDER FOR A "180 DAY OWNER OCCUPANT" TO RECEIVE THE FULL AMOUNT OF THEIR REPLACEMENT HOUSING PAYMENT (Price Differential, Mortgage Differential and Incidental Expenses), you must:

A) Purchase and occupy a DS&S replacement dwelling within one year after the later of:

   (1) The date you first receive a notification of an available replacement house, OR

   (2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the closing of escrow on State's acquisition),

AND

B) Spend at least the amount of the Caltrans "Comparable Replacement Property" for a replacement property,

AND

C) File a claim for relocation payments within 18 months of the later:

   (1) The date you vacate the property acquired by Caltrans, OR

   (2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the close of escrow on State's acquisition)

You will not be eligible to receive any relocation payments until the State has actually made the first written offer to purchase the property. Also, you will also receive at least 90 days' written notice before you must move.
For Owner Occupants and Tenants of 90 Days or More

If you qualify as a 90-day occupant (either as an owner or tenant), you may be eligible for a Replacement Housing Payment in the form of a Rent Differential.

The Rent Differential payment is designed to assist you in renting a comparable decent, safe and sanitary replacement dwelling. The payment is based on the difference between the base monthly Rent for the property acquired by Caltrans (including average monthly cost for utilities) and the lesser of:

a) The monthly rent and estimated average monthly cost of utilities for a comparable replacement dwelling as determined by Caltrans, OR

b) The monthly rent and estimated average monthly cost of utilities for the decent, safe and sanitary dwelling that you actually rent as a replacement dwelling.

Utility costs are those expenses you incur for heat, lights, water and sewer - regardless of the source (e.g. electricity, propane, and septic system). It does not include garbage, cable, telephone, or security. The utilities at your property are the average costs over the last 12 months. The utilities at the comparable replacement property are the estimated costs for the last 12 months for the type of dwelling and area used in the calculation.

This difference is multiplied by 42 months and may be paid to you in a lump sum payment or in periodic installments in accordance with policy and regulations.

In order to receive the full amount of the calculated Rent Differential, you must spend at least the amount calculated by Caltrans on a replacement property.

This payment may - with certain limitations - be converted to a Downpayment Option to assist you in purchasing a replacement property.
Example of Rent Differential Payment Computation:

After a thorough study of comparable, decent, safe and sanitary dwellings that are available for rent, Caltrans determines that a comparable replacement property will rent for $325.00 per month.

**Caltrans Computation (rates are per month)**

- Rental Rate for Comparable Replacement Property $325
- PLUS average estimated utilities costs + 100
- TOTAL Cost to Rent Comparable Replacement Property = $425

- Rental Rate for Your Current Property $300
- PLUS average utilities costs + 90
- TOTAL Cost to Rent Current Property = $390

Comparative Replacement Property including utilities $425
Cost you pay to rent your property including utilities + 390
Difference = $35

Multiplied by 42 months = $1,470 Rent Differential

**Example A:**

- Rental Rate for a Replacement Property including
  - Estimated average utilities costs $525
- Comparable Replacement Property including utilities $425
- Cost you pay to rent your property including utilities $390

Since $425 is less than $525, the Rent Differential is based on the difference between $390 and $425.

Rent Differential ($35 x 42 months = $1,470)

*In this case you spent “at least” the amount of the Comparable Replacement Property on the replacement property and will receive the full amount.*

**Example B:**

- Rental Rate for a Replacement Property including
  - Estimated average utilities costs $400
- Comparable Replacement Property including utilities $425
- Cost you pay to rent your property including utilities $390
Since $400 is less than $525, the Rent Differential is based on the difference between $400 and $390.

Rent Differential ($10 x 42 months = $420)

In this case you spent “less than” the amount of the Comparable Replacement Property on the replacement property and will not receive the full amount.

IN ORDER FOR A "90 DAY OWNER OCCUPANT" TO RECEIVE THE FULL AMOUNT OF THEIR REPLACEMENT HOUSING PAYMENT (Rent Differential), you must:

A) Rent and occupy a DS&S replacement dwelling within one year after the later of:

   (1) The date you first receive a notification of an available replacement house, OR

   (2) The day you vacate the property acquired by Caltrans.

AND

B) Spend at least the amount of the Caltrans "Comparable Replacement Property" to rent a replacement property,

AND

C) File a claim for relocation payments within 18 months of the later of:

   (1) The date you vacate the property acquired by Caltrans, OR

   (2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the close of escrow on State’s acquisition)

You will not be eligible to receive any relocation payments until the State has actually made the first written offer to purchase the property. And, you will also receive at least 90 days' written notice before you must move.

Note1: The time periods for a 90-day owner occupant are different than a 180-day owner occupant.
Note 2: If the Rent Differential is converted to a Downpayment Option, there is no "spend-to-get" requirement.

DOWN PAYMENT OPTION

The Rent Differential payment may - with certain limitations - be converted to a Down Payment Option to assist you in purchasing a replacement property. The down payment option is a direct conversion of the Rent Differential payment.

If the Caltrans calculated Rent Differential is between $0 and $5,250, your down payment option will be $5,250, which can be used towards the purchase of a replacement decent, safe and sanitary dwelling.

If the Rent Differential is over $5,250, you may be able to convert the entire amount of the Rent Differential to a downpayment option.

The down payment option must be used for the acquisition of the replacement dwelling, plus any eligible incidental expenses (see “180-day Owner Occupants Incidental Expenses”) related to the purchase of the property. You must work closely with your Relocation Agent to ensure you can utilize the full amount of your down payment option towards the purchase.

If any portion of the Rent Differential was used prior to the decision to convert to a down payment option, those advance payments will be deducted from the entire benefit.

LAST RESORT HOUSING

On most projects, an adequate supply of housing will be available for sale and for rent, and the benefits provided will be sufficient to enable you to relocate to comparable housing. However, there may be projects in certain locations where the supply of available housing is insufficient to provide the necessary housing for those persons being displaced. In such cases, Caltrans will utilize a method called Last Resort Housing. Last Resort Housing allows Caltrans to construct, rehabilitate or modify housing in order to meet the needs of the people displaced from a project. Caltrans can also pay above the statutory limits of $5,250 and $22,500 in order to make available housing affordable.
Relocation Advisory Assistance

Any individual, family, business or farm displaced by Caltrans shall be offered relocation advisory assistance for the purpose of locating a replacement property. Relocation services are provided by qualified personnel employed by Caltrans. It is their goal and desire to be of service to you and assist in any way possible to help you successfully relocate.

A Relocation Agent from Caltrans will contact you personally. Relocation services and payments will be explained to you in accordance with your eligibility. During the initial interview with you, your housing needs and desires will be determined as well as your need for assistance. You cannot be required to move unless at least one comparable replacement dwelling is made available to you.

You can expect to receive the following services, advice and assistance from your Relocation Agent who will:

- Explain the relocation benefits and eligibility requirements.
- Provide the amount of the replacement housing payments in writing.
- Assure the availability of a comparable property before you move.
- Inspect possible replacement residential units for DS&S compliance.
- Provide information on counseling you can obtain to help minimize hardships in adjusting to your new location.
- Assist you in completing loan documents, rental applications or Relocation Claims Forms.
AND provide information on:

- Security deposits
- Interest rates and terms
- Typical down payments
- VA and FHA loan requirements
- Real property taxes.
- Consumer education literature on housing

If you desire, your Relocation Agent will give you current listings of other available replacement housing. Transportation will be provided to inspect available housing, especially if you are elderly or handicapped. Though you may use the services of a real estate broker, Caltrans cannot provide a referral.

Your Relocation Agent is familiar with the services provided by others in your community and will provide information on other federal, state, and local housing programs offering assistance to displaced persons. If you have special problems, your Relocation Agent will make every effort to secure the services of those agencies with trained personnel who have the expertise to help you.

If the highway project will require a considerable number of people to be relocated, Caltrans will establish a temporary Relocation Field Office on or near the project. Project relocation offices will be open during convenient hours and evening hours if necessary.

In addition to these services, Caltrans is required to coordinate its relocation activities with other agencies causing displacements to ensure that all persons displaced receive fair and consistent relocation benefits.
Remember - YOUR RELOCATION AGENT is there to offer advice and assistance. Do not hesitate to ask questions. And be sure you fully understand all of your rights and available benefits.

YOUR RIGHTS AS A DISPLACEE

All eligible displacees have a freedom of choice in the selection of replacement housing, and Caltrans will not require any displaced person to accept a replacement dwelling provided by Caltrans. If you decide not to accept the replacement housing offered by Caltrans, you may secure a replacement dwelling of your choice, providing it meets DS&S housing standards. Caltrans will not pay more than your calculated benefits on any replacement property.

The most important thing to remember is that the replacement dwelling you select must meet the basic "decent, safe, and sanitary" standards. Do not execute a purchase agreement or a rental agreement until a representative from Caltrans has inspected and certified in writing that the dwelling you propose to occupy meets the basic standards. DO NOT jeopardize your right to receive a replacement housing payment by moving into a substandard dwelling.

It is important to remember that your relocation benefits will not have an adverse affect on your:

- Social Security Eligibility
- Welfare Eligibility
- Income Taxes
In addition, the Title VIII of the Civil Rights Act of 1968 and later acts and amendments make discriminatory practices in the purchase and rental of most residential units illegal if based on race, color, religion, sex, or national origin.

Whenever possible, minority persons shall be given reasonable opportunities to relocate to decent, safe, and sanitary replacement dwellings, not located in an area of minority concentration, and that is within their financial means. This policy, however, does not require Caltrans to provide a person a larger payment than is necessary to enable a person to relocate to a comparable replacement dwelling.

Caltrans' Non-Discrimination Policy ensures that all services and/or benefits will be administered to the general public without regard to race, color, national origin, or sex in compliance with Title VI of the 1964 Civil Rights Act (42 USC 2000d. et seq.).

And you always have the Right to Appeal any decision by Caltrans regarding your relocation benefits and eligibility.

Your Right of Appeal is guaranteed in the "Uniform Act" which states that any person may file an appeal with the head of the responsible agency if that person believes that the agency has failed to properly determine the person's eligibility or the amount of a payment authorized by the Act.

If you indicate your dissatisfaction, either verbally or in writing, Caltrans will assist you in filing an appeal and explain the procedures to be followed. You will be given a prompt and full opportunity to be heard. You have the right to be represented by legal counsel or other representative in connection with the appeal (but solely at your own expense).

Caltrans will consider all pertinent justifications and materials submitted by you and other available information needed to ensure a fair review. Caltrans will provide you with a written determination resulting from the appeal with an explanation of the basis for the decision. If you are still dissatisfied with the relief granted, Caltrans will advise you that you may seek judicial review.
Sus Derechos y Beneficios Como Una Persona Desplazada Bajo el Programa Uniforme De Asistencia Para Reubicación (Residencial)

Introducción

En la construcción de un sistema moderno de transportación, el desplazamiento de un pequeño porcentaje de la población es a menudo necesario. Sin embargo, la política de Caltrans es que las personas desalojadas no tengan que sufrir innecesariamente como resultado de los programas diseñados para el beneficio del público en general.

Los individuos y familias desplazadas pueden ser elegibles para recibir servicios de asesoramiento y pagos de reubicación.

Este folleto provee información acerca de los servicios y pagos de reubicación disponibles. Si usted es requerido a mudarse como resultado de un proyecto de transportación, un Agente de Reubicación se comunicará con usted. El Agente de Reubicación le contestará preguntas específicas y le proveerá información adicional.

Ley de Procedimiento Uniforme de Asistencia para Reubicación y Adquisición de Bienes Raíces de 1970, Enmendada “La Ley Uniforme”

El propósito de esta Ley es proveer tratamiento igual y uniforme para las personas que son desplazadas de sus hogares, negocios, u operaciones agrícolas por programas federales o programas que son asistidos con fondos federales y para establecer uniformidad e igualdad en la política de adquisición de tierras por programas federales y programas asistidos con fondos federales.

La ley trata de asegurar que las personas desplazadas directamente como resultado de proyectos federales o proyectos asistidos con fondos federales sean tratados con igualdad, consistencia y equidad para que esas personas no sufran
daños desproporcionados como resultado de proyectos designados para el beneficio del público en general.

Aunque se ha hecho un esfuerzo para asegurar la precisión de este folleto, debe de ser entendido que no tiene la fuerza o efectos de la ley, regla, o regulación que gobierna el pago de los beneficios. Si hay diferencias o error, la ley tomará precedencia.

Algunas Definiciones Importantes...

Sus beneficios de reubicación pueden ser entendidos mejor si usted entiende los siguientes términos:

**Vivienda de Restitución comparable:** significa una propiedad que es:

1. Decente, segura y sanitaria. (Vea la definición abajo.)
2. Equivalente funcionalmente a la propiedad desplazada.
3. Adecuada en tamaño para acomodar a la familia que está siendo reubicada.
4. En un área que no esté sujeta a condiciones irrazonablemente adversas.
5. En una localidad generalmente no menos deseable que la localidad de su propiedad desplazada con respecto a servicios públicos, y acceso razonable al lugar de empleo.
6. En una parcela de tamaño típico para el desarrollo de una residencia de tamaño normal.

**Decente, Segura y Sanitaria (DS&S):** La vivienda de restitución debe de ser decente, segura y sanitaria … que significa que llena todos los requisitos mínimos establecidos por las regulaciones federales y conforme a los códigos de ocupación de viviendas aplicables. La propiedad será:

1. Buena estructuralmente, cerrada a las condiciones climáticas y en buen estado de reparación.
2. Contiene un sistema eléctrico adecuado para iluminación y otros aparatos.
3. Contiene un sistema de calefacción capaz de mantener una temperatura saludable (de aproximadamente 70 grados) para la persona desplazada,
con excepción en aquellas áreas donde las condiciones climáticas no requieren dicho sistema.

(4) Debe de ser adecuada en tamaño con respecto al número de cuartos y áreas para vivir necesarias para acomodar a las personas desplazadas. Es política de Caltrans que más de dos personas no deben de estar en un solo cuarto, a menos que que el tamaño del cuarto sea suficientemente adecuado para acomodar los muebles de dormitorios necesarios de los ocupantes.

(5) Tener un baño separado, bien iluminado y ventilado que sea privado a los usuarios y que contenga un lavamanos, una tina o regadera, y un excusado, todos en buenas condiciones y apropiadamente conectados a los sistemas de aguas negras y aguas potables.

Nota: En el caso de una propiedad residencial, debe de haber una área de cocina que contenga un lavatruastos usable, propiamente conectado a agua caliente y agua fría, y al sistema de drenaje, y con espacio adecuado para utilizar los servicios y conexiones para una estufa y un refrigerador.

(6) Que contenga salidas sin obstrucción y seguros espacio abierto al nivel del suelo. Si la propiedad de restitución está en el segundo piso o más arriba, que tenga acceso directamente desde o a través de un corredor, y que éste corredor común debe de tener al menos dos salidas.

(7) Si la persona desplazada es incapacitada físicamente, debe de ser libre de cualquier barrera que le impidan la entrada o salida, o uso razonable de la propiedad por dicha persona incapacitada.

Persona Desplazada: Cualquier individuo o familia que se mueva de una propiedad o mueva sus bienes personales de una propiedad como resultado de la adquisición de bienes raíces, en todo o en parte, o como resultado de una notificación escrita de una agencia pidiéndole que desocupe la propiedad que se necesita para un proyecto de transportación. En el caso de una adquisición parcial, Caltrans debe de determinar si la persona es desplazada directamente como resultado de esta adquisición.

Los residentes que no están legalmente en los Estados Unidos no son elegibles para recibir pagos y asistencia de reubicación.
Los beneficios de reubicación van a variar dependiendo del tipo y tiempo de ocupación. Como una persona desplazada de una unidad residencial usted puede ser clasificado como:

- Un dueño ocupante de una propiedad residencial (incluyendo casas movibles)
- Un inquilino ocupante de una propiedad residencial (incluyendo casas movibles y cuartos para dormir)

**Vivienda:** El lugar de permanencia o residencia regular y usual de una persona, de acuerdo a las costumbres locales o la ley, incluyendo una unidad familiar, una unidad familiar en un complejo doble o multi-familiar, o una propiedad de uso múltiple, una unidad de condominio o proyecto de vivienda en cooperativa, una unidad libre de mantenimiento doméstico, una casa movible, o cualquier otra unidad residencial.

**Dueño:** Una persona es considerada que llena los requisitos de dueño de una casa, si esta persona compra, tiene título o tiene algunos de los siguientes intereses en una propiedad:

1. Una escritura de propiedad, un interés de por vida en una propiedad, un contrato de renta por 99 años, un contrato oral de renta incluyendo una opción para extensión con al menos 50 años que queden después de la fecha de adquisición; o
2. El interés en un proyecto de vivienda en cooperativa que incluya el derecho de ocupar una vivienda; o
3. Un contrato de compra de interés, o bienes raíces.
4. Algún otro interés, incluyendo intereses parciales, qua a juicio de la agencia garanticen los pagos como dueño.

**Inquilino:** Una persona que tiene el uso y la ocupación temporal de una propiedad de la que otro es dueño.
Gastos de Mudanza

Si usted califica como persona desplazada, usted tiene derecho a reembolso de sus gastos de mudanza y a ciertos gastos relacionados incurridos durante el traslado. Los métodos de traslado y los distintos tipos de pagos para gastos de mudanza son explicados abajo.

Los individuos y familias desplazadas pueden escoger un pago basado en los gastos reales, razonables y los gastos relacionados, o de acuerdo a una lista de costos fijos de mudanza. Sin embargo, para asegurar su elegibilidad y el pago rápido de sus gastos de mudanza, usted debe de ponerse en contacto con su Agente de Rubicación antes de mudarse.

Usted Puede Elegir Entre:

Los Gastos Razonables de Mudanza – A usted se le puede pagar por los gastos razonables de mudanza y gastos relacionados cuando una compañía comercial de mudanza hace la mudanza. Los reembolsos deberán ser limitados a una mudanza de 50 millas o menos. Los gastos relacionados pueden incluir:

- Transportación.
- Empaque y desempaque de propiedades personales.
- Desconexión y reconexión de aparatos eléctricos.
- Almacenaje temporal de propiedades personales.
- Seguros cuando la propiedad está almacenada o en tránsito.

Ó

Lista de Costos Fijos de Mudanza – A usted se le puede pagar basado en una lista de costos fijos de mudanza. Bajo esta opción, usted no puede ser elegible para reembolsos de gastos relacionados incluidos en la lista de arriba. Esta lista de gastos fijos está designada a cubrir todos esos gastos.

Por ejemplo (Tarifa para el año 2001)

- 4 Cuartos - $ 950
- 7 Cuartos - $1,550
Los costos fijos de mudanza para una unidad amueblada (ejemplo, usted es inquilino en un apartamento donde los muebles pertenecen al dueño de la vivienda) están basados en la Tabla de Honorarios B.

Ejemplos (Taza en el año 2001):
   4 Cuartos - $475
   7 Cuartos - $625

Bajo la lista de Pago Fijos de Mudanza, usted no puede recibir ningún pago adicional por almacenamiento temporario, vivienda temporaria, transportación o conexiones de servicios públicos.
Pagos Para Vivienda de Restitución

El tipo de Pago Para Vivienda de Restitución (RHP) depende de si usted es dueño o un inquilino, y en el tiempo de ocupación que tiene de la propiedad que será adquirida.

Si usted es calificado como dueño ocupante de más de 180 días antes de la iniciación de negociaciones para la adquisición de su propiedad, usted puede tener derecho a recibir RHP que consiste en:

Diferencia de Precio, y

Diferencia para Hipoteca, y

Gastos Incidentales

O

Diferencia Para Rentar

Si usted es calificado como dueño ocupante de más de 90 días, pero menos de 180 días, O si usted es calificado como inquilino ocupante de al menos 90 días, usted puede tener derecho a recibir RHP así:

Diferencia Para Rentar

U

Opción para Enganche

Tiempo de ocupación simplemente significa contar el número de días que usted actualmente ocupó la vivienda antes de la fecha de iniciación de negociaciones por Caltrans para la compra de la propiedad. El término “iniciación de negociaciones” significa la fecha que Caltrans hizo el primer contacto personal con el dueño de bienes raíces, o su representante, para darle a el/ella una oferta escrita para la adquisición de la propiedad.

Nota: Si usted ocupó una vivienda por menos de 90 días antes de la iniciación de negociaciones y la propiedad es posteriormente adquirida, o si usted se mudó a la propiedad después de la iniciación de negociaciones y usted todavía...
ocupaba la propiedad a la fecha de adquisición, usted puede ser elegible para un Pago para Restitución de Vivienda, basado en una guía de elegibilidad establecida. Consulte con su Agente de Reubicación antes de que haga cualquier decisión de mudarse de su propiedad.

Para Ocupantes de 180 Días o Más

Si usted califica como dueño ocupante de 180 días, puede ser elegible – además del valor equitativo en el mercado de su propiedad – para un Pago de Restitución de Vivienda que consiste en un pago de Diferencia de Precio y/o Gastos Incidentales.

El Pago de Diferencia de Precio es la cantidad por la que el costo de una vivienda de restitución excede el costo de adquisición de la vivienda desplazada. Este pago le asistirá en la compra de una vivienda decente, segura, y sanitaria (DS&S). Caltrans computará el pago máximo que usted puede ser elegible para recibir. (Vea un ejemplo en la página 15.)

Para recibir la cantidad total de la diferencia de precio calculadas, usted debe de gastar al menos la cantidad calculada por Caltrans en la propiedad de restitución.

El pago de Diferencia de Hipoteca le será reembolsado por cualquier aumento del costo de interés en la hipoteca que usted haya incurrido porque la tasa de interés en su nueva hipoteca excede la taza de interés de la propiedad adquirida por Caltrans. La computación del pago es complicada ya que está basada en las tasas típicas entre su préstamo anterior y su préstamo nuevo. También, una parte de los pagos pueden ser prorrateado como reembolso por una porción de los honorarios de su préstamo y los puntos (intereses) de la hipoteca.

Para ser elegible para recibir este pago, la propiedad adquirida debe de ser hipotecada con una hipoteca de buena fé, la cual fue un crédito válido de por lo menos 180 días antes de la iniciación de negociaciones.

Usted también puede ser reembolsado por cualquier Gasto Incidental actual y necesario que usted incurra en relación con la compra de su propiedad de restitución. Estos gastos pueden ser los costos por búsqueda de título, honorarios de copia en el Registro, reporte de crédito, reporte de evaluación, y ciertos otros gastos de cierre de escritura. Usted no puede ser reembolsado por ningún gasto frecuente como pre-pagos de impuesto de bienes raíces y seguro de propiedad.
Si la cantidad total de su **Pago de Vivienda de Restitución** (Diferencia de Precio, Diferencia Para Hipoteca y Gastos Incidentales) excede $22,500, el pago debe de ser depositado directamente en una cuenta fiduciaria o ser pagado directamente a la compañía financiera.

**EJEMPLO DE COMO SE CALCULA LA DIFERENCIA DE PAGO:**

Suponga que Caltrans compra su propiedad por $98,000. Después de un estudio completo de viviendas disponibles en el mercado, que sean decentes, seguras y sanitarias, Caltrans determina que la propiedad de restitución comparable en el mercado abierto le costará $100,000. Si su precio de compra es $100,000 usted recibirá $2,000 (*Vea el Ejemplo A*)

Si su precio de compra es de más de $100,000, usted paga la diferencia (*vea el Ejemplo B*). Si su precio de compra es menor de $100,000, el pago se basará en los costos actuales (*vea el Ejemplo C*).

La cantidad que usted recibe en un pago diferencial dependerá de cuanto usted realmente gasta en una vivienda de restitución, como se muestra en estos ejemplos.

**Computación de Caltrans**

| Precio Comparable de la Propiedad de Restitución | $100,000 |
| Precio de Adquisición de su Propiedad            | – $ 98,000 |
| Diferencia Máxima de Precio                      | $ 2,000 |

**Ejemplo A**

| Precio de Compra de Restitución                  | $100,000 |
| Propiedad Comparable de Restitución              | $100,000 |
| Precio de Adquisición de su Propiedad            | – $ 98,000 |
| Diferencia Máxima de Precio                      | $ 2,000 |
Ejemplo B

Precio de Compra de Restitución $105,000  
Propiedad Comparable de Restitución $100,000  
Precio de Adquisición de su Propiedad $  98,000  
Diferencia Máxima de Precio $  2,000  
Usted Debe de Pagar el Precio Adicional de $  5,000

Ejemplo C

Propiedad Comparable de Restitución $100,000  
Precio de Compra de Restitución $  99,000  
Precio de Adquisición de su Propiedad $  98,000  
Diferencia de Precio $  1,000

En el ejemplo C usted solo recibirá $1,000 – no la cantidad completa de “La propiedad Comparable de Restitución” por los requisitos de “Gastar para Obtener” de Caltrans.

PARA QUE UN “DUENO OCUPANTE DE 180 DÍAS” RECIBA LA CANTIDAD TOTAL DE SUS BENEFICIOS DE PAGOS PARA VIVIENDA (Diferencia de Precio, Diferencia de Hipoteca y Gastos Incidentales), usted debe:

A) Comprar y ocupar una vivienda de restitución que sea DS&S dentro de al menos un año desde la fecha más tarde de:

(1) La fecha en que recibió la primera notificación de una casa de restitución, O

(2) La fecha que Caltrans pagó los costos de adquisición de su vivienda actual (usualmente los gastos de cierre de escritura en la adquisición del Estado.)

Y

B) Haber gastado al menos la cantidad que Caltrans estableció para “La Propiedad Comparable de Restitución” para la propiedad de restitución.

Y
C) Reportar un reclamo para pago para reubicación dentro de los 18 meses de la fecha más tarde de:

(1) La fecha en que se mudó de la propiedad adquirida por Caltrans, O

(2) La fecha en que Caltrans le pagó los costos de adquisición de su vivienda actual (usualmente al cierre de escritura en la adquisición del Estado.)

Usted no será elegible para recibir ningún pago de reubicación hasta que el Estado haya hecho la primera oferta por escrito de la compra de la propiedad. Usted también recibirá una notificación escrita por lo menos 90 días antes de tener que mudarse.

Para Dueños Ocupantes e Inquilinos de 90 Días o Más

Si usted califica como un ocupante (ya sea como dueño o inquilino) de 90 días, usted puede ser elegible para un Pago de Vivienda de Restitución en la forma de Diferencia para Rentar.

El pago de la Diferencia para Rentar es designado para asistirle en la renta de una vivienda comparable que sea decente, segura y sanitaria. El pago será basado en la diferencia entre la renta básica mensual por la propiedad adquirida por Caltrans (incluyendo el promedio del costo mensual de servicios públicos) y el menor de:

a) La renta mensual y el promedio del costo mensual estimado de los servicios públicos para una vivienda comparable de restitución determinada por Caltrans, O

b) La renta mensual y el promedio del costo mensual estimado de los servicios públicos para una vivienda decente, segura y sanitaria que usted rente como vivienda de restitución.

Gastos de servicios públicos son esos gastos que usted incurre por calefacción, luz, agua, aguas negras y basura – sin importar quien los provea (ejemplo, electricidad, gas propano, y sistema séptico.) No incluye cable de televisión, teléfono, o seguridad. Los servicios públicos en su propiedad de restitución será el estimado del promedio de costos por los 3 últimos meses para el tipo de vivienda y área usados en los cálculos.
Esta diferencia es multiplicada por 42 meses y le puede ser pagado en una sola suma o en pagos periódicos de acuerdo con la política y regulaciones. (Vea un ejemplo en la página 21.)

Para recibir la cantidad calculada total de la diferencia para rentar, usted debe gastar al menos la cantidad calculada por Caltrans en la propiedad de restitución.

Este pago puede – con ciertas limitaciones – ser convertido en una Opción para Enganche para asistirle en la compra de una propiedad de restitución (Vea la página 25 para una explicación completa.)

**EJEMPLO DE LA COMPUTACIÓN DEL PAGO DE LA DIFERENCIA PARA RENTAR:**

Después de hacer un estudio completo de viviendas comparables, decentes, seguras y sanitarias que estén disponibles para rentar, Caltrans determina que una propiedad comparable de restitución podría ser rentada por $325 al mes.

**Computación de Caltrans**

<table>
<thead>
<tr>
<th>Descripción</th>
<th>Monto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renta por una Propiedad Comparable de Restitución</td>
<td>$ 325 al mes</td>
</tr>
<tr>
<td>MÁS: estimado de costos de servicios públicos</td>
<td>100 al mes</td>
</tr>
<tr>
<td>TOTAL Costo de renta por una Propiedad Comparable de Restitución</td>
<td>$ 425 al mes</td>
</tr>
<tr>
<td>Renta por su Propiedad Actual</td>
<td>$ 300 al mes</td>
</tr>
<tr>
<td>MÁS: costos de servicios públicos</td>
<td>90 al mes</td>
</tr>
<tr>
<td>TOTAL Costo para pagar la renta de su propiedad actual</td>
<td>$ 390 al mes</td>
</tr>
<tr>
<td>Propiedad Comparable de Restitución incluyendo servicios públicos</td>
<td>$ 425 al mes</td>
</tr>
<tr>
<td>Costo para pagar la renta de su propiedad incluyendo servicios públicos</td>
<td>390 al mes</td>
</tr>
<tr>
<td>Diferencia</td>
<td>$ 35 al mes</td>
</tr>
</tbody>
</table>

Multiplicado por 42 meses = $1,470 Diferencia para Rentar
Ejemplo A:
Rentas para una Propiedad de Restitución, incluyendo los costos estimados de servicios públicos $ 525 al mes
Propiedad Comparable de Restitución incluyendo servicios públicos $ 425 al mes
Costos de pago de la renta de su propiedad incluyendo servicios públicos $ 390 al mes

Ya que $425 es menos que $525, la diferencia para rentar está basada en la diferencia entre $390 y $425.

Diferencia para Rentar ($35 x 42 meses = $1,470)

En este caso usted gasta “al menos” la cantidad de la Propiedad de Restitución Comparable en la propiedad de restitución y así recibirá la cantidad total.

Ejemplo B:
Rentas por una Propiedad de Restitución, incluyendo los costos estimados de servicios públicos $ 400 al mes
Propiedad Comparable de Restitución incluyendo servicios públicos $ 425 al mes
Costos de pago de la renta de su propiedad incluyendo servicios públicos $ 390 al mes

Ya que $400 es menos que $525, la diferencia para rentar está basada en la diferencia entre $400 y $390.

Diferencia para Rentar ($10 x 42 meses = $420)

En este caso usted va a gastar “menos que” la cantidad de Propiedad de Restitución Comparable en la restitución de la vivienda y usted no recibirá la cantidad total.

PARA QUE UN “DUENO OCUPANTE DE 90 DÍAS” RECIBA LA CANTIDAD TOTAL DE PAGO PARA SU VIVIENDA DE RESTITUCION (Diferencia para Rentar), usted debe de:

A) Rentar y ocupar una vivienda de restitución DS&S dentro de un año después de la última fecha de:
(1) La fecha en que usted recibió la primera notificación de una casa de 
restitución disponible.

(2) El día en que usted su mudó de la propiedad adquirida por Caltrans.

Y

B) Gastar al menos la cantidad de la “Propiedad Comparable de Restitución” de 
Caltrans para rentar una vivienda de restitución.

Y

C) Reportar un reclamo para pagos de reubicación dentro de los 18 meses de la 
fecha más tarde:

(1) La fecha en que usted se mudó de la propiedad adquirida por Caltrans, 

O

(2) La fecha en que Caltrans le pagó los costos de adquisición de su 
propiedad actual (usualmente al cierre de escritura de la adquisición del 
Estado.)

Usted no será elegible para recibir ningún pago de reubicación hasta que haya 
hecho la primera oferta escrita para comprar la propiedad. Además, usted 
recibirá al menos una noticia por escrito 90 días antes de tener que mudarse.
OPCIÓN PARA ENGANCHE

El pago de Diferencia para Rentar puede – con ciertas limitaciones – ser convertido en una **Opción para Enganche** para asistirle en la compra de una propiedad de restitución. La Opción para Enganche es una conversión directa del pago de la diferencia para rentar.

Si la diferencia para rentar es calculada entre $0 y $5,250, su Opción Para Enganche será de $5,250 la cual puede ser usada para la compra de una vivienda de restitución decente, segura y sanitaria.

Si la diferencia para rentar es más de $5,250 usted podrá convertir la cantidad completa de diferencia para rentar a una Opción Para Enganche.

La Opción Para Enganche debe de ser usada para el enganche requerido, la cual usualmente es un porcentaje del precio total de compra, más cualquier gasto incidental elegible (vea la página 14, “Gastos Incidentales para Dueños Ocupantes de 180 días”) relacionado con la compra de la propiedad. Usted debe trabajar junto con su Agente de Reubicación para asegurarse de que puede utilizar la cantidad total de su Opción Para Enganche en su compra.

Si alguna porción de la diferencia para rentar fue usada antes de su decisión de convertirla a una Opción Para Enganche, los pagos avanzados serán deducidos de los beneficios completos.
CASA DEL ÚLTIMO RECURSO

En la mayoría de los proyectos de Caltrans, existe una cantidad adecuada de viviendas de venta y alquiler, y los beneficios serán suficientes para que usted pueda reubicarse a una vivienda comparable. Sin embargo, en ciertas localidades pueden haber proyectos donde el número de viviendas disponibles no son suficientes para proveer viviendas a todas las personas desplazadas. En estos casos, Caltrans utiliza un método llamado Casa del Último Recurso. La Casa del Último Recurso permite a Caltrans construir, rehabilitar, o modificar viviendas para cumplir con las necesidades de las personas desplazadas por un proyecto. Caltrans puede también pagar arriba de los límites legales de $5,250 y $22,500 para hacer posible viviendas con precios razonables.

Asistencia de Consulta Para Reubicación

A cualquier individuo, familia, negocio u operación agrícola desplazada por Caltrans deberá ofrecérselle servicios de asistencia con el propósito de localizar una propiedad de restitución. Los servicios de reubicación son proveídos por empleados calificados de Caltrans. Es la meta de ellos y el deseo de estos empleados de servirle y asistirle de cualquier manera posible para ayudarle a reubicarse exitosamente.

Un Agente de Reubicación de Caltrans se pondrá en contacto con usted personalmente. Los servicios de reubicación y pagos se le explicarán de acuerdo con su elegibilidad. Durante la entrevista inicial, sus necesidades de vivienda y deseos se determinarán así como sus necesidades de asistencia. No se le puede pedir que se mude a menos que una vivienda comparable de restitución le sea disponible.

Usted puede esperar recibir los siguientes servicios, consejos y asistencia de su Agente de Reubicación quien le:

• Explicará los beneficios de reubicación y los requerimientos de elegibilidad.
• Proveerá por escrito la cantidad de pago por su vivienda de restitución.
• Asegurará la disposición de una propiedad comparable antes de que se mude.
• Inspeccionará las posibles unidades residenciales de restitución para el cumplimiento de DS&S.
• Proveerá información y aconsejará como puede obtener ayuda para minimizar las adversidades en ajustarse a su nueva localidad.

• Ayudará en completar los documentos de préstamos, aplicaciones de rentas o las Formas de Reclamo para Reubicación.

Y proveerle información de:

• Seguro de Depósitos
• Taza de intereses y términos
• Pagos típicos de enganches
• Requisitos de préstamos de la Administración de Veteranos (VA) y la Administración de Vivienda Federal (FHA)
• Impuestos sobre bienes raíces
• Literatura de educación en viviendas para el consumidor

Si usted lo desea, el Agente de Reubicación le dará una lista actual de otras viviendas de restitución disponibles.

Se proveerá transportación para inspeccionar viviendas disponibles, especialmente si usted es mayor de edad o con impedimento físico. Aunque usted puede utilizar los servicios de un agente de bienes raíces, Caltrans no lo podrá referir.

Su Agente de Reubicación está familiarizado con los servicios proveídos por otras agencias de su comunidad y le proveerá información de otros programas de viviendas federales, estatales y locales que ofrecen programas de asistencia para personas desplazadas. Si usted tiene algún problema especial, su Agente de Reubicación hará su mejor esfuerzo para asegurarle los servicios de esas agencias con personal capacitado y con experiencia que le ayudarán.

Si el proyecto de transportación requiere un número considerable de personas que sean reubicados, Caltrans establecerá una Oficina Temporal de Reubicación en, o cerca del proyecto. Las oficinas de proyectos de reubicación deberán de abrirse durante horas convenientes y en horas tempranas de la noche, si es necesario.
Además de estos servicios, Caltrans es requerido que coordine las actividades de otras agencias que causen desplazamientos para asegurar que todas esas personas desplazadas reciban beneficios de reubicación equitativos y consistentes.

Recuerde – SU AGENTE DE REUBICACIÓN está para aconsejarle y asistirle. No vacile en hacer preguntas, y asegúrese de que entiende completamente sus derechos y beneficios de reubicación disponibles.
SUS DERECHOS COMO UNA PERSONA DESPLAZADA

Todas las personas elegibles como personas desplazadas tienen la libertad de escoger dentro de la selección de viviendas de restitución, y Caltrans no requerirá a ninguna persona que sea desplazada que acepte una vivienda de restitución proveída por Caltrans. Si usted decide no aceptar la vivienda de restitución ofrecida por Caltrans, usted puede elegir una vivienda de restitución de su propia selección, mientras que cumple con los requisitos de DS&S. Caltrans no pagará más que los beneficios calculados por una vivienda de restitución.

Lo más importante que usted debe de recordar es que la vivienda de restitución que usted seleccione debe de llenar los requisitos básicos de “decente, segura y sanitaria”. No ejecute los documentos de compra o el contrato de renta hasta que un representante de Caltrans haya inspeccionado y certificado por escrito que la vivienda que usted se propone ocupar cumple con los requisitos básicos. NO ARRIESGUE su derecho de recibir los pagos de vivienda de restitución por mudarse a una vivienda que no sea “decente, segura y sanitaria.”

Es importante recordar que sus beneficios de reubicación no van a tener ningún efecto adverso en su:

- Elegibilidad para Seguro Social
- Elegibilidad para Asistencia Social
- Impuestos sobre ingresos

Además, el Título VIII de los Derechos Civiles, Ley de 1968 y luego otras leyes y enmiendas hacen descriminatoria la práctica de compra y renta de unidades de vivienda si es basada ilegalmente en la raza, color, religión, sexo u origen nacional.

Cuando sea posible, a personas de minorías se les debe de dar oportunidades razonables para reubicarse a viviendas de restitución que sean decentes, seguras y sanitarias, no localizadas en áreas de concentración de minorías, y que estén dentro de sus recursos económicos. Esta política, sin embargo, no requiere que Caltrans provea a una persona pagos más grandes de lo que sean necesarios para permitir que la persona sea reubicada a una vivienda de restitución comparable.
La política No-Discriminatoria de Caltrans asegura que todos los servicios y/o los beneficios deben de ser administrados al público en general sin importar la raza, color, origen nacional, o sexo en cumplimiento con el Título VI de la Ley de Derechos Civiles de 1964 (42 USC 2000 d. et seq.)

Usted siempre tendrá el Derecho de Apelar cualquier decisión hecha por Caltrans relacionada a los beneficios de reubicación y elegibilidad.

Su Derecho de Apelar está garantizado en la “Ley Uniforme” la cual establece que una persona puede apelar al jefe de la agencia responsable, si ella cree que la agencia ha fallado en determinar correctamente su elegibilidad, o la cifra del pago autorizado por la Ley.

Si usted indica su disatisfacción, ya sea verbalmente o por escrito, Caltrans le asistirá en hacer su demanda de apelación y le explicará el procedimiento que debe de seguir. Usted tiene derecho de ser representado por un asesor legal u otro representante en conexión con su apelación (pero solamente por su propia cuenta.)

Caltrans considerará toda justificación y materia pertinente que usted entregue u otra información disponible, necesaria para asegurar una audiencia equitativa. Caltrans le proveerá una determinación por escrito del resultado de su apelación, con una explicación sobre la base de la decisión. Si usted aún no está satisfecho con la decisión otorgada, Caltrans le aconsejará que usted puede pedir una audiencia judicial.

Noticiero de la Ley para Americanos con Incapacidades Físicas (ADA):

Para personas con incapacidades físicas, este documento es disponible en formatos alternativos. Para Información llame al número (916) 654-5413 Voz, CRS: 1-800-735-2929, o escriba a Derecho de Vía, MS 37, 1120 N Street, Sacramento, CA 95814.
NOTAS
**U.S. Department of Agriculture**

**FARMLAND CONVERSION IMPACT RATING**

**PART I (To be completed by Federal Agency)**

<table>
<thead>
<tr>
<th>Name Of Project</th>
<th>Date Of Land Evaluation Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-501-B0, I-80, I-680-58 12 Exchange Project</td>
<td>12/8/08</td>
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</table>

**Federal Agency Involved**

<table>
<thead>
<tr>
<th>Federal Agency Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Highway Administration</td>
</tr>
</tbody>
</table>

**County And State**

| Solano County, California |

**PART II (To be completed by NRCS)**

<table>
<thead>
<tr>
<th>Does the site contain prime, unique, statewide or local important farmland?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres Impacted</td>
<td>12,000</td>
</tr>
<tr>
<td>Average Farm Size</td>
<td>94.0</td>
</tr>
</tbody>
</table>

**Major Crop Production**

<table>
<thead>
<tr>
<th>Farmland, Land In Gov. Jurisdiction</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Of Farmland As Defined In EPPA</td>
<td>252,000</td>
</tr>
</tbody>
</table>

**Name Of Land Evaluation System Used**

<table>
<thead>
<tr>
<th>Natural Resources Conservation Service LC STIPS.</th>
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</table>

**PART III (To be completed by Federal Agency)**

<table>
<thead>
<tr>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>185.9</td>
<td>118.8</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**PART IV (To be completed by NRCS)**

<table>
<thead>
<tr>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3.3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**PART V (To be completed by NRCS)**

Site Assessment Criteria (These criteria are explained in 7 CFR 658.8(b):

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**PART VI (To be completed by Federal Agency)**

| 4. Protection Provided By State And Local Government | 2.0 | 2.0 |
| 5. Distance From Urban Built-up Area | N/A | N/A |
| 6. Distance To Urban Support Services | N/A | N/A |
| 7. Size Of Present Farm Unit Compared To Average | 0 | 0 |
| 8. Creation Of Nonfarmable Farmland | 10 | 10 |
| 9. Availability Of Farm Support Services | 6 | 6 |
| 10. On-Farm Investments | 18 | 18 |
| 11. Effects Of Conversion On Farm Support Services | 1 | 1 |
| 12. Compatibility With Existing Agricultural Use | 5 | 5 |

**TOTAL SITE ASSESSMENT POINTS**

| 160 | 97 | 71 | 0 | 0 |

**PART VII (To be completed by Federal Agency)**

| 100 | 138.3 | 0 | 0 | 0 |

**Relative Value Of Farmland (From Part V)**

| 160 | 97 | 71 | 0 | 0 |

**TOTAL POINTS (Total of above two lines)**

| 260 | 134.3 | 137.7 | 0 | 0 |

**Site Selected:**

<table>
<thead>
<tr>
<th>Date Of Selection</th>
<th>Was A Local Site Assessment Used?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

**Reason For Selection:**
May 20, 2009

Mr. Dennis J. O'Bryant, Program Manager  
California Department of Conservation  
c/o Division of Land Resource Management  
801 K Street, MS 18-01  
Sacramento, CA 95814

Subject: Notification of the I-80/I-680/SR 12 Interchange Project

Dear Mr. O'Bryant:

In accordance with Government Code Section 51291(b), this letter serves as notification of the possible acquisition of a portion of a conservation easement for the proposed I-80/I-680/SR 12 Interchange Project in Solano County. The purpose and need of this project is to reduce existing and future traffic congestion by increasing capacity of the facility from two lanes to four lanes and by either constructing ramps on SR 12E to serve Beck Avenue and Pennsylvania Avenue, or by re-aligning I-680 to the west to connect with the I-80/SR 12W interchange. The western boundary of the proposed project is on Jameson Canyon Road, just west of Red Top Road in the city of Fairfield. The eastern boundary exists to the east of Pennsylvania Avenue in Suisun City. This boundary reaches the railroad track used for Amtrak in Suisun City. The enclosed exhibits, Attachment A and Attachment B, show the project location and project area respectively. For a detailed project description please refer to Attachment C of this letter.

There are two alternatives being considered, Alternative B and Alternative C (see Attachment D and Attachment E). Both alternatives would require the acquisition of land from 4 parcels currently under the Williamson Act contracts (Table 1, Attachment F). These four parcels amount to 406 acres. Caltrans proposes to acquire 96.8 acres from these parcels to be converted into permanent transportation use.

**Table 1: Williamson Act Contracts in the Project Area**

<table>
<thead>
<tr>
<th>Contract Number</th>
<th>APN</th>
<th>Total Acres in Contract</th>
<th>Acres Removed from Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>739</td>
<td>0027-251-330</td>
<td>78.9</td>
<td>61.9</td>
</tr>
<tr>
<td></td>
<td>0027-271-060</td>
<td></td>
<td>18.0</td>
</tr>
<tr>
<td>97</td>
<td>0148-260-010</td>
<td>268.8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>0148-270-010</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>1100</td>
<td>0148-270-340</td>
<td>42.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0150-270-050</td>
<td>16.1</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>406</strong></td>
<td><strong>96.8</strong></td>
</tr>
</tbody>
</table>


"Caltrans improves mobility across California"
Although design refinements may further reduce the project footprint, impacts to Williamson Act contract lands cannot be completely avoided because of the scale of needed improvements on the I-80/I-680/SR 12 Interchange Project. Based on this consideration, Caltrans has determined that use of other non-contract land is not reasonably foreseeable for the proposed public improvement.

Due to the small size of the proposed acquisitions in each alternative, production on the Williamson Act parcels would not be significantly affected. Furthermore, affected areas are generally on the periphery of the agricultural properties; therefore, no significant acreage of farmland would become non-productive because of interference with land patterns. The project design is taking steps to accommodate the need of landowners for ingress and egress to their properties, both during construction and long-term.

Caltrans requests you review of this notification and your comments. If you have questions or comments on this notification, please contact Howell Chan of my staff at (510) 286-5623, howell_chan@dot.ca.gov, or me at (510) 286-5231, Melanie_brent@dot.ca.gov.

Sincerely,

Melanie Brent
District Office Chief
Office of Environmental Analysis

Enclosures:
Attachment A: Project Location Map
Attachment B: Project Area Map
Attachment C: Project Description
Attachment D: Alternative B Map
Attachment E: Alternative C Map
Attachment F: Williamson Act Contract Map

"Caltrans improves mobility across California"
TO: Melanie Brent, District Office Chief  
Department of Transportation  
Office of Environmental Analysis

FROM: Dan Otis, Program Manager  
Williamson Act Program  
Division of Land Resource Protection  
Department of Conservation

DATE: July 8, 2009

SUBJECT: Notification of the I-80/I-680/State Route (SR) Interchange Project

Thank you for your letter notifying the Department of Conservation (Department) of the Department of Transportation’s (Caltrans) possible acquisition of portions of six parcels of land restricted by a Williamson Act contract for the construction of a state highway interchange project to reduce existing and future traffic congestion in Solano County. This project will involve the following contracted parcels:

<table>
<thead>
<tr>
<th>Contract Number</th>
<th>Parcel Number</th>
<th>Total Acres</th>
<th>Acres to be Removed from Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>739</td>
<td>0027-251-330</td>
<td>78.9</td>
<td>61.9</td>
</tr>
<tr>
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</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>406</td>
<td>96.8</td>
</tr>
</tbody>
</table>

Project Location

The project area is divided into three segments: western, central, and eastern. The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/Suisun Valley Road interchange. The central segment begins at the I-80 Suisun Valley Road interchange and ends at the SR12E/Chadbourne Road interchange. The eastern segment begins at the SR12E Chadbourne Road interchange and ends at the Fairfield Overhead where SR12E crosses over the Union Pacific Railroad (UPRR) tracks just west of Suisun City. The western boundary of the proposed project is on Jameson Canyon Road, just west of Red Top Road in the City of Fairfield. The eastern boundary exists to the east of Pennsylvania Avenue in Suisun City. This boundary reaches the railroad track used for Amtrak in Suisun City.
Project Description

Caltrans proposes to acquire 96.8 acres from several parcels to be converted into permanent transportation use. The project would construct an interchange to reduce existing and future traffic congestion by constructing ramps on SR 12E to serve Beck Avenue and Pennsylvania Avenue, or by re-aligning I-680 to the west to connect with I-80/SR 12W interchange. Caltrans is considering two full-build alternatives (Alternatives B and C) for the construction of the project. Both projects require the acquisition of land from four parcels.

The Williamson Act requires that public agencies shall not locate public improvements in agricultural preserves unless the following specific findings can be made (Government Code § 51292):

- "The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve (§51292(a))."
- "If the land is agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement (§51292(b))."

One of the limited exceptions to required findings is for “...All state highways on routes as described in Sections 301 to 622, inclusive, of the Streets and Highways Code...” (Gov. Code §51293, subd. (3)(g.).) The information in your notice appears to indicate that this project qualifies for this exception. Therefore, the Department has determined that the findings required by Government Code §51292 do not apply in this case.

Please be advised that, pursuant to Government Code §51291(d), the Department must be notified of any proposed, significant changes to the project. The Department must also be notified when the property is actually acquired (Gov. Code §51291(c)). If Caltrans determines not to locate the proposed public improvement on the purchased subject property, before returning the land to private ownership, it must notify the Department. The land shall be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Gov. Code §51295). The local jurisdiction administering the preserve should also be notified, when notice is provided to the State. If you have any questions, please contact Jacqueyn Ramsey, Environmental Planner, at (916) 323-2379.

cc: The Honorable Skip Thomson  
Solano County Assessor  
600 Texas Street  
Fairfield, CA 94533-6386

Solano County Board of Supervisors  
Old County Courthouse  
580 Texas Street  
Fairfield, CA 94533
Appendix F  Threatened and Endangered Species List
Quad Lists

Listed Species

Invertebrates

- *Branchinecta conservatio*
  - Conservancy fairy shrimp (E)
  - Critical habitat, Conservancy fairy shrimp (X)

- *Branchinecta lynchi*
  - Critical habitat, vernal pool fairy shrimp (X)
  - Vernal pool fairy shrimp (T)

- *Desmocerus californicus dimorphus*
  - Valley elderberry longhorn beetle (T)

- *Elaphrus viridis*
  - Critical habitat, delta green ground beetle (X)
  - Delta green ground beetle (T)

- *Lepidurus packardi*
  - Critical habitat, vernal pool tadpole shrimp (X)
  - Vernal pool tadpole shrimp (E)

- *Speyeria callippe callippe*
  - Callippe silverspot butterfly (E)

- *Speyeria zerene myrtleae*
  - Myrtle's silverspot butterfly (E)

- *Syncaris pacifica*
  - California freshwater shrimp (E)

Fish

- *Acipenser medirostris*
  - Green sturgeon (T) (NMFS)

- *Eucyclogobius newberryi*
  - Tidewater goby (E)

- *Hypomesus transpacificus*
  - Critical habitat, delta smelt (X)
  - Delta smelt (T)

- *Oncorhynchus kisutch*
  - Coho salmon - central CA coast (E) (NMFS)

- *Oncorhynchus mykiss*
  - Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

*Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

**Amphibians**

*Ambystoma californiense*
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

*Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

**Reptiles**

*Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

*Thamnophis gigas*
giant garter snake (T)

**Birds**

*Charadrius alexandrinus nivosus*
western snowy plover (T)

*Pelecanus occidentalis californicus*
California brown pelican (E)

*Rallus longirostris obsoletus*
California clapper rail (E)

*Sternula antillarum (=Sterna, =albifrons) browni*
California least tern (E)

*Strix occidentalis caurina*
northern spotted owl (T)

**Mammals**

*Reithrodontomys raviventris*
salt marsh harvest mouse (E)

**Plants**

*Blennosperma bakeri*
Baker's stickyseed [=Sonoma Sunshine] (E)

*Castilleja affinis ssp. neglecta*
Tiburon paintbrush (E)

*Cirsium hydrophilum var. hydrophilum*
Suisun thistle (E)

*Cordylanthus mollis ssp. mollis*
soft bird's-beak (E)

*Holocarpha macradenia*
Santa Cruz tarplant (T)

*Lasthenia conjugens*
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

*Limnanthes vinculans*
Sebastopol meadowfoam (E)

*Neostapfia colusana*
Colusa grass (T)

*Oenothera deltoides ssp. howellii*
Antioch Dunes evening-primrose (E)

*Orcuttia inaequalis*
San Joaquin Valley Orcutt grass (T)

*Sidalcea keckii*
Keck's checker-mallow (=checkerbloom) (E)

*Trifolium amoenum*
Showy Indian clover (E)

*Tuctoria mucronata*
Solano grass (=Crampton's tuctoria) (E)

**Proposed Species**

**Plants**

*Cirsium hydrophilum var. hydrophilum*
Critical habitat, Suisun thistle (PX)

*Cordylanthus mollis ssp. mollis*
Critical habitat, soft bird's-beak (PX)

**Quads Containing Listed, Proposed or Candidate Species:**

BIRDS LANDING (481A)
DENVERTON (481B)
HONKER BAY (481C)
FAIRFIELD SOUTH (482A)
CORDELIA (482B)
BENICIA (482C)
VINE HILL (482D)
CUTTINGS WHARF (483A)
SEARS POINT (483B)
MARE ISLAND (483D)
ALLENDALE (498B)
ELMIRA (498C)
DOZIER (498D)
MT. VACA (499A)
MT. GEORGE (499C)
FAIRFIELD NORTH (499D)
NAPA (500D)

**County Lists**

No county species lists requested.
Key:

(E) **Endangered** - Listed as being in danger of extinction.

(T) **Threatened** - Listed as likely to become endangered within the foreseeable future.

(P) **Proposed** - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service.

Consult with them directly about these species.

**Critical Habitat** - Area essential to the conservation of a species.

(PX) Proposed **Critical Habitat** - The species is already listed. Critical habitat is being proposed for it.

(C) **Candidate** - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) Critical Habitat designated for this species

**Important Information About Your Species List**

**How We Make Species Lists**

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

**Plants**

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

**Surveying**

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

**Your Responsibilities Under the Endangered Species Act**

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue,
hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project’s direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

More info
Wetlands
If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates
Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be November 08, 2012.
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https://nrmsecure.dfg.ca.gov/gridprint.aspx 8/15/2012
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Appendix G  Native Trees Mapped in the Study Area
## Native Trees Mapped in the Study Area

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*ID refers to tree numbers shown on Figures 3-1 and 3-2.

**Removed for the eastbound Cordelia truck scales project.**

**Removed for widening of SR 12W.**
U.S. Army Corps of Engineers
Jurisdictional Determination
DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO

Regulatory Division

JUL 09 2009

SUBJECT: File Number SPN-2007-400401 N

Mr. Jeffry Jensen
Division of Biological Sciences and Permits
California Department of Transportation
Post Office Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This letter is written in response to your submittal of March 20, 2008, requesting confirmation of the extent of Corps of Engineers jurisdiction for the Interstate 80/Interstate 680/State Route 12 Interchange Project in Solano County, California.

Enclosed are maps showing the extent and location of Corps of Engineers jurisdiction. We have based this jurisdictional delineation on the current conditions on the site as verified during site visits performed by our staff on January 6, 2009, January 7, 2009, and April 1, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.
Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

ORIGINAL SIGNED
BY __________________________
ACTING CHIEF, REG. DIV., SOUTH BR.
FOR
Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies furnished (with wetland delineation maps to follow via email):

CA RWQCB, Oakland, CA
CA SWRCB, Sacramento, CA
US EPA, San Francisco, CA
US FWS, Sacramento, CA

CF:

CESPN-R (Rdg File)

MEIER
CESPN-R
-6798
06/24/09

MARTEL
CESPN-R

JOHNSON
CESPN-R-S

HICKS
CESPN-R
JUL 09 2009
Floodplain Issue
Mr. James W. van Loben Sels, Director
CALTRANS, 1120 N Street
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500
for Mr. Robert L. Buckley

Dear Mr. van Loben Sels:

SUBJECT: FLOODING ON MAJOR FACILITIES

The Federal Highway Administration (FHWA) is concerned with recent partial and full closures of major facilities during this year’s winter storms in that storm intensities did not appear great enough, yet caused flooding and closures on some major facilities including the Interstate System which should be capable of passing a 50-year flood event without encroachment of through lanes.

FHWA sees this as an opportunity to focus on those facilities which experienced this type of flooding by performing engineering studies to determine the need for improvements to meet current capacity standards and to repair the conditions that contributed to closures. Some examples of impacted facilities include I-680 near Marina Vista, State Route 4 near Loveridge, I-80 at Redtop Road Slide, State Route 101 at Lucky Drive in Marin County, Interstate 80 between the West Texas Street and Abernathy Road exits in Fairfield, and State Route 37. Again, FHWA sees this as a great opportunity to provide solutions with construction projects that would prevent future closures during heavy winter rain periods. A good example is a recent project using lightweight fill on the I-680 undulations near the Benicia-Martinez Bridge where the facility has experienced many closures in past years.

Mr. Arlo Waddoups, our Regional Hydraulic Engineer, and the California Division Office can offer technical assistance on this matter. Should you have any questions, please call Brett Jackson at (916) 498-5852.

Sincerely,

/s/ Bradley D. Keazer

For
Jeffrey A. Lindley
Division Administrator
Section 6002 of the Safe, Accountable, Flexible, Efficient, Transportation Act: A Legacy for Users
Regulatory Division

SUBJECT: File Number SPN-2007-400401 S

Ms. Melanie Brent  
Office of Environmental Analysis  
California Department of Transportation, District 4  
PO Box 23660  
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your invitation to become a cooperating agency for the preparation of an environmental impact statement (EIS) for the Interstate 80/Interstate 680/State Route 12 Interchange Project in accordance with the SAFETEA-LU authority. We would like to accept your invitation to become a cooperating agency during the development of the EIS for this project.

We would like to take this opportunity to emphasize that one of our greatest concerns is cumulative impacts to waters of the U.S. in the I-80/I-680/SR-12 corridor from transportation projects, residential development, and commercial/industrial development. As a cooperating agency, we will be encouraging a thorough evaluation of cumulative impacts to waters of the U.S. in this area, that we hope will include those areas of concern presented in our August 6, 2009 letter.

As a part of your standard permit application package, we will require that you provide information to perform an alternatives analysis to satisfy our requirements in the Clean Water Act Section 404(b)(1) Guidelines. The information and analysis needed can be incorporated into your EIS or it can be completed as a separate document. We look forward to assisting you in guiding your collection of pertinent information and guiding you through the 404(b)(1) analysis for the project.
Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798 or email her at andrea.j.meier@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Copy Furnished:

US EPA, San Francisco, CA
Section 106 of the National Historic Preservation Act
October 14, 2009

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
1416 Ninth Street, Room 1442-7
Sacramento, CA 95814

RE: Historic Property Survey Report for the I-80/I-680/SR-12 interchange project in Solano County (EA 0A5300)

Dear Mr. Donaldson:

The California Department of Transportation (Caltrans), under the authority of the Federal Highway Administration (FHWA), is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the I-80/I-680/SR-12 interchange project in Solano County. This consultation is undertaken in accordance with the January 1, 2004 Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation (PA).

Caltrans is initiating this consultation as a federal agency, following the provisions of the Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation concerning the state of California’s Participation in the Surface Transportation Project Delivery Pilot Program, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6004 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which allows the Secretary of Transportation to assign, and the State of California to Assume, responsibility for compliance with federal environmental laws with respect to some highway projects in California. For those projects, the state may also be assigned FHWA’s responsibilities for environmental consultation and coordination under other federal environmental laws. By statute, the state is deemed to be a federal agency for these assigned responsibilities. In that this project is covered by the above referenced MOU, FHWA has assigned, and Caltrans has assumed, FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to Caltrans.

The undertaking includes improvements to the I-80/I-680/SR-12 interchange, widening of all three highways, and the relocation and expansion of the westbound truck scales on I-80.
Two full-build alternatives are being considered (alternatives B and C). Alternative B retains the current alignments for I-80 and I-680, while alternative C would realign I-680 to the west to connect directly with the I-80/SR-12W interchange. Completion of construction for the full-build alternatives is anticipated to take approximately 30 years to complete. Each of the two alternatives has a phase I component that represents a funded phase with logical termini and independent utility. The alignments and construction footprints for each full-build alternative and the phase I component of each alternative are shown on the Area of Potential Effect (APE) maps in the Historic Property Survey Report (HPSR).

Enclosed is an HPSR for this undertaking, with attached Historic Resource Evaluation Report (HRER) and Archaeological Survey Report (ASR). The HRER includes DPR forms for 210 properties, including the Village of Cordelia Historic District and 11 individual properties in Suisun City that have previously been determined eligible for inclusion on the National Register of Historic Places. The HRER concludes that five properties that were previously determined to be contributors to the Cordelia Historic District are no longer contributors. Three of these (Map Reference Numbers 7, 8, and 11) have been demolished in recent years and two (Map Ref. Nos. 26 and 31) have lost integrity due to recent alterations. The HRER also concludes that two additional properties are eligible for National Register listing:

- Neitzel Farm at 3936 Suisun Valley Road, Map Reference Number 51
- Suisun City Historic District, including most of the properties from Map Reference Number 63 through 208. The district includes 95 contributing and 36 non-contributing properties. The district boundary, with contributing and non-contributing properties indicated, is shown on Sheet 14a of the APE map.

We are consulting with you under Stipulation VIII.C.5 of the PA, and request your concurrence on the following:

- Properties 26 and 31 are no longer contributors to the Cordelia Historic District
- Property 51 and the Suisun City Historic District are eligible for inclusion on the National Register of Historic Places.
- The remaining properties that have not previously been evaluated are ineligible for National Register listing.

As discussed in the Archaeological Survey Report, two archaeological resources were identified within the APE through archival research. The included sensitivity assessment identified large areas of the APE as highly sensitive for buried resources. Because the recorded sites and sensitive zones are located in areas covered by pavement and sidewalks, the presence of the two known resources and any buried resources within the project footprint cannot be determined at this time. Limited access to these areas, the high potential for buried archaeological resources, the number of alternatives under consideration, and long timeframe for the ultimate build-out pose formidable challenges to completing the identification of potential archaeological properties within the APE. We propose that identification and evaluation of archaeological properties within the APE, and any necessary resolution of adverse effects upon those properties, be provided for in a programmatic agreement specific to this undertaking.

It is anticipated that a Historic Properties Treatment Plan (HPTP), including a detailed protocol for

"Caltrans improves mobility across California"
identification, evaluation, and treatment of any affected historic properties, will be developed and attached to the programmatic agreement. The HPTP will also include protocols for archaeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking.

If you have any questions or need any additional information, please do not hesitate to contact architectural historian Andrew Hope at (916) 654-5611 or archaeologist Brett Rushing at (510) 286-6336.

Sincerely,

JENNIFER DARCANGELO
Chief, Office of Cultural Resource Studies
California Department of Transportation
District 4

Enclosure: HPSR with HRER and ASR

c: Jill Hupp, Cultural and Community Studies Office, Caltrans Headquarters

"Caltrans improves mobility across California"
March 20, 2010

Jennifer Darcangelo
Chief, Office of Cultural Resource Studies
Caltrans District 4
PO Box 23660
Oakland, CA 94623-0660

Re: Determinations of Eligibility for the Proposed I-80/I-680/SR-12 Interchange Project in Solano, CA

Dear Ms. Darcangelo:

Thank you for consulting with me about the subject undertaking in accordance with the Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California (PA).

The California Department of Transportation (Caltrans) is requesting my concurrence, pursuant to Stipulation VIII.C.5 of the PA, that the following properties are not eligible for the National Register of Historic Places (NRHP):

- Claus & Henry Mangels Sheep Barn and Ranch, Fairfield, CA
- Utility Buildings, 0148260040, Fairfield, CA
- 3360 Ramsey Road, Fairfield, CA
- 2172 Bridgeport Avenue, Cordelia, CA
- 3607 Ritchie Road, Fairfield, CA
- 3605 Thompson Court, Fairfield, CA
- 3617 Ritchie Road, Fairfield, CA
- 3621 Ritchie Road, Fairfield, CA
- Utility Building, 004-530-0030, Fairfield, CA
- Cordelia Truck Scales, Fairfield, CA
- 2543/2547 Cordelia Road, Cordelia, CA
- Irrigation Ditch adjacent to APN 0027272180
- 4012 Russel Road, Fairfield, CA
- 2621 Cordelia Road, Cordelia, CA
- 4015 Hale Ranch Road, Fairfield, CA
- 2814 Rockville Road, Fairfield, CA
- 2818 Rockville Road, Fairfield, CA
- 260 Benton Court, Suisun City, CA
- 212 Sacramento Street, Suisun City, CA
- 216 Sacramento Street, Suisun City, CA
- 520 School Street, Suisun City, CA
- 302, 304 Sacramento Street, Suisun City, CA
- 515 Suisun Street, Suisun City, CA
- 306 Sacramento Street, Suisun City, CA
- 701 West Street, Suisun City, CA
- 705 West Street, Suisun City, CA
- 201 California Street, Suisun City, CA
- 205 California Street, Suisun City, CA
- 806 West Street, Suisun City, CA
- 808 West Street, Suisun City, CA
- 206 Morgan Street, Suisun City, CA
- 1012 Suisun Street, Suisun City, CA
- 1009 Main Street, Suisun City, CA
- 1013 Main Street, Suisun City, CA
- 510 Cordelia Road, Suisun City, CA
- 516 Cordelia Road, Suisun City, CA
- 519 Line Street, Suisun City, CA
Based on my review of the submitted documentation, I concur with the above determinations.

Caltrans is also requesting my concurrence that 2100 Bridgeport Avenue and 2124 Bridgeport Avenue no longer contribute to the Village Cordelia Historic District due to substantial alterations that have diminished the historic integrity of the buildings. I concur.

Caltrans determined that the property located at 3936 Suisun Valley Road is eligible for the NRHP. I cannot concur with this determination based on additional information that the buildings on the property are no longer extant.

Caltrans is also requesting my concurrence that the Suisun City Historic District is eligible for the NRHP under criterion A, at the local level of significance, in the area of community development during the period of 1880-1934, and under Criterion C in the area of architecture. The district reflects distinctive examples of late nineteenth and early twentieth century architecture. I concur.

Caltrans also proposes that identification and evaluation of archeological properties within the APE, and any resolution of adverse effects on those properties, be provided for in a programmatic agreement (PA) specific to this undertaking. An attachment to the PA will include a Historic Properties Treatment Plan (HPTP) to be developed that will include a detailed protocol for identification, evaluation and treatment of any affected historic properties. The HPTP will also include protocols for archeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking. I agree that the PA and HPTP are appropriate for this situation.

Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist of my staff at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov or Dwight Dutschke at (916) 653-9134 or e-mail at ddutschke@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
PROGRAMMATIC AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION
AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE I-80/I-680/SR-12 INTERCHANGE PROJECT,
SOLANO COUNTY, CALIFORNIA

WHEREAS, the Federal Highway Administration (FHWA) has assigned and the California Department of Transportation (Caltrans) has assumed FHWA responsibility for environmental review, consultation, and coordination under the provisions of the Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California’s Participation in the Surface Transportation Project Delivery Pilot Program, which became effective on July 1, 2007 and applies to this project; and,

WHEREAS, Caltrans and the Solano Transportation Authority (STA) propose to implement the I-80/I-680/SR-12 Project (Undertaking), located near the cities of Fairfield and Suisun City in Solano County, that currently consists of two ultimate alternatives (Alternatives B and C) and two fundable alternatives (Alternative B Phase I and Alternative C Phase I) that will be constructed in a number of stages; and,

WHEREAS, Caltrans has consulted with the State Historic Preservation Officer (SHPO) pursuant to the 1 January 2004 Programmatic Agreement Among The Federal Highway Administration, The Advisory Council On Historic Preservation, The California State Historic Preservation Officer, And The California Department Of Transportation Regarding Compliance With Section 106 Of The National Historic Preservation Act, As It Pertains To The Administration Of The Federal-Aid Highway Program In California (Federal-Aid Highway PA), and, where the Federal-Aid Highway PA so directs, in accordance with 36 CFR Part 800, the regulation implementing Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended (NHPA), regarding the Undertaking’s potential to affect historic properties, has decided to prepare a programmatic agreement (PA) pursuant to 36 CFR §800.4(b)(2) and 800.14(b), and has notified the Advisory Council on Historic Preservation (ACHP) that a PA will be prepared, pursuant to 36 CFR § 800.6(a)(1)(i)(C), who is not participating by their letter dated March 7, 2011; and

WHEREAS, Caltrans has chosen to prepare this PA to ensure completion of the identification and evaluation of potential historic properties within the Undertaking’s Area of Potential Effects (APE), and provide for the resolution of any adverse effects on identified historic properties subsequent to its approval of the Undertaking; and

WHEREAS, the Undertaking, as currently proposed, has the potential to affect historic properties, including the Village of Cordelia Historic District, the Suisun City Historic District, and the Suisun City Train Depot that have been determined eligible for listing in the National Register of Historic Places (NRHP), and may affect archaeological properties and resources of significance to Native Americans that have not yet been identified; and

WHEREAS, the Yocha Dehe Wintun Nation has participated in the consultation and has been invited to concur in this PA, and Caltrans will continue to afford them, should they so desire, with the opportunity to participate in the implementation of this PA and the undertaking; and

WHEREAS, Caltrans has initiated consultation with the Cortina Band of Indians regarding the proposed undertaking and its effects on historic properties, and will continue to afford them, should they so desire, with the opportunity to participate in the implementation of this PA and the undertaking; and

WHEREAS, Caltrans District 04 (District 04) and the STA have participated in the consultation and have been invited to concur in this PA;
NOW, THEREFORE, Caltrans and the SHPO agree that, upon Caltrans’ decision to proceed with the Undertaking, Caltrans shall ensure that the Undertaking is implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on historic properties and further agree that these stipulations shall govern the Undertaking and all of its parts until this PA expires or is terminated.

STIPULATIONS

Caltrans shall ensure that the following measures are carried out:

I. AREA OF POTENTIAL EFFECTS

A. The APE for the Undertaking is described and depicted in the 2009 Historic Property Survey Report (HPSR) for the Undertaking. The APE encompasses the maximum extent of the area anticipated to be potentially affected, directly or indirectly, by construction of either of the ultimate alternatives. The APE is included within Attachment 1 of this PA.

B. If Caltrans determines modifications to the Undertaking subsequent to the execution of this PA or identification results necessitate revision of the APE, Caltrans will submit the appropriate APE revisions to the PA parties along with any documentation prepared to complete identification, evaluation and effects assessments for each stage of the proposed project. In this manner, the APE may be amended without amending the PA. Revisions to the APE will be consistent with guidance in Attachment 3 of the Federal-Aid Highway PA.

II. PHASED IDENTIFICATION, EVALUATION, AND APPLICATION OF THE CRITERIA OF ADVERSE EFFECTS

Caltrans shall, upon its decision to proceed with future stages of the Undertaking, and prior to the start of construction for that stage, complete its efforts to identify, evaluate, and apply the criteria of adverse effect to historic properties within the APE for that stage in accordance with 36 CFR §800.4(b)(1), §800.4(c)-(d), and §800.5(a)(1) as follows:

A. Archaeological Resources

1. All work regarding the identification, evaluation, assessment of effects, and mitigation of any adverse effects on archaeological resources shall be completed for future stages of the Undertaking with the approval of Caltrans Professionally Qualified Staff (CTPQS) in the appropriate discipline and in accordance with the Federal-Aid Highway PA.

2. Due to the general lack of surface visibility, access limitations, lack of design detail, and potential for subsurface archaeological resources within the APE, STA in consultation with District 04 and the Yocha Dehe Wintun Nation, prior to the construction of each stage, shall assess the impacts of that stage against the extent of the previous efforts to identify archaeological resources and the archaeological sensitivity of the location, and prepare for District 04 approval, a Historic Properties Identification Proposal (HIPP) detailing what additional actions will be taken to identify archaeological resources within the footprint of that stage. The assessment shall include impacts associated with utility relocation and tree removal. The HIPP may include more than one stage, provided sufficient design detail has been prepared to assess the impacts and any access limitations have been resolved.
3. If a conclusion that no further efforts to identify archaeological resources is justified in the HPIP, and District 04 agrees, District 04 will notify the other PA parties of this finding and allow 30 days for the parties to comment. Any objection received within 30 days will be resolved in accordance with Stipulation VIII.C of this PA.

4. If subsurface exploration is indicated, the HPIP shall include an Extended Phase I (XPI) proposal, consistent with Caltrans policies and guidelines and the October 2010 Historic Properties Treatment Plan, I-80/I-680/SR-12 Interchange Project (Treatment Plan), and any subsequent addenda to the Treatment Plan. The Treatment Plan is included as Attachment I of this PA.

5. Any approved XPI investigations shall occur prior to construction. An XPI report, consistent with Caltrans guidelines, documenting the results of any XPI investigations, shall be submitted to the Yocha Dehe Wintun Nation for 30 day review and District 04 for review and approval. If archaeological resources are identified as a result of XPI investigations or during construction of any stage, and those resources can be protected during construction from any project effects by the establishment and effective enforcement of an Environmentally Sensitive Area (ESA), those resources may be considered eligible for the NRHP for the purposes of the Undertaking without conducting additional subsurface testing or surface collecting in accordance with Stipulation VIII.C.3 of the Federal-Aid Highway PA.

6. If archaeological resources are identified that do not appear eligible for listing in the NRHP, documentation supporting that determination shall be included in the XPI report. If the Yocha Dehe Wintun Nation and District 04 agree with the determination, District 04 will submit the documentation to SHPO for concurrence in accordance with Stipulation VIII.C.5 of the Federal-Aid Highway PA.

7. If archaeological resources considered eligible for listing in the NRHP are identified as a result of XPI investigations or the monitoring of construction excavations for any stage, and those resources cannot be protected from any potential effects by the establishment of an ESA, Caltrans shall follow section C of this stipulation and the Treatment Plan.

B. Built Environment Resources

1. All work regarding the identification, evaluation, assessment of effects, and mitigation of any adverse effects on built environment resources shall be completed for future stages of the Undertaking with the approval of Caltrans Professionally Qualified Staff (CTPQS) in the appropriate discipline and in accordance with the Federal-Aid Highway PA.

2. STA, in consultation with District 04, shall include in the HPIP an assessment of the adequacy of the previous built environment studies against the design details of that stage, and include any additional built environment properties in an amended APE. The assessment shall also consider the need to re-evaluate properties due to the passage of time and changing conditions.

3. If any additional built environment properties are identified within an amended APE that do not qualify as exempt under Stipulation VIII.C.1 and Attachment 04 of the Federal-Aid Highway PA, prior to the construction of each stage, STA in consultation with District 04,
shall evaluate the properties in accordance with stipulation VIII.C.2 of the Federal-Aid Highway PA and the Treatment Plan.

4. As currently proposed the Undertaking will have no adverse effect on NRHP eligible built environment properties. For any future stage of the project that will potentially affect NRHP listed or eligible built environment properties, Caltrans shall follow section C of this stipulation.

C. Assessment of Effects

STA in consultation with District 04 shall assess the effects of each stage of the Undertaking on any properties listed, eligible, or considered eligible for the NRHP within the APE for that stage in accordance with Stipulation X of the Federal-Aid Highway PA and Caltrans policies and guidelines.

1. If District 04 determines that a stage of the Undertaking meets the conditions of Stipulation X.B.2.a of the Federal-Aid Highway PA, District 04 shall notify Caltrans and SHPO of a finding of No Adverse Effect with Standard Conditions in accordance with Stipulation X.B.2.b of the Federal-Aid Highway PA. Documentation, consistent with Caltrans guidance, supporting the finding shall be submitted with the notification.

2. If District 04 concludes that a stage of the Undertaking will have an effect on properties listed, eligible, or considered eligible for the NRHP, but the effect is not considered adverse, District 04 shall propose a finding of No Adverse Effect to Caltrans in accordance with Stipulation X.B.1.a of the Federal-Aid Highway PA. Following approval, Caltrans shall consult with SHPO regarding the finding, after which SHPO shall have 30 days to provide comment. If SHPO does not comment within 30 days of receipt of the documentation, Caltrans may proceed with the No Adverse Effect finding in accordance with Stipulation X.B.1.b of the Federal-Aid Highway PA.

3. If District 04 concludes that a stage of the Undertaking will have an adverse effect on properties listed, eligible or considered eligible for the NRHP, District 04 shall propose a finding of Adverse Effect to Caltrans in accordance with Stipulation X.C of the Federal-Aid Highway PA. Following approval, Caltrans shall consult with SHPO regarding the finding, after which SHPO shall have 30 days to provide comment. If SHPO does not comment within 30 days of receipt of documentation, Caltrans may assume the SHPO's concurrence with the finding in accordance with Stipulation X.C.2 of the Federal-Aid Highway PA.

III. TREATMENT OF HISTORIC PROPERTIES

Caltrans shall, upon its decision to proceed with construction of a stage of the Undertaking, and prior to implementation of that stage, resolve adverse effects to historic properties within the APE for that stage of the Undertaking in accordance with 36 CFR § 800.6, as follows:

A. Archaeological Resources

1. Caltrans may, as a result of consultation to resolve adverse effects for any stage of the Undertaking, conduct data recovery work on historic properties determined to be significant exclusively under Criterion D of the NRHP pursuant to Stipulation X.C.2 of the Federal-Aid Highway PA. STA, in consultation with District 04 and the Yocha Dehe Wintun Nation, shall prepare a Data Recovery Proposal (Proposal), to be included as an addendum to the Treatment Plan, detailing the treatment for historic properties specific to that stage.
Following Caltrans approval, Caltrans shall consult with SHPO regarding the Proposal, after which SHPO shall have 45 days to provide comment. This comment period is to run concurrently with that provided in Stipulation II.C.3 if the Proposal accompanies the finding of adverse affect. If SHPO does not comment within 45 days of receipt of the documentation, Caltrans may proceed with the implementation of the Proposal.

2. In order to avoid adverse effects to deposits that contribute to the NRHP eligibility of archaeological sites described in stipulation III.A.1, above, where data recovery is not prescribed, Caltrans will protect those contributing deposits from any potential effects during construction by establishment and effective enforcement of ESA(s). Provisions for the protection of the ESA(s) will be described, and the locations depicted, in information included in the final construction plans for that stage of the Undertaking. The ESA provisions will indicate that no work will take place within the ESA(s), either horizontally or to a depth that may impact the deposits, and that temporary fencing will be placed between the areas of impact and the location of the contributing deposits of the archaeological sites. Caltrans shall further ensure that a professional archaeologist will coordinate the installation of the fence. A Yocha Dehe Tribal Monitor will be invited to be present during installation of the fence. Caltrans shall be responsible for ensuring its integrity is maintained for the duration of construction activities in the vicinity of deposits that contribute to the NRHP eligibility of the archaeological sites.

B. Built Environment Resources

In the event that a stage of the Undertaking will result in an unavoidable Adverse Effect to built environment properties in accordance with stipulation II.C.3 above, Caltrans shall consult to resolve the adverse effect in accordance with stipulation XLA of the Federal-Aid Highway PA and 36 CFR § 800.6(a) and 36 CFR § 800.6(b)(1). To support the consultation, STA shall prepare, for Caltrans review and approval, a Built Environment Treatment Plan (BETP) outlining an approach to resolve the adverse effect. Caltrans shall ensure that the agreed upon resolution is thereafter implemented.

C. Treatment Plan Amendments

Any PA party may propose amendments to the Treatment Plan. Such amendment will not require amendment of this PA. Disputes regarding amendments proposed hereunder shall be addressed through further consultation among the PA parties. Consultation regarding the proposed amendment shall extend for 30 days. If the dispute is resolved within this time frame, the PA parties shall proceed in accordance with the terms of that resolution. If the dispute is not resolved within this time frame, Caltrans shall render a final decision regarding the dispute and the PA parties shall proceed in accordance with the terms of that decision.

D. Caltrans Authorization

Caltrans shall not authorize the execution of any Undertaking activity, for any stage, that may affect (36 CFR § 800.16(i)) historic properties in the Undertaking’s APE prior to the completion of the fieldwork and appropriate consultation stipulated in this PA and the Treatment Plan found in Attachment 1 of this PA.

IV. REPORTING REQUIREMENTS AND RELATED REVIEWS
A. For any XPI, Phase II or Phase III investigations, reporting will follow the guidance found in Caltrans Standard Environmental Reference and the Treatment Plan, which is included as Attachment 1 of this PA.

B. Reporting for built environment studies will follow stipulations VIII.C.5 and stipulations IX-X of the Federal-Aid Highway PA, as appropriate. Mitigation measures developed through consultation conducted in accordance with stipulation III.B of this PA shall be reported as a result of such consultation.

V. NATIVE AMERICAN CONSULTATION

The Yocha Dehe Wintun Nation and the Cortina Band of Indians have been consulted regarding the proposed undertaking and its effect on historic properties, will continue to be consulted, and will be afforded, should they so desire, the opportunity to participate in the implementation of the PA and of the Undertaking. Should any of the parties consulted with desire, individually, to participate as a PA party as herein set forth, Caltrans will make an effort to reach a consensus with each such party regarding the manner in which they may participate in the implementation of this PA and the Undertaking, and regarding any time frames or other matters that may govern the nature, scope, and frequency of such participation.

VI. TREATMENT OF HUMAN REMAINS OF NATIVE AMERICAN ORIGIN

The PA parties agree that human remains and related items discovered during the implementation of the terms of this PA and of the Undertaking will be treated in accordance with the requirements of § 7050.5(b) of the California Health and Safety Code. If, pursuant to § 7050.5(c) of the California Health and Safety Code, the county coroner/medical examiner determines that the human remains are or may be of Native American origin, then the discovery shall be treated in accordance with the provisions of § 5097.98(a)-(d) of the California Public Resources Code.

VII. LATE DISCOVERIES AND UNANTICIPATED EFFECTS

If Caltrans determines, after commencement of any stage of the Undertaking, that construction of that stage will affect a previously unidentified property that may be eligible for the National Register, or affect a known historic property in an unanticipated manner, Caltrans will address the discovery or unanticipated effect in accordance with 36 CFR § 800.13(b)(3). Caltrans at its discretion may hereunder assume any discovered property to be eligible for the National Register in accordance with 36 CFR § 800.13(c).

VIII. ADMINISTRATIVE PROVISIONS

A. Standards

1. Definitions. The definitions provided at 36 CFR § 800.16 are applicable throughout this PA.

2. Professional Qualifications. All activities prescribed by stipulations I, II, III, IV, V, VI and VII of this PA shall be carried out under the authority of Caltrans by or under the direct supervision of a person or persons meeting at a minimum Secretary of the Interior’s Professional Qualification Standards (48 FR 44738-39) (PQS) in appropriate disciplines. Nothing in this stipulation, however, may be interpreted to preclude Caltrans or any agent or contractor thereof from using the properly supervised services of persons who do not meet the PQS.
3. **Documentation Standards.** Written documentation of activities prescribed by stipulations II, III, IV, VI, and VII of this PA shall conform to the *Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-44740), as well as to applicable standards and guidelines established by the SHPO.

4. **Curation Standards.** Caltrans shall ensure that, to the extent permitted under § 5097.98 and § 5097.991 of the California Public Resources Code, the materials and records resulting from the activities prescribed by this PA are curated in accordance with 36 CFR § 79. Caltrans shall ensure that the views of the PA parties are taken into consideration when decisions are made about the final disposition of archaeological materials resulting from activities prescribed by this PA.

**B. Confidentiality.**

The parties to this PA acknowledge that historic properties covered by this PA are subject to the provisions of § 304 of the NHPA and § 6254.10 of the California Government Code (Public Records Act), relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this PA are consistent with said sections.

**C. Resolving Objections**

1. Should any party to this PA object to the manner in which the terms of this PA are implemented, to any action carried out or proposed with respect to implementation of the PA (other than the Undertaking itself), or to any documentation prepared in accordance with and subject to the terms of this PA, Caltrans shall immediately notify the other PA parties of those objections, and shall consult with the objecting party and with the other parties for no more than 14 days to resolve the objection. Caltrans shall reasonably determine when this consultation will commence. If the objection is resolved through such consultation, the action subject to dispute may proceed in accordance with the terms of that resolution. If, after initiating such consultation, Caltrans determines that the objection cannot be resolved through consultation, Caltrans shall forward all documentation relevant to the objection, including Caltrans’ proposed response to the objection, to the ACHP, with the expectation that the ACHP will, within thirty (30) days after receipt of such documentation, do one of the following:

   a. advise Caltrans that the ACHP concurs in Caltrans’ proposed response to the objection, whereupon Caltrans will respond to the objection accordingly. The objection shall thereby be resolved; or

   b. provide Caltrans with recommendations, which Caltrans will take into account in reaching a final decision regarding its response to the objection. The objection shall thereby be resolved; or

   c. notify Caltrans that the objection will be referred for comment pursuant to 36 CFR § 800.7(c) and proceed to refer the objection and comment. Caltrans shall take the resulting comments into account in accordance with 36 CFR § 800.7(c)(4) and Section 110(1) of the NHPA. The objection shall thereby be resolved.

2. Should the ACHP not exercise one of the above options within 30 days after receipt of all pertinent documentation, Caltrans may proceed to implement their proposed response. The objection shall thereby be resolved.
3. Caltrans shall take into account any of the ACHP’s recommendations or comments provided in accordance with section C of this stipulation with reference only to the subject of the objection. Caltrans’ responsibility to carry out all actions under this PA that are not the subjects of the objection shall remain unchanged.

4. At any time during implementation of the measures stipulated in this PA, should an objection pertaining to such implementation be raised by a member of the public, Caltrans notify the PA parties in writing of the objection and take the objection into consideration. Caltrans shall consult with the objecting party and, if the objecting party so requests, with the other PA parties, for no more than 15 days. Within 10 days following closure of the consultation period, Caltrans will render a decision regarding the objection and notify all consulting parties hereunder of its decision in writing. The objection will thereby be resolved. In reaching its decision, Caltrans will take into account any comments from the consulting parties regarding the objection, including the objecting party. Caltrans’ decision regarding the resolution will be final.

5. Caltrans shall provide all PA parties, the ACHP when the ACHP has issued comments hereunder, and any parties that have objected pursuant to section C.4 of this stipulation, with a copy of its final written decision regarding any objection addressed pursuant to this stipulation.

6. Caltrans may authorize any action subject to objection under section C.4 of this stipulation to proceed after the objection has been resolved in accordance with the terms of section C.5, above.

D. Amendments

Any PA party may propose that this PA be amended, whereupon the PA parties will consult for no more than 30 days to consider such amendment. Caltrans may extend this consultation period. The amendment process shall comply with will 36 CFR §§ 800.6(c)(1) and 800.6(c)(7). This PA may be amended only upon written agreement of the signatory parties. If it is not amended, this PA may be terminated by any of the signatory parties in accordance with section E of this stipulation, below.

E. Termination

1. If this PA is not amended as provided for in section D of this stipulation, above, or if any signatory proposes termination of this PA for other reasons, the signatory party proposing termination shall, in writing, notify the other PA parties, explain the reasons for proposing termination, and consult with the other PA parties for at least 30 days to seek alternatives to termination. Such consultation shall not be required if Caltrans proposes termination because the Undertaking no longer meets the definition set forth in 36 CFR § 800.16(y).

2. Should such consultation result in an agreement on an alternative to termination, the signatory parties shall proceed in accordance with the terms of that agreement.

3. Should such consultation fail, the signatory party proposing termination may terminate this PA by promptly notifying the other PA parties in writing. Termination hereunder shall render this PA without further force or effect.
4. If this PA is terminated hereunder, and if Caltrans determines that the Undertaking will nonetheless proceed, then Caltrans shall either consult in accordance with 36 CFR § 800.6 to develop a new PA, or request the comments of the ACHP, pursuant to 36 CFR Part 800.

F. Duration of the PA

1. Unless terminated pursuant to section E. of this stipulation, or unless it is superseded by an amended PA, this PA will be in effect following execution by the signatory parties until Caltrans, in consultation with the other PA parties, determines that all of its stipulations have been satisfactorily fulfilled. This PA will terminate and have no further force or effect on the day that Caltrans notifies the other PA parties in writing of its determination that all stipulations of this PA have been satisfactorily fulfilled.

2. The terms of this PA shall be satisfactorily fulfilled within ten (10) years following the date of execution by the signatory parties. If Caltrans determines that this requirement cannot be met, the PA parties will consult to reconsider its terms. Reconsideration may include continuation of the PA as originally executed, amendment of the PA, or termination. In the event of termination, Caltrans will comply with section E of this stipulation if it determines that the Undertaking will proceed notwithstanding termination of this PA.

3. If the Undertaking has not been implemented within ten (10) years following execution of this PA by the signatory parties, this PA shall automatically terminate and have no further force or effect. Prior to such time, Caltrans may consult with the other consulting parties to reconsider the terms of the PA and extend its duration through amendment pursuant to section D of this stipulation. If not amended, Caltrans shall notify the other PA parties in writing and, if it chooses to continue with the Undertaking, shall reinitiate review of the Undertaking in accordance with 36 CFR Part 800.

G. Effective Date

This PA will take effect on the date that it has been executed by Caltrans and the SHPO.

EXECUTION of this PA by Caltrans and the SHPO, its transmittal by Caltrans to the ACHP in accordance with 36 CFR §800.6(b)(1)(iv), and subsequent implementation of its terms, shall evidence, pursuant to 36 CFR §800.6(c), that this PA is an agreement with the ACHP for purposes of Section 110(1) of the NHPA, and shall further evidence that Caltrans has taken into account the effects of the Undertaking on historic properties and has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties.
SIGNATORY PARTIES:

California Department of Transportation

By [Signature] Date 1/3/11
Jay Norvell, Chief
Division of Environmental Analysis

California State Historic Preservation Officer

By [Signature] Date 1/7/11
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
CONCURRING PARTIES:

California Department of Transportation

By: Bijan Sartipi, Director
District 04, Oakland

Date: 7/20/12

Solano Transportation Authority

By: Daryl K. Halls, Executive Director

Date: 7/11/12

Yocha Dehe Wintun Nation

By: Marshall Mckay, Chairman

Date: 

Solano I-80/I-680/SR-12

Programmatic Agreement page 11 of 11
Section 7 of the Federal Endangered Species Act
January 14, 2011

In response, refer to:
2010/06180

James Richards, Deputy District Director
Department of Transportation
Caltrans District 4
Office of Environmental Analysis
111 Grand Avenue
Oakland, California 94610

Dear Mr. Richards:

Thank you for your letter of December 8, 2010, requesting initiation of consultation with NOAA’s National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Effective July 1, 2007, the Federal Highway Administration assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the Federal action agency for ESA consultations with NMFS for Federally funded projects. This letter also serves as consultation under the authority of, and in accordance with, the Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act (MSA), and the provisions of the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended. These consultations pertain to Caltrans’ proposed Interstate-80/Interstate-680/State Route 12 Interchange Improvement Project in Solano County, California.

The Interstate-80/Interstate-680/State Route 12 (I-80/I-680/SR 12) Interchange Improvement Project covers several miles of roadway around the City of Fairfield in Solano County, California. The western boundary of the Project is the Red Top Road crossings of I-680, I-80, and SR 12; the eastern boundary of the Project is the Suisun Valley Road crossing on I-80 and the Ledgewood Creek road crossing on SR 12. Surface water in the action area includes Green Valley Creek and Ledgewood Creek. The purpose of the project is to improve the I-80/I-680/SR 12 interchange complex to meet traffic demands and alleviate cut-through traffic on local roads. The project consists of construction or realignment of the following interchanges: 1) I-80/I-680/SR 12 West; 2) I-680 and Red Top Road; 3) I-80 and Green Valley Road; 4) I-80/Red Top Road and Business Center Drive; and 5) and SR 12 West and Red Top Road. Construction will also involve widening of I-80 and a new lane on eastbound SR 12, which will require a new bridge and off-ramp over Green Valley Creek, and widening of the culvert over Ledgewood Creek. All proposed in-stream work will occur during the dry season (June 1 through October 15).
Green Valley Creek originates in Green Valley, northwest of Rockville Hills Regional Park, and flow south to Cordelia Slough which is a tributary of Grizzly Bay. At the existing I-80 and I-680/I-80 West Interchange overcrossing, Green Valley Creek flows in a concrete-lined, trapezoidal channel approximately 670 feet long and 70 feet wide. The proposed action will remove the existing I-80 West bridge and replace it with a single span structure measuring approximately 103 feet long and 133 feet wide. Additionally, a single span structure to carry the Green Valley Road off-ramp over the creek will replace the existing I-680/I-80 West interchange.

In-stream construction at Green Valley Creek is proposed to occur between June 1st and October 15th, over approximately four construction seasons. Construction at Green Valley Creek will occur within a 10-20 year time frame. The first phase will involve construction of the outside (northernmost) westbound lanes on I-80 while maintaining traffic flow on the existing structure. Demolition of the existing I-80 West bridge, and completion of the new I-80 West bridge and the new off-ramp structure will follow.

Piles for the new free-spanning structures will be located at the top of the creek bank and are anticipated to be 12-inch square piles driven to a depth of approximately 70 feet. Approximately 40 piles per abutment will be installed for the westbound I-80 bridge, and approximately 24 piles per abutment will be installed for the new off-ramp structure. Vibratory hammers will be used for pile driving to the maximum practicable extent. Pile driving will only occur during low precipitation periods (June 1 to October 15) and any work occurring before June 1 or after October 15 will be restricted to road or bridge surface only, with water quality control measures in place.

Ledgewood Creek originates in the Vaca Mountains, north of the Solano/Napa County line, and flows south to Paytonia Slough which is a tributary of Grizzly Bay. In the vicinity of the existing SR 12 overcrossing, Ledgewood Creek is confined to a levee-lined trapezoidal channel. Beneath the five-span bridge at SR 12, Ledgewood Creek is conveyed through concrete-lined box culverts. Within the action area, riparian and riverine cover is limited to areas downstream of these culverts. The culverts at SR 12 and Ledgewood Creek is proposed to be extended 15 feet to the south (downstream) to accommodate an additional lane on SR 12; this would permanently impact 15 linear feet of the existing earthen channel. Construction associated with the culvert is expected to last only one season from June 1 to October 15.

Dewatering of both Ledgewood Creek and Green Valley Creek will involve construction of the following in-channel features: 1) temporary cofferdams (made of gravel and fabric) constructed 20-50 feet beyond the limit of bridge/culvert widening; and a pipe diversion to facilitate dewatering of the channel and bypass creek flow; 2) cofferdams constructed utilizing the same methods to facilitate excavation of existing bridge/culvert footings; and 3) falsework placed within the banks and channel to support construction of the cast-in-place concrete box girder structures of the new bridges/culverts. No construction related material (including dewatering and bypass structures) will remain in the channel between October 15 and June 1. When construction is completed, falsework will be removed and any disturbed portions of the creek bed and bank temporarily affected during construction will be restored to pre-project conditions. Additionally, the channel under the new bridges at Green Valley Creek will be restored to an
earthen channel; and a concrete fish passage structure involving a low flow channel and possibly baffles will be constructed in the culvert at SR 12 and Ledgewood Creek.

Standard best management practices (BMPs) for construction site and sediment and stormwater runoff control will be utilized on this project. Biofiltration swales and biostrips will be used when possible to control runoff. Vegetation will be trimmed rather than removed when possible. Temporarily disturbed riparian areas will be replanted with the native species prior to October 15 to minimize erosion and creek sedimentation, and revegetation will be monitored annually for 3 years.

Endangered Species Act

In its December 8, 2010, letter Caltrans asked for concurrence with a finding that the project is not likely to adversely affect Central California Coast (CCC) steelhead (Oncorhynchus mykiss). Reaches of Green Valley Creek and Ledgewood Creek within the project area are not designated critical habitat for CCC steelhead. Available information indicates the following DPS may occur in the project area:

**Central California Coast steelhead Distinct Population Segment (O. mykiss) DPS**
Threatened (January 5, 2006; 71 FR 834).

The life history of steelhead is summarized in Busby et al. (1996). Steelhead typically immigrate to tributaries of San Francisco Bay between November and April, peaking in January and February (Fukushima and Lesh 1998). Adult CCC steelhead are generally not present in streams between May and October; warm summer water temperature and poor habitat quality within the project area further reduce the likelihood of adult steelhead presence during summer months. Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating CCC steelhead use Green Valley Creek and portions of the San Francisco Bay for rearing and as a migration corridor to the ocean. In summer months, reaches of Green Valley Creek and Ledgewood Creek within the action area are unsuitable for salmonid rearing due to poor water and habitat quality. Although data regarding the emigration timing of steelhead smolts from Green Valley Creek and Ledgewood Creek is lacking, steelhead from other streams draining to San Francisco Bay typically emigrate from March through June (Fukushima and Lesh 1998). NMFS assumes that steelhead from Green Valley Creek and Ledgewood Creek emigrate at the same time and smolting steelhead should be absent during the in-channel construction window of June 1 through October 15.

*O. mykiss* have been collected in Green Valley Creek from the 1950s to the present, and unpublished data indicates *O. mykiss* were collected 1 mile upstream of I-80 in January 1997 (Leidy et al. 2005). Therefore, it is likely that steelhead spawning and rearing occur above the I-80 crossing of Green Valley Creek. Beneath I-80 and the I-680/I-80 West interchange Green Valley Creek passes through a 670 foot long, concrete-lined trapezoidal channel and primarily provides a migration corridor for salmonids at this location. This crossing contains an engineered low-flow channel and concrete weirs to enhance fish passage, but lacks significant riparian canopy and natural instream cover due to the concrete channel invert.
Caltrans proposes to restore approximately 300 feet of Green Valley Creek to natural earthen channel and in the process enhance habitat at the site. Proposed actions will not inhibit fish passage at the site, and could provide additional rearing habitat for juvenile salmonids. Salmonids are not likely to be present during summer in-channel construction and pile driving work windows. Construction activities that are proposed to occur when migratory steelhead are likely to be present will be restricted to road or bridge surfaces only, with water quality control measures in place. Therefore, CCC steelhead are not likely to be adversely affected by the proposed actions at Green Valley Creek.

In the vicinity of the SR 12 crossing, levees line both banks of Ledgewood Creek and the channel has a trapezoidal cross section. SR 12 crosses Ledgewood Creek over a five-span bridge. At low flows Ledgewood Creek passes through the second culvert from the east bank, which forms a V-shaped channel to maximize water depths at low flows. No observations of steelhead have been reported in Ledgewood Creek. The Ledgewood Creek drainage, however, is adjacent to the Suisun Creek Watershed which is known to support steelhead populations. Furthermore, Chinook salmon have been observed spawning in Ledgewood Creek above the project site, indicating that Ledgewood Creek supports migratory habitat for anadromous salmonids (NMFS 2011).

Proposed activities at Ledgewood Creek involve widening the SR 12 crossing by 15 linear feet to the south. This will permanently impact 15 linear feet of the existing earthen channel by converting it to a concrete invert slab. This action will exacerbate the existing shallow water depth issues at low flows; and concrete low-flow walls and potentially baffles will be constructed to enhance low-flow fish passage of the culvert. Ledgewood Creek is not designated critical habitat for CCC steelhead, and there is no confirmed documentation of *O. mykiss* within the drainage. The proximity of Ledgewood Creek to the Suisun Creek watershed, however, indicates migratory steelhead could be present during periods of higher flows. All construction activities associated with the culvert will occur over one dry season, from June 1 to October 15. Therefore, the presence of CCC steelhead is unlikely during proposed construction activities, and CCC steelhead are not likely to be adversely affected by the proposed actions at Ledgewood Creek. Proposed passage improvements at Ledgewood Creek will address the addition of 15 linear feet of hardened creek bottom, and potentially make higher quality habitat above the culvert more accessible to CCC steelhead.

Based on the best available information, NMFS concurs with Caltran’s determination that threatened CCC steelhead are not likely to be adversely affected by the I-80/I-680/SR 12 Interchange Improvement Project. This concludes informal consultation in accordance with 50 CFR 402.13(a) for the proposed I-80/I-680/SR 12 Interchange Improvement Project in Solano County, California. However, further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.
Magnuson-Stevens Fishery Conservation and Management Act

The project area is located within an area identified as EFH for Central Valley fall/late fall-run Chinook salmon, managed with the Pacific Coast Salmon Fishery Management Plan under the MSA. As discussed in the above ESA section, no in-water construction will take place when Chinook salmon are likely to be present. However, adverse effects to EFH could occur from increased sedimentation and turbidity following construction activities. While these impacts are considered minor and temporary, NMFS has made the determination that the proposed action would adversely affect EFH for this species. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset any adverse effects to EFH. Therefore, NMFS has no additional EFH Conservation Recommendations to provide.

This concludes EFH consultation for Caltrans’ proposed I-80/I-680/SR 12 Interchange Improvement Project, Solano County, California. Pursuant to 50 CFR 600.920(l) of the EFH regulations, Caltrans must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS’ EFH Conservation Recommendations.

Fish and Wildlife Coordination Act

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development [16 U.S.C. 661]. The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage [16 U.S.C 662(a)]. Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources. With implementation of the previously-referenced EFH conservation recommendations, NMFS has no further comments to provide.

Please contact Mr. Joseph Heublein at (707) 575-1251, or via e-mail at joe.heublein@noaa.gov should you have any questions.

Sincerely,

Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS, Long Beach
Bob Hoffman, NMFS, Long Beach
Bryant Chesney, NMFS, Long Beach
Ahmad Hashemi, Caltrans District 4
Copy to File ARN: 151422-SWR-2010-SR00524
Literature Cited


April 10, 2012

Susan Moore
Field Supervisor
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, CA 95825-1846

Bijan Sartipi
District 4 Director
California Department of Transportation
111 Grand Avenue
Oakland, CA 94612

This memo documents the final resolution of the automatic elevation of the Interstate 680/80, State Route 12 Caltrans Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS). The automatic elevation process follows the policy and procedures outlined in the March 18, 2011 memo describing the Caltrans/USFWS automatic elevation¹ and October 2006 Joint Memorandum for the Dispute Resolution Process².

This particular elevation process has been complex and has required several meetings, input from staff at Caltrans District 4 (D4) and the USFWS Sacramento Fish and Wildlife Service Office (SFWO), and has resulted in major revisions to the Draft Biological Opinion.

The attached Biological Opinion (BO) incorporates the results of this resolution process. This BO shall be signed by the SFWO and sent to D4 no later than noon, Monday April 16, 2012.

¹ Tracking Federal Endangered Species Act Consultations and Automatic Elevation Procedures
² Joint Memorandum for the Dispute Resolution Process
Finally, we want to thank you and your staff for participating in the automatic elevation process. We believe that the elevation process, including the auto-elevation process will help us find solutions to on-going issues and result in positive partnerships, transparency, and timeliness of the consultation process.

If you have any questions please contact Amy Bailey at (916) 651-8166 or Jay Norvell at (916) 653-7136 at Caltrans or Roberta Gerson (916) 978-6191 at the RO.

Sincerely,

[Signature]  Date: 4/10/12
MICHAEL FRIS
Assistant Regional Director
Ecological Services
U.S. Fish and Wildlife Service, Region 8 Office

[Signature]  Date: 4/10/12
JAY NORVELL
Chief
Division of Environmental Analysis
California Department of Transportation

Attachments: 1) Resolution Memo
              2) Biological Opinion for Signature
Interstate 80/680/12 Auto Elevation Resolution: EA 04-0A5300/0400000150, Service File: 81420-2009-F-0857

This particular elevation process has been complex and has required several meetings, input from staff at Caltrans District 4 (D4) and the USFWS Sacramento Fish and Wildlife Service Office (SFWO), and has resulted in major revisions to the Draft Biological Opinion. Much of the resolution process was spent on trying to bring perspectives closer together, clarifying the science, understanding that there are unknowns associated with access to properties, and providing forums for communication of these perspectives. Note that any decisions made during this elevation process utilized best available science but are case-specific to this project and not to be assumed as precedent-setting for future projects.

The attached Biological Opinion (BO) incorporates the results of this resolution process. The BO shall be signed by the SFWO and sent to D4 no later than noon, Monday April 16, 2012.

The following notation outlines the process and decisions that were made by Caltrans Headquarters Division of Environmental Analysis (HQDEA) and USFWS Region Office (RO) (Elevation Panel) for this dispute resolution:

- On March 2, 2012 D4 submitted project description revisions for the Biological Assessment (BA) related to the vernal pool fairy shrimp and tadpole shrimp and frog to reflect: 1) incorporation of the conservation measures and analysis related to vernal pool (VP) species and the California red-legged frog (frog) as outlined in their February 17, 2012 memo, 2) a statement identifying when pre-construction surveys will be completed to clarify and confirm the amount of impacts/effects to the frog, and 3) the intent to identify a monitoring approach and plan, which will be submitted to and approved by the Service prior to construction.
- Information regarding the Callippe silverspot butterfly (butterfly) was requested by the elevation panel and reviewed on February 22, 2012.
  - The panel concluded that the available data supported that the butterfly could be reasonably inferred to be present within the general area of the proposed Business Center Drive and the Red Top Road Extensions. Therefore, Caltrans needed to enter formal consultation on the butterfly. Caltrans and USFWS needed to evaluate avoidance, minimization, and conservation measures, and these needed to be included in the Biological Assessment (BA) and incorporated into the BO.
  - The elevation panel scheduled two facilitated meetings with project-level staff from SFWO and D4 to collect additional information on avoidance, minimization and conservation measures and to understand perspectives and points of disagreement regarding project impacts.
    - The first meeting focused on clarifying and refining impact acreage mapping and identifying ways of avoiding or minimizing the impacts to the butterfly and its habitat. Also, D4 and SFWO discussed temporary and permanent impacts and expectations associated with avoidance, minimization and conservation measures related to each impact. D4
presented refined GIS mapping and all reviewed it to better understand the project impacts.

- Between the first and second meeting, the elevation panel tasked D4 and SFWO with revising the conservation measures, terms and conditions of the Draft BO as appropriate, and refining impact area mapping based on the first facilitated meeting. This action was not fully achieved by the parties; however, they did make partial progress on revisions and they did provide some information to the elevation team for further consideration. Due to this incomplete resolution, the elevation panel was unable to review a complete package of agreements and disagreements between D4 and SFWO. As a result, the second facilitated meeting that had been scheduled to finalize the resolution was modified to allow additional discussion and clarification between the elevation panel, SFWO and D4. The SFWO and D4 were again tasked with revising the Draft BO and the elevation panel developed a schedule for edits and opportunities for reviews and comments on any outstanding disagreements.

- The elevation panel met to go over each section of the revised Draft BO on March 23, 2012. Jay Norvell and Mike Fris discussed the proposed revisions to the BO were made, based on those discussions. Specific areas of resolution, discussion and associated rationale for decisions made included:
  - The elevation panel agreed that the ratios for preservation and restoration ratios for Vernal Pool species are to be based on the premise that effects to low value conservation areas will be compensated in medium to high value areas.
  - Based on information and rationale provided to the elevation panel, we determined appropriate on-site conservation measures and appropriate off-site preservation needs.
  - The elevation panel clarified that compensation will coincide with the phasing of construction packages presented in the BA. Implementation is defined as including a) identification of land to be restored or enhanced, b) associated agreements to fund restoration or enhancement activities, and c) a restoration plan and schedule approved by the Service.
  - The elevation panel modified the language associated with the Solano HCP planning throughout the document to indicate a preference for these locations rather than a requirement.
  - The panel agreed that compensation acreage for permanent impacts to the butterfly can be in the form of preservation, restoration or enhancement. Compensation for permanent impacts to the frog can be in the form of off-site preservation only. Compensation implemented within Service-approved areas that serve as appropriate upland frog habitat and butterfly habitat may be overlaid on common acreage (commonly called
“stacking”). Caltrans will receive conservation credit for the area from the Service for both species if compensation is done in this manner.

- The panel agreed that the extent of habitat loss and reduced habitat connectivity caused by the new Business Center Drive extension includes loss of and fragmentation of designated critical habitat and warrants off-site habitat preservation for the frog.

- The panel modified the Restoration Monitoring Plan to address concerns related to timing and costs associated with monitoring.

- The panel notes the need for an agreement with the entity that will be in charge of operations and maintenance of Business Center Drive in order to convey the requirements of this formal consultation should those areas be used as mitigation.

- The panel included routine maintenance considerations in the project description. Mitigation ratios to offset temporary impacts to habitat were defined for areas both within areas that would be maintained and areas that would not be maintained. Restrictions associated with routine maintenance are described in the BO as it relates to each species.

The size and technical complexities associated with this project have made this resolution process difficult. The different perspectives and points of view have resulted in the need for elevation. HQDEA and RO have attempted to arrive at the best solution that ensured conservation of the frog, butterfly, and vernal pool crustaceans, and enabled project planning to proceed. This agreement shouldn’t be seen as a guideline for future projects as it is context-dependent and is a result of the information provided in this resolution process. It is fully anticipated that reinitiation will be needed due to the complexity and lengthy timeline associated with the construction of this action. We expect all parties to work collaboratively and expeditiously in these instances.

Please note: Current regulation and policy provided adequate guidance to resolve these elevations therefore no policy revision or precedential decisions were required.
Ms. Moujan Mostaghimi  
California Department Transportation  
Environmental Division, MS 8E  
111 Grand Avenue  
Oakland, California 94612

Subject: Biological Opinion on the Effects of the Proposed Interstate 80/Interstate 680/State Route 12 Interchange Phase 1 Project, Solano County, California (EA 0A5300)

Dear Ms. Mostaghimi:

This is in response to your April 20, 2011, request for consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) Interchange Phase 1 Project in Solano County, California. At issue are the effects of the proposed action on the endangered showy Indian clover (Trifolium amoenum), endangered Contra Costa goldfields (Lasthenia conjugans) and its critical habitat, endangered vernal pool tadpole shrimp (Lepidurus packardi), threatened vernal pool fairy shrimp (Branchinecta lynchi), endangered callippe silverspot butterfly (Speyeria callippe callippe), threatened valley elderberry longhorn beetle (Desmocerus californicus dimorphus), threatened Central California Distinct Population Segment of the California tiger salamander (Ambystoma californiense), the threatened California red-legged frog (Rana draytonii) and its critical habitat, and the endangered salt marsh harvest mouse (Reithrodontomys raviventris).

The Service concurs with the California Department of Transportation’s (Caltrans) determination that the proposed project may affect, but is not likely to adversely affect the showy Indian clover, Contra Costa goldfields, and the Central California Distinct Population Segment of the California tiger salamander.

Caltrans has not completed protocol-level surveys for showy Indian clover in the entire action area due to access problems. Due to its extreme rarity we concur that the proposed project may affect, but is not likely to adversely affect this listed plant. Caltrans has committed to conducting Service protocol-level plant surveys of the previously inaccessible parcels on the Mangels' property north of SR 12 West (SR 12W) for showy Indian clover prior to the initial groundbreaking for Construction Package 3. Caltrans will reinitiate consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.) (Act) if
the listed plant is found, with the understanding that the presence of any additional listed species could lead to additional conservation measures that will be determined in conjunction with the Service. In the case of reinitiation, Caltrans' course of action with this species could lead to project delays, project redesign, or other significant effects on the project.

Caltrans has minimized potential effects such that it will not adversely affect the Contra Costa goldfields, Central California Distinct Population Segment of the California tiger salamander, and salt marsh harvest mouse. This determination was based upon: (1) the proposed retaining wall along the south shoulder of SR 12 East (SR 12E) between Ledgewood Creek and approximately 300 feet east of Pennsylvania Avenue and (2) information provided in the April 2011 Biological Assessment (BA) stating that the proposed construction activities and project design would not adversely affect the hydrology of the Gentry Suisun wetlands. The adjacent Gentry Suisun wetlands are occupied by Contra Costa goldfields and this lowland area is designated critical habitat for the species. The area provides potential habitat for the Central California Distinct Population Segment of the California tiger salamander and sufficient surveys have not been conducted to discount species presence. There are records of the salt marsh harvest mouse from within the pickleweed habitat in the Gentry Suisun wetlands (CDFG 2011a, 2011b). Along with Proposed Conservation Measure 23, the proposed retaining wall will avoid intrusion of proposed road widening into the low-lying wetland and will be of sufficient height to prevent salamanders that may inhabit the area from entering the SR 12E roadway.

In their April 20, 2011, letter, Caltrans requested formal consultation on the valley elderberry longhorn beetle and the California red-legged frog. Caltrans determined the project may affect, but is unlikely to adversely affect the Contra Costa goldfields, vernal pool tadpole shrimp, vernal pool fairy shrimp, and callippe silverspot butterfly. Pursuant to 50 CFR 402.13(d), we do not concur with the determination by Caltrans on the vernal pool fairy shrimp, vernal pool tadpole shrimp, and callippe silverspot butterfly. During the technical assistance phase, the Service informed Caltrans and Solano Transit Authority (STA) that it is our biological opinion that the project may affect and is likely to adversely affect the vernal pool fairy shrimp, vernal pool tadpole shrimp, and callippe silverspot butterfly. This adverse effects determination was reflected in the DEIR/FIR and was not challenged by Caltrans or STA during the technical assistance phase, prior to issuance of the April 2011 BA. The Service repeated the biological reasoning for our determinations in our June 30, 2011 30-Day Letter and subsequent meetings with Caltrans and STA after Caltrans issued contrary effects determinations in their April 2011 BA. The Service disagreed with the biological rationale provided by Caltrans to support their not likely to adversely affect determinations for the vernal pool fairy shrimp, vernal pool tadpole shrimp, and callippe silverspot butterfly in their April 2011 BA, their August 17, 2011 response to the 30-day letter, and in meetings with the Service subsequent to the issuance of the April 2011 BA. Therefore, we are issuing this biological opinion on the adverse effects of your project.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users legislation (23 U.S.C § 327) allows the Secretary of the U.S. Department of Transportation acting through the Federal Highway Administration (FHWA) to establish a Surface Transportation Project Delivery Pilot Program, whereby a State may assume the FHWA responsibilities under the National Environmental Policy Act (NEPA) for environmental review,
responsibilities under the National Environmental Policy Act (NEPA) for environmental review, agency consultation and other actions pertaining to the review or approval of a specific project. Caltrans assumed these responsibilities for the FHWA on July 1, 2007 through a Memorandum of Understanding within the State of California (http://www.dot.ca.gov/ser/downloads/MOU/20040506-sec6005mou.pdf) and are exercising this authority as the Federal nexus for section 7 consultation on this project.

This biological opinion is based on: (1) the April 2011 BA, (2) the September 15, 2011 meeting with Caltrans and STA, (3) site visits and meetings during the technical assistance phase of the consultation; (4) discussions with Sue Wickham of the Solano Land Trust (SLT) regarding listed species in nearby SLT holdings; (5) miscellaneous correspondence and electronic mail (e-mail) messages between the Service and Caltrans; (6) results from the joint resolution process; and (7) other information available to the Service.

**Consultation History**

March 26, 2007 The Service received meeting notes from a March 15, 2007, NEPA/404 Integration Memorandum of Understanding checkpoint meeting. The Service did not attend the meeting.

March 10, 2009 The Service received a California red-legged frog habitat assessment for the project from STA’s consultant.

May 29, 2009 The Service received meeting notes for a February 10, 2009, presentation of the alternatives for inclusion in the Draft Environmental Impact Statement (EIS) for the project and the criteria for the selection of alternatives from Caltrans. The Service did not attend this meeting.

November 19, 2009 The Service met with Caltrans and STA’s consultant to discuss future consultation on the project. The expectations for the BA and the need to incorporate wildlife passage into the project design were discussed. The Service was informed that the first project phase was expected to begin in 2012 and later phases may not start for 30 years or more. Caltrans and STA stated that each project phase had independent utility and Caltrans planned to initiate separate consultation on Phase 1. Their current EIS was limited to Phase 1 but the Environmental Impact Report (EIR) included Phase 1 and 2.

June 28, 2010 The Service attended a meeting with Caltrans and STA to discuss the consultation process and a revised project description.

July 15, 2010 The Service provided technical assistance via an e-mail message to STA’s consultant in response to the March 2009 California red-legged frog habitat assessment.
July 19, 2010  The Service visited Solano Land Trust land holdings with STA’s consultant to discuss needed funding to complete and perform California red-legged frog-associated restoration and habitat management projects. STA was exploring compensation opportunities to minimize the effects of the proposed project on the listed frog. The Service emphasized that preservation and management of red-legged frog breeding and upland habitat adjacent to the proposed Business Center Drive Extension is the preferred option for minimizing the projects’ adverse effects on the frog. A conservation easement on this land would preserve the proposed road undercrossing connections between a primary breeding pond and the remainder of the SOL-2 California red-legged frog critical habitat unit.

July 20, 2010  The Service received Wildlife and Fish addendums for the DEIR/EIS from Caltrans for review.

August 13, 2010  The Service received Volumes 1 and 2 of the DEIR/EIS from Caltrans. Although a final alternative has not been selected, Caltrans decided to pursue section 7 consultation on what is identified as Alternative C Phase 1 in the DEIR/EIS. Caltrans included the Solano County Draft Habitat Conservation Plan (HCP) (SCWA 2009) in the Consistency with State, Regional, and Local Plans and Programs, Section 3.1.1.2. The DEIR/EIS acknowledged the draft Solano HCP as establishing a framework for complying with State and Federal endangered species regulations. According to the DEIR/EIS, all the proposed project alternatives would result in impacts to callippe silverspot butterfly, vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, California red-legged frog and their habitat. The document stated that Alternative C, Phase 1 had the potential to destroy or disturb callippe silverspot butterfly or its habitat. The DEIR/EIS also stated that Alternative C Phase 1 would result in impacts to 1.71 acres (1.45 acres direct impacts + 0.26 acre indirect impacts) of vernal pool fairy shrimp/vernal pool tadpole shrimp habitat. In the DEIR/EIS, Caltrans committed to compensating for direct effects to vernal pool fairy shrimp and vernal pool tadpole shrimp at 3:1 and at a minimum of 1:1 for indirect effects. The DEIR/EIS stated that the actual ratios would be determined through consultation with the Service and that credits would be purchased through a Service-approved conservation bank. Although the analysis was not included in the April 2011 BA, the DEIR/EIS acknowledged that the proposed Business Center Drive Extension would reduce dispersal opportunities within the California red-legged frog SOL-2 critical habitat unit. The DEIR/EIS concluded that this reduction in dispersal could result in substantial frog mortality. The DEIR/EIS stated that the effects to the California red-legged frog would be compensated by habitat enhancement or contribution to a California red-legged frog conservation bank. In the Growth-Inducing Impacts section of the DEIR/EIS, Caltrans concluded that the proposed project would accommodate growth and that it would indirectly
lead to development and intensification of land uses by improving access and roadway capacity.

October 18, 2010 The Service issued a DEIR comment letter (Service File #81420-2009-TA-0857-1) to Caltrans.

November 4, 2010 The Service met with STA and their consultant to discuss our DEIR/EIS comments relevant to the consultation. We explained the need for adequate passage to allow listed species and wildlife to safely cross roads, wildlife passage structures and directional fencing designs, construction scheduling, conservation measures, effects determinations on Contra Costa goldfields critical habitat, and the California tiger salamander habitat assessment.

November 10, 2010 The Service sent STA’s consultant comments regarding their draft of the November 4, 2010, meeting notes. The Service recommended that the two large crossings on the Business Center Drive Extension be spanned structures rather than culverts and that the western crossing (the third undercrossing on the Business Center Drive Extension) be at least 78 inches wide with a natural bottom. The Service clarified that the use of vegetation would not be an effective alternative to fencing to direct California red-legged frogs to safe undercrossings or exclude them from the road.

November 18, 2010 The Service visited the proposed project site with Caltrans and STA’s consultant to discuss the Business Center Drive Extension and the Contra Costa goldfields critical habitat, potential branchiopod habitat, and potential California tiger salamander habitat in the Gentry Suisun wetland area.

November 29, 2010 The Service attended a NEPA/Section 404 Integration Process checkpoint meeting. The Service recommended that the planned relocation of businesses displaced by the project should be covered in the section 7 consultation because the relocations would not occur if not for the proposed project. Caltrans and STA informed the Service that a BA would be provided for the project within a week of the meeting.

April 21, 2011 The Service received a digital and hard copy of an April 2011 BA from Caltrans with a letter requesting formal consultation for the California red-legged frog and valley elderberry longhorn beetle, and informal consultation on Contra Costa goldfields, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, and the Central California Distinct Population Segment of the California tiger salamander

May 24, 2011 The Service received a letter from Caltrans stating that the Service was beyond the 30-day review period for the BA. However, the BA that had been provided to us by Caltrans was incomplete and it did not contain all
of the information necessary to initiate formal consultation pursuant to 50 CFR 402.14(c).

June 30, 2011
The Service issued a 30-day letter (Service File #81420-2009-0857-2) to Caltrans in response to the April 2011 BA.

August 19, 2011
The Service received Caltrans' August 17, 2011 response to the Service's June 30, 2011 30-day letter. In the letter, Caltrans requested the issuance of a draft biological opinion.

August 26, 2011
Caltrans notified the Service via an e-mail message that they were entering the formal elevation process to resolve consultation conflicts. This is a procedure both agencies have to agree to in order to resolve impasses on projects.

September 15, 2011
The Service met with Caltrans and STA to discuss Caltrans’ August 19, 2011, response to the June 30, 2011, 30-day letter. The issues and requests for adequate project and species information were not resolved during the meeting. Caltrans asserts that under section 7 they do not recognize in-perpetuity preservation of habitat as a means to minimize the project’s effects on listed species. The Service explained the biological reasons why the vernal pool fairy shrimp, vernal pool tadpole shrimp, and callippe silverspot butterfly are likely to be affected by the proposed project. Caltrans and STA stated they were reluctant to seek take coverage for these species because of their concerns of the costs associated with conservation measures for these species. Caltrans and STA requested a list of conservation measures that would be appropriate to minimize the adverse effects on these listed animals. Caltrans requested that the Service issue a biological opinion for the project without authorization for incidental take for these three species with the acknowledgement they would accept the risk of violating the prohibitions of section 9.

October 7, 2011
The Service Caltrans Liaison preparing the draft biological opinion was instructed to stop work on the project while Caltrans considered approval to provide additional funding to complete consultation.

November 3, 2011
In response to a request made during the September 15, 2011 meeting, the Service sent a written list of recommended conservation measures to minimize the proposed project’s effects on listed species to Caltrans and STA (Service File #81420-2009-F-0857-3).

November 17, 2011
The Service received Caltrans' November 15, 2011 letter response to the Service’s November 3, 2011 letter via e-mail. Caltrans declined to change their determination and request formal consultation for the vernal pool fairy shrimp, vernal pool tadpole shrimp, and callippe silverspot butterfly. However, they provided no biological explanation for their determination.
Caltrans also declined adoption of the appropriate conservation measures listed in the Service’s November 3, 2011 letter to minimize effects to the vernal pool fairy shrimp, vernal pool tadpole shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog.

November 30, 2011  The Service Caltrans Liaison received approval from Caltrans to resume work on the consultation.

December 1, 2011  The Service attended a NEPA/Section 404 checkpoint meeting. Caltrans and STA discussed the project alternatives and avoidance and minimization measures with a collection of State and Federal regulatory agencies. A final project alternative had not been selected. Caltrans is still in the process of finalizing a Least Environmentally Damaging Practicable Alternative determination and approval of a Conceptual Mitigation Plan.

December 15, 2011 - April 11, 2012  Caltrans and the Service entered into and completed the joint dispute resolution elevation process to resolve outstanding issues on the consultation.

BIOLOGICAL OPINION

Description of the Proposed Action

The following project description was provided by Caltrans with minor modifications for reasons of clarity and accuracy provided by the Service.

Caltrans’ full-build project involves comprehensive transportation improvements to the I-80/ I-680/SR 12 interchange complex intended to meet the future traffic demand over a 20-year planning horizon. The full-build includes the widening of I-680 and I-80 and the relocation, upgrade, and expansion of the I-80 westbound truck scales. The full scope of these improvements is not currently funded under the Metropolitan Transportation Commission’s Regional Transportation Plan, 2035. Consequently, a fundable first phase of the full-build project has been developed (referred to as Phase 1). Phase 1 is the subject of evaluation under NEPA and the action for which a record of decision will be issued. STA has provided rationale for why Phase 1 has independent utility and therefore is the proposed action for this section 7 consultation.

General Scope of Work

The proposed Phase 1 project is comprised of the following components:

1. Improvements to the I-80/I-680/SR 12W interchange;

2. Realignment of I-680;
3. A new interchange at I-680 and Red Top Road;

4. A new road connecting the I-80/Red Top Road interchange to Business Center Drive (Business Center Drive Extension);

5. A new interchange at SR 12W and the new Red Top Road alignment;

6. A modified interchange at I-80 and Green Valley Road;

7. New I-80 bridges over Green Valley Creek;

8. Widening I-80;

9. A new lane on eastbound SR 12E; and

10. Widening of the SR 12E bridge over Ledgewood Creek.

Construction Schedule and Funding
The proposed project will be constructed in a series of seven discrete Construction Packages over an eight-year period, as funding becomes available. A summary of the anticipated construction packages, associated activities, and their sequencing is shown in Table 1

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<tr>
<th>Construction Package Number</th>
<th>Main Construction Elements</th>
<th>Scheduling</th>
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| 1                           | 1. Construct the westbound I-80 to westbound SR 12W (Jameson Canyon) Connector.  
                              2. Widen westbound I-80 between the existing I-80/I-680 separation and SR 12W.  
                              3. Reconstruct the west half of the I-80 Green Valley Road interchange.                                                                                           | Start in 2013 with approximate two-year duration. |
| 2                           | 1. Construct the I-680/Red Top Road interchange.  
                              2. Realign Lopes Road and Fermi Road.  
                              3. Realign Ramsey Road around the proposed I-680/Red Top Road interchange.                                                                                           | Start in 2014 with approximate 1.5-year duration. |
| 3                           | 1. Construct the westbound I-80 to southbound I-680 connector.  
                              2. Widen westbound I-80 between the I-80/Suisun Valley Road and the I-80/Green Valley Road interchanges.  
                              3. Reconstruct the westbound I-80 bridge over Green Valley Creek.  
                              4. Construct a new westbound on-ramp from I-80 at Suisun Valley Road.  
                              5. Construct a new westbound off-ramp from I-80 to Green Valley Road.  
                              6. Construct new bridge over Green Valley Creek carrying westbound off-ramp to Green Valley Road.  
                              7. Remove the existing I-80/I-680 connector bridges over I-80 and Green Valley Creek.  
                              8. Remove Neitzel Road.  
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| 4 | 1. Construct the northbound I-680 to eastbound I-80 connector.  
2. Reconstruct the eastbound SR 12W connector to eastbound I-80.  
3. Reconstruct the eastbound I-80 off-ramp to Green Valley Road.  
4. Reconstruct Green Valley Road on-ramp to eastbound I-80.  
5. Realign both Lopes Road and Green Valley Road to connect to the original I-680 alignment.  
6. Widen SR 12F: one lane to the south, including widening the culvert for Ledgewood Creek. | Start in 2014 with approximate two-year duration. FHWA and Caltrans will adopt the full new alignment of I-680 and transfer the original alignment to local control. |
| 5 | 1. Construct the northbound I-680 to westbound SR 12W connector.  
2. Reconstruct the I-80/Red Top interchange.  
| 7 | 1. Construct the northbound I-680/WB I-80 loop on-ramp.  
2. Construct the eastbound I-80 connector to southbound I-680.  
3. Reconstruct the Union Pacific Railroad underpass. | Start in 2018 with approximate 1.5-year duration. |

NOTE: This schedule is approximate and subject to change.

Work in drainages and wetlands will be restricted to the dry season (April 15–October 15, or as otherwise specified in regulatory permits). Work in drainages that support habitat for anadromous fish, such as Green Valley Creek and Ledgewood Creek, will be restricted to the time when fish are not as likely to be present. To the extent possible, vegetation removal will be limited to between September 1 and January 31 to minimize adverse effects to migratory birds. Nighttime construction will be minimized.

**Construction Activities**

**Highway and Road Construction**

Highway construction for Phase 1 will consist of widening I-80 to the north for approximately 1 mile between a point west of Suisun Valley Road and SR 12W, realignment of I-680 and realignment of the connector between westbound I-80 and SR 12W Caltrans will acquire additional ROWs to accommodate the widening. Some highway construction will take place in all seven Construction Packages.

Highway construction will generally consist of cutting and filling to create a roadbed, grading to a maximum depth of 3.3 feet, paving or repaving, and striping or restriping. Highway sections will be constructed or altered to encourage drainage to the sides of the highway.

Roadway excavation will be conducted using equipment such as scrapers, front-end loaders, and motor graders to excavate the area and haul material to construct the embankments necessary to support the proposed roadways. Surplus excavated material will be hauled offsite to an approved commercial disposal site using dump trucks when necessary. The location(s) of material borrow and location and type of material disposal will be determined by the contractor. Caltrans will require the contractor to obtain any necessary environmental clearances associated with obtaining a material borrow site, or with the disposal or reuse of surplus materials. Once the roadbed has been excavated, the soil will be rolled and vibrated with a sheepfoot or drum roller to 95 percent relative compaction.
SR 12E Widening
In Construction Package 4, a third eastbound lane and standard shoulder will be constructed along SR 12E from I-80 east to the existing Webster Street off-ramp immediately east of the SR 12E/Pennsylvania Avenue intersection. Construction of the lane and shoulder will include retaining walls to minimize temporary and permanent disturbance south of SR 12E, and the existing ROW fence would remain in its current location. Drainage improvements along SR 12E would maintain existing hydrological conditions and patterns.

Business Center Drive Extension
Construction of the extension of Red Top Road to Business Center Drive will include excavation to a maximum depth of 95 feet in some areas prior to grading and paving. Excavation and grading will occur during Construction Package 3 and roadway construction will occur during Construction Package 5. Three undercrossings will be included in the Business Center Drive Extension between the existing terminus of Business Center Drive and the proposed intersection with Jameson Canyon Road (SR 12W). The undercrossings will include two approximately 15 by 14 feet span style undercrossings corresponding with two existing dirt access roads. The easternmost large undercrossing will allow continued vehicle access to an existing residence and the second undercrossing will enable access for vehicles and cattle to the Mangels' Pond. The third culvert will be located between the pond access and Jameson Canyon Road. This 60-inch diameter round culvert will convey an ephemeral drainage and will be designed to have a natural bottom (dirt or gravel). The extension from the Jameson Canyon Road intersection to I-80 will include a span bridge over Jameson Canyon Creek.

Approximately 2.5 miles of directional fencing will be attached to the ROW fencing paralleling the Business Center Drive Extension. The ROW fencing is intended to define the ROW, deter access to adjacent private land, and keep livestock from entering the ROW. The attached directional fencing is intended to exclude California red-legged frogs from the ROW and guide them to the three undercrossings and Jameson Canyon Creek Bridge described in the previous paragraph. The fencing will consist of hard plastic or a combination of permanent hardware cloth and flashing with a lip sufficient to deflect frogs on the top, or similar material and design. Directional fencing will be attached to the newly installed ROW fence on both sides of the new roadway constructed between Business Center Drive and I-80. The fence will be constructed along Business Center Drive, which is a local road off the State highway system, and its long-term maintenance will be the responsibility of STA.

Culverts and Bridge/Box Culvert Construction
The project would require the extension/widening of 12 existing culverts and bridges.

Bridge Replacement Construction Activities. The existing I-80 bridges over Green Valley Creek will be replaced with single-span structures. In Construction Package 3, the existing westbound I-80 bridge will be removed and replaced with a single-span structure approximately 103 feet long and 133 feet wide. A new single-span Green Valley Creek bridge for the I-80 Green Valley Road off-ramp will be approximately 180 feet long and 39 feet wide.

Bridge replacement will occur in two segments to maintain traffic on I-80. The work within Green Valley Creek bed and bank for each segment is expected to take approximately four
months and will be scheduled between June 15 and October 15. Bridge demolition will occur when Central Valley fall-run/late-fall-run Chinook salmon and central California coast steelhead are less likely to be present. Any work occurring before June 15 or after October 15 will be restricted to the road or bridge surface, and all work in or adjacent to a creek will be done with the implementation of water quality best management practices (BMPs).

Construction equipment would access the site from the north side of I-80. A staging area will be located within the curve of the I-680 entrance to westbound I-80. Bridge construction will involve the following activities.

1. Bridge abutment locations will be scarified and then excavated to the bottom of the abutment or pile cap using backhoes or bobcats. In some cases, the area adjacent to the abutment will be over-excavated by several feet to ensure that low-expansion material is adjacent to the abutment and wing walls.

2. Temporary cofferdams will be constructed both upstream and downstream of the bridge, and a piped water diversion system will be installed. The cofferdams will be at least 20 feet from the limit of the existing bridge.

3. Pile driving will be necessary to construct new bridge abutments for both bridges over Green Valley Creek. Piles will be located at the top of the creek bank and are anticipated to be 12-inch-square piles driven to a depth of approximately 70 feet. A vibratory hammer will be used when feasible. The number of strikes will depend on the loading and soil characteristics. Pile driving equipment will be operated from beyond the top bank.

4. Concrete abutments or pile caps will be constructed above the piles.

5. Wooden or steel falsework will be placed within the creek (banks and channel) once the abutments and columns have been constructed as necessary to support the construction of the cast-in-place concrete box girder structures.

6. When the reinforcement is set, the concrete will be placed for the superstructure. Once the concrete for the superstructure has hardened the tendons will be tensioned.

7. The last elements of major construction for the bridges will be bridge railings, approach slabs (placed on the embankment approaches to the bridge), and slope paving.

8. To the extent practicable, disturbed portions of Green Valley Creek (bed and bank) will be restored to pre-project conditions upon completion of construction. This may include grading and contouring the site, and seeding or planting with native plants as appropriate.

*Culvert Construction Activities.* Culvert construction will take place at Ledgewood Creek in Construction Package 3 and at Jameson Canyon Creek in Construction Packages 3 and 4. Construction associated with the culverts is expected to take approximately four months and will be scheduled during the driest time of the year (June 15–October 15).
Culvert construction will involve the following activities:

1. Temporary cofferdams (made of gravel, fabric, and pipe) will be constructed upstream and downstream from the culvert; a water diversion system using pipes will be installed to facilitate dewatering of the channel within the cofferdam during construction while bypassing creek flow. The cofferdams will be approximately 20 feet from the limit of the existing culvert.

2. Temporary cofferdams will be constructed to facilitate excavation of existing footings. The cofferdams will consist of gravel wrapped in fabric and would be slightly larger than the footing plan dimensions.

3. Vibratory equipment will be used to compact soil if feasible.

4. Falsework will be placed within the creek (banks and channel) as necessary to support construction of the cast-in-place (poured) concrete box culvert.

5. Falsework will be removed after concrete has set.

6. The concrete invert slab (i.e., invert of the culvert) will be extended to the edge of the widened culvert.

7. To the extent practicable, disturbed portions of Ledgewood Creek and Jameson Canyon Creek (bed and bank) will be restored to pre-project conditions when construction is complete. This may include grading and contouring the site, and seeding or planting with native plants as appropriate.

Ledgewood Creek Culvert. The Ledgewood Creek culvert will be extended 15 feet to the south to accommodate an additional lane for SR 12E (Construction Package 4). The existing crossing consists of a series of five culverts, each measuring 16.5 feet wide and supported by wall piers.

Construction associated with the culvert is expected to take approximately four months and will be scheduled during the driest time of the year (June 15–October 15) for ease of operation and to avoid potential effects to anadromous fish.

Jameson Canyon Creek Culvert. The Jameson Canyon Creek culvert will be constructed under the new I-680 alignment. It will be a two-box culvert, with each box approximately 12 feet wide and 8 feet high. Construction associated with the culvert is expected to last approximately four months and will be scheduled during the driest time of the year (June 15–October 15).

Utilities
As part of the proposed project, utilities within the project footprint will be relocated, realigned, or extended as necessary to accommodate project construction and operation. The maximum extent of disturbance from utilities falls within the project footprint. Utilities that will be affected are water, electrical, gas, cable/fiber, and telephone lines. Actions affecting these utilities will be coordinated with the respective operators. Caltrans will submit detailed
descriptions of utility relocations should the area of disturbance exceed the limits of the current proposed project footprint.

Staging Locations
Caltrans has identified potential construction staging areas within the proposed action area. Should construction contractors determine that other staging areas within or outside the state ROW and proposed action area are necessary to complete work, the contractor will be required by Caltrans or STA to obtain all necessary environmental clearances associated with the alternative staging areas prior to their use for staging purposes. Staging locations will be used for temporary placement of heavy construction equipment and vehicles; construction materials such as shotcrete (a mixture of concrete, fine aggregate, and water blown pneumatically through a hose), gravel, road base, and rebar; equipment maintenance shops; field offices; and rest rooms.

Access roads linking staging areas to the various work areas will be cleared and graded using equipment such as excavators, bobcats, and bulldozers. Upon project completion, and to the extent practicable, staging location and access roads will be returned to their pre-project conditions.

Construction Site Restoration
Caltrans plans to restore areas of temporary ground disturbances, including storage and staging areas, and temporary roads. These areas will be re-contoured, if appropriate, and revegetated with seeds and/or cuttings of appropriate native plant species to promote restoration of the area. Caltrans has developed a restoration plan that will be submitted to the Service for approval prior to initial ground breaking. This plan includes immediate application of permanent erosion control measures for all areas disturbed by construction activities. The permanent erosion control measures will include native (here referring to species naturally occurring in Solano County) grass and forb seed, fertilizer, compost and mulch for soil protection. The restoration plan also includes planting at each creek crossing using a combination of wetland, riparian and upland/transitional species appropriate for the conditions at the specific creek crossings and is informed by local reference sites. To the maximum extent practicable (i.e., presence of natural lands), topsoil will be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle or block California red-legged frog escape or dispersal routes.

Equipment
Construction is expected to require heavy equipment such as cranes, pile drivers, vibratory and hydraulic hammers, excavators, bobcats, bulldozers, roadheaders, hydraulic excavators or backhoes, scrapers, rubber-tired dump trucks, front-end loaders, load-haul-dumps, drill jumbos, front-end loaders and motor graders, sheepsfoot or drum rollers, and asphalt-paving machines.

Temporary construction areas will be cleared, graded, and reestablished using equipment such as excavators, bulldozers, and/or bobcats.
Routine Maintenance

Routine maintenance activities are anticipated within the R-O-Ws. Within R-O-Ws determined to be temporarily impacted, routine maintenance may have restrictions.

Proposed Conservation Measures

Caltrans proposes to avoid and minimize effects to the showy Indian clover, Contra Costa goldfields, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, Central California Distinct Population Segment of the California tiger salamander, and California red-legged frog by implementing the following measures:

1. All construction personnel will attend a mandatory Worker Environmental Awareness Training Program delivered by a Service-approved biologist prior to working on the project site. The program will focus on the conservation measures that are relevant to employee’s personal responsibility and will include an explanation as how to best avoid take of the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog. The program will include an explanation of Federal laws protecting these listed species as well as the importance of compliance with this biological opinion. Documentation of the training, including sign-in sheets, will be kept on file and will be available on request.

2. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

3. A Service-approved biologist(s) will be on-site during any ground-disturbing activities that have the potential to adversely affect the showy Indian clover, Contra Costa goldfields, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, California tiger salamander, and California red-legged frog.

4. A Service-approved biologist will be present during all construction-related activities in sensitive habitats. If special-status species are discovered during these activities, the Service-approved biologist, through the Resident Engineer, will halt all work within 50 feet of the species and contact the Service to determine how to proceed.

5. Prior to construction, Environmentally Sensitive Areas will be delineated using high-visibility orange construction fencing installed along the perimeter of the work areas to clearly delineate the extent of the construction area. The project plans will show the locations where fencing will be installed. The plans will also define the fencing installation procedure. The project’s special provisions package will provide clear language regarding acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within sensitive areas.
6. No more than 20 calendar days prior to any ground disturbance in a given location, preconstruction surveys will be conducted by a Service-approved biologist for the showy Indian clover, Contra Costa goldfields, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, elderberry plants, and California red-legged frog where habitat was identified for each respective species. These surveys will consist of walking surveys of the project limits and accessible adjacent areas within at least 50 feet of the project limits. The biologist(s) will investigate all potential California red-legged frog cover sites. This includes thorough investigation of mammal burrows, appropriately sized soil cracks, and debris. Native vertebrates found in the cover sites will be documented and relocated to an adequate cover site in the action area vicinity. The entrances and other refuge features within the project limits will be collapsed or removed following investigation and clearance.

7. Vegetation clearing will be limited throughout the proposed project area to the non-nesting season (September 1–January 31) to the extent possible. Vegetation removal work outside this window will be preceded by preconstruction nest clearance surveys.

8. Vegetation will be cleared only where necessary and will be cut approximately 4 inches above soil level except in areas that will be excavated for roadway construction. This will allow plants that reproduce vegetatively to resprout after construction. All clearing and grubbing of woody vegetation will be done using hand tools, small mechanical tools, or backhoes and excavators. All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site.

9. All slopes or unpaved areas temporarily disturbed by construction activities will be stabilized to prevent erosion at least three days prior to a forecasted rain event. After construction activities, the temporarily disturbed areas will be restored to pre-project conditions to the maximum extent practicable. Where disturbance includes the removal of trees, native species will be replanted.

10. To reduce the spread of invasive, nonnative plant species and minimize the potential decrease of palatable vegetation for wildlife species, Caltrans will comply with Executive Order 13112. This order is intended to prevent the introduction of invasive species and provide for their control to minimize adverse economic, ecological, and human health effects. In the event that noxious weeds are disturbed or removed during construction-related activities, the contractor will be required to contain the plant material associated with these noxious weeds and dispose of them in a manner that will not promote the spread of the species. The contractor will be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing of materials. Areas subject to noxious weed removal or disturbance will be replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area of disturbance will be covered to the extent practicable with heavy black plastic solarization material until the end of project construction.

11. Construction access, staging, storage, and parking areas will be located within the project ROW or temporary easements and outside of designated Environmentally Sensitive
Areas. Access routes and the number and size of staging and work areas will be limited to the minimum necessary to construct the proposed project. Routes and boundaries of roadwork will be clearly marked prior to initiating construction or grading.

12. All food and food-related trash items will be enclosed in sealed trash containers and removed completely from the site at the end of each day.

13. No firearms will be allowed in the action area except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

14. Caltrans and STA will install bio-swales and bio-filtration in the area adjacent to roadways to avoid and minimize sediment loading and point source pollutants.

15. Stormwater pollution prevention plans (SWPPPs) and erosion control BMPs will be developed and implemented to minimize any wind- or water-related erosion and will be in compliance with the requirements of the Regional Water Quality Control Board. The design staff will include provisions in construction contracts for measures to protect sensitive areas and prevent and minimize stormwater and nonstormwater discharges. Protective measures will include, at a minimum, those listed below.

   a. No discharge of pollutants from vehicle or equipment cleaning will be allowed into any storm drains or water courses.

   b. Vehicle and equipment fueling and maintenance operations will be at least 50 feet away from water courses, except at established commercial gas stations or established vehicle maintenance facilities.

   c. Concrete waste and water from curing operations will be collected in washouts and will be disposed of and not allowed into water courses.

   d. Spill containment kits will be maintained onsite at all times during construction operations and/or staging or fueling of equipment.

   e. Dust control measures will include use of water trucks and organic tackifiers to control dust in excavation-and-fill areas, covering temporary access road entrances and exits with rock (rocking), and covering of temporary stockpiles when weather conditions require.

   f. Silt fences, coir rolls, or straw wattles will be installed along or at the base of slopes during construction to capture sediment.

16. All equipment will be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents, and a Spill Response Plan will be prepared.

17. To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep will be covered at the close of each
working day with plywood or other suitable material, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored in the action area overnight will be inspected before they are subsequently moved, capped, or buried. If at any time a listed species is discovered, the Resident Engineer and Service-approved biologist will be immediately informed. The animal will be allowed to move out of the area on its own volition.

18. If requested through the Resident Engineer or Construction Inspector before, during, or upon completion of groundbreaking and construction activities, Caltrans will ensure that the Service and/or its designated agents can, immediately and without delay, access and inspect the project site for compliance with the proposed project description, conservation measures, and terms and conditions of the biological opinion, and to evaluate project effects on listed species and their habitat.

19. The following measures are intended to avoid and minimize effects to the showy Indian clover.

a. Prior to groundbreaking for Construction Package 3, protocol-level surveys of the inaccessible parcels on the Mangels’ property north of SR 12W will be conducted for showy Indian clover in accordance with the Service protocol.

b. If protocol-level surveys identify showy Indian clover plants within 250 feet of the project footprint, the project footprint will be fenced and flagged to ensure that construction equipment and construction activities are confined and completely avoid any potential direct or indirect effects on individual showy Indian clover plants during construction. In the event of a positive survey finding, Caltrans will implement the following specific measures.

i. Orange Environmentally Sensitive Area construction barrier fencing at least 4 feet in height will be installed to protect Environmentally Sensitive Areas. A Service-approved biologist will identify sensitive biological resources adjacent to the construction area; the Environmentally Sensitive Areas to be fenced will be included in the contract plans and specifications.

ii. A Service-approved biologist will identify potential showy Indian clover habitat, and a protective silt fence, described in the Caltrans Standard BMPs, will be installed to protect down-gradient habitat for showy Indian clover from being affected by sediment loading.

iii. Construction activities conducted within the area of potential showy Indian clover habitat will be confined to the driest season (June 1–October 15) to protect down-gradient, showy Indian clover habitat and minimize potential indirect dust effects on identified flowering showy Indian clover plants.
iv. A Service-approved biologist will be present during all ground-disturbing activities occurring within 250 feet of occupied showy Indian clover habitat to ensure that showy Indian clover habitat is avoided.

v. Vegetation removal within 250 feet of occupied showy Indian clover habitat will be limited to the maximum extent practicable.

vi. A Service-approved biologist will develop and conduct environmental education training for construction employees working on ground-disturbing activities. The program will include the following: a description of showy Indian clover and its habitat needs, photographs of the plant species, an explanation of its legal status and protection under the Act, and a list of the measures that will be implemented to minimize and avoid potential effects on showy Indian clover.

vii. The Service-approved monitor will coordinate with the Resident Engineer to ensure that the contractor maintains the staked, fenced, and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources, including occupied or potential showy Indian clover habitat.

20. The following measures are intended to minimize direct and indirect effects to callippe silverspot butterfly.

a. Caltrans will minimize harm to the callippe silverspot butterfly resulting from the adverse effects to 58.14 acres of habitat. Compensation implemented within Service-approved areas that are both California red-legged frog habitat and Callippe silverspot butterfly may be overlaid on common acreage as long as it is appropriate habitat for each species. The area will receive conservation credit from the Service for both species. The compensation will be phased to coincide with project construction packages as presented in Table 1 and implemented 60 calendar days prior to the date of initial ground disturbance.

Compensation will be based on the amount of permanent and temporary loss of callippe silverspot butterfly habitat. Temporary habitat loss will be compensated at rates based on the amount of time it takes to restore the habitat to baseline conditions following the date of initial habitat disturbance and whether the restored habitat will be subjected to ongoing roadway maintenance activities that would not be entirely beneficial to the species. Off-site conservation will offset routine maintenance activities that are short in duration, e.g. mowing. Habitat value in these R-O-W areas is diminished but not permanently destroyed. Should the determination of permanent versus temporary habitat loss change after Caltrans has provided this compensation, Caltrans will provide additional compensation, if necessary, or apply excess compensation towards future projects that adversely affect the callippe silverspot butterfly.

The maintained ROW is defined as the ROW between the edge of pavement or denuded road shoulder and the Caltrans ROW fence. Permanent effects will
occur within the bounds of the maintained ROW (road surface and area between edge of pavement and ROW fence).

<table>
<thead>
<tr>
<th>Callippe Silverspot Butterfly Habitat Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of Effect</strong></td>
</tr>
<tr>
<td>Permanent</td>
</tr>
<tr>
<td>Temporary</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

<sup>1</sup> period of time from the date of initial ground disturbance until the success criteria described in the restoration/revegetation plan are met.

<sup>2</sup> as per GIS map dated March 2012, potential to be adjusted at final project design, with subsequent reinitiation.

<sup>3</sup> Acres of compensation = off-site areas.

Caltrans will compensate for adverse effects to callippe silverspot butterfly habitat by implementing one of the following two options:

i. Caltrans will establish in-perpetuity callippe silverspot butterfly habitat preservation by purchasing habitat or purchasing callippe silverspot butterfly habitat credits from a Service-approved conservation bank.

Compensation will be implemented with in-perpetuity preservation of callippe silverspot butterfly habitat with high conservation values and (1) include ridge line topographical features associated with callippe silverspot butterfly breeding behavior and adult and/or larval nectar plants, and (2) preference given to areas located within the Callippe Silverspot Butterfly Conservation Area defined in the Draft Solano HCP (SCWA 2009). Location of the proposed conservation areas will be submitted to the Service for review and approval.

The habitat will include a Service-approved conservation easement, held by a third party. An approved ecologically-based conservation easement will include managed public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a PAR-like property analysis. The management plan will include a description of the site, management needs (e.g. grazing plan, non-native vegetation and animal control, etc), when the management activities will be implemented, how often and to what level monitoring of the site will occur, and an action/contingency plan to address potential management issues.
ii. Caltrans will implement or fund restoration and enhancement actions within occupied callippe silverspot butterfly habitat that will have beneficial effects on the species. Such measures shall be implemented on lands with in-perpetuity conservation beneficial to the callippe silverspot butterfly.

Implementation includes identification of land to be restored or enhanced, associated agreements to fund restoration or enhancement activities, and a restoration plan and schedule approved by the Service.

b. Caltrans will survey for the presence of adult nectar and larval host plants and adult nectar sources within areas that will be subject to temporary effects within callippe silverspot habitat. The surveys will be conducted during the blooming season (March to May) no more than one year prior to the excavation and grading of the Business Center Drive Extension proposed to occur during Construction Packages within Callippe silverspot butterfly habitat. SLT will be contacted in order to synchronize the surveys with peak Viola blooming on the Swett Ranch. Observed adult nectar plants and Viola will be mapped and flagged. Caltrans will modify the boundaries of temporary work areas to avoid the nectar and host plants when feasible.

c. To the maximum extent possible, Caltrans will avoid areas of Viola delineated prior to construction and during preconstruction surveys within temporary affected areas.

d. The project footprint will be clearly delineated with Environmentally Sensitive Area fencing and signage to limit construction activities to the described footprint and to maintain awareness. All Environmentally Sensitive Areas will be shown on the final construction drawings.

e. Grading activities within callippe silverspot butterfly habitat will be conducted between August 1 and April 1, to the extent practicable as determined during constructability review. When grading activities must take place after April 1 and before August 1, daily biological monitoring will occur for the callippe silverspot butterfly.

f. Insecticides or herbicides in the Business Center Drive Extension ROW will not be applied during road construction or long-term operational maintenance within 300 feet of the host plant occurrences mapped by Monk & Associates in 2004 or otherwise identified or adult nectar plants or from other locations where the chemical treatments can be carried in by wind or surface flow.

g. Standard erosion and dust control measures will be implemented to minimize the deposition of dust, soil, and silt on callippe silverspot butterfly habitat.
h. Caltrans and STA will ensure there is no drift of sprayable dust control formulations used for dust and erosion control towards callippe silverspot butterfly habitat during construction. Appropriate spray devices and application methods, such as spray pressures, nozzle opening size, and additives such as spray retardants, will be used to prevent drift. Applications will be made on calm days or when the wind speed is low and blowing away from callippe silverspot butterfly habitat. Spray applications will not be made within 200 yards by air or 40 yards by ground upwind from callippe silverspot butterfly habitat. Applications will not occur during rain events.

i. No equipment will be driven or parking or laydown areas established within 20 feet of larval host plants located outside the defined construction footprint and, to the extent feasible, within 20 feet of adult nectar plants located outside the defined construction footprint.

j. If any other life history phases of the callippe silverspot butterfly are found such as adults, pupae, larvae, or eggs, the Service shall be immediately contacted for further guidance.

21 The following measures are intended to avoid and minimize direct and indirect effects to vernal pool fairy shrimp and vernal pool tadpole shrimp.

a. The potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat within the action area is within what is described in the draft Solano HCP as having a low conservation value. Caltrans will compensate for the effects to 1.71 acres (1.45 acres direct effects + 0.26 acre indirect effects) of vernal pool habitat based on the conservation strategy in the draft Solano HCP as follows:

<table>
<thead>
<tr>
<th>Listed Vernal Pool Crustacean Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Effect</td>
</tr>
<tr>
<td>Direct</td>
</tr>
<tr>
<td>Direct</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
</tbody>
</table>

i. The above compensation of 1.71 acres of preservation and 1.45 acres of restoration will be implemented no later than sixty (60) calendar days prior to the date of initial ground disturbance of the specific construction packages. The compensation will be phased to coincide with the initiation of the individual project construction packages as presented in Table 1.

ii. Preservation and restoration for adverse effects to Low Value Conservation Areas shall occur within Medium to High Value Conservation Areas identified in the draft Solano HCP. The location of the compensation will be submitted for Service approval. Preservation and restoration ratios reflected
above are based on the premise that effects to low value conservation areas will be compensated in medium to high value areas.

b. To the extent practicable, Caltrans and its contractors will initiate all work in or within 250 feet of potential habitat for vernal pool crustaceans between May 1 and November 1. When construction activities must take place after November 1 and before May 1, daily biological monitoring will occur for the vernal pool crustaceans.

c. To the extent practicable, Caltrans will incorporate design modifications to avoid direct permanent effects on potential habitat for federally listed branchiopods.

d. Caltrans will avoid potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat, to the maximum extent practicable, during construction activities in temporary work areas. All potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat not directly affected will be designated as an Environmentally Sensitive Area and protected with appropriate fencing and signage. All Environmentally Sensitive Areas will be shown on the final construction drawings.

e. Caltrans will perform all work in accordance with a SWPPP BMPs will be implemented and may include the use of silt fences, sandbags, detention basins, and other means as appropriate to prevent erosion into any potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.

22. The following measures are intended to avoid direct and indirect effects to Contra Costa goldfields, and effects to potential listed branchiopods and California tiger salamander habitat immediately south of SR 12E, between Ledgewood Creek and Suisun City.

a. Caltrans will construct a retaining wall along SR 12E, between Ledgewood Creek and Suisun City. This design feature will limit the roadway expansion to the existing raised roadbed and avoid permanent intrusion into the immediately adjacent seasonal wetland habitat (Gentry Suisun wetland).

b. The boundaries of this habitat along SR 12E will be identified as inaccessible by an orange construction barrier fence and depicted on final design plans. The fence will be at least 4 feet high, it will include signage as the boundary of an Environmentally Sensitive Area, and the installation will be guided and monitored by a Service-approved biologist.

c. A Service-approved biologist will identify potential Contra Costa goldfields habitat prior to ground-disturbing activities, and a protective silt fence, described in the Caltrans Standard BMPs, will be installed to protect down-gradient areas from being affected by sediment loading. This fencing will prevent direct impacts on wetlands south of SR 12E between Ledgewood Creek and the eastern end of the construction area.
d. A Service-approved biologist will conduct construction monitoring in and adjacent to all sensitive special-status plant populations. Construction monitoring frequency will range from daily to weekly depending on the biological resource and the construction activities.

e. A Service-approved biologist will coordinate with the Resident Engineer to ensure that the contractor maintains the staked, fenced, and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources, including potential Contra Costa goldfields habitat.

f. Vegetation removal on the south side of the existing SR 12E will be limited to the minimum necessary.

g. The Service-approved biologist will be present during all ground-disturbing activities occurring within 250 feet of vernal pool habitat.

h. Construction activities conducted within the area between Ledgewood Creek and Suisun City will be confined to the driest season (April 15–October 15, or as otherwise specified in regulatory permits) to protect down-gradient habitat.

i. Caltrans or STA will survey the seasonal wetland / pools south of their Biological Study Area located between SR 12E, Pennsylvania Avenue, Ledgewood Creek, and the SPRR rail line for California tiger salamander prior to construction. Should these surveys find occurrences of California tiger salamander within the action area, Caltrans and STA will reinitiate formal Section 7 consultation with the Service.

23. The following measures are intended to avoid and minimize direct and indirect effects to valley elderberry longhorn beetle.

a. Caltrans will install Environmentally Sensitive Area fencing and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, the fencing will provide a minimum 2-foot setback from the drip line of each elderberry plant.

b. Caltrans will provide contractors with training educating them on the status of the valley elderberry longhorn beetle and its host plant and emphasize the need to avoid damaging elderberry plants.

c. Caltrans will erect signs every 50 feet along the edge of the avoidance area with 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." The signs will be clearly readable from a distance of 20 feet, and will be maintained for the duration of construction.
d. Caltrans will restore, to the maximum extent practicable, any damage or disturbance to the buffer area (areas within 100 feet of elderberry plants) during construction. Caltrans will provide erosion control and revegetate the areas with appropriate native plants.

e. Caltrans will prohibit the use of insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant in the buffer areas or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or more in diameter at ground level.

f. Caltrans and STA will work with the Solano County Resource Conservation District or a Service-approved bank to facilitate the plant removal and transplanting effort. Transplantation of ten elderberry shrubs that are within the construction footprint will be done prior to ground-disturbing activities within 100 feet of the shrubs and will be conducted according to the Service’s 1999 Conservation Guidelines for the Valley Elderberry Longhorn Beetle. A Service-approved biologist will be on-site to monitor the transplanting of the elderberry plants.

g. Caltrans will implement one or a combination of the following:

i. Provide replacement plantings and associated native plantings as described in Table 1 at a Service-approved location.

<table>
<thead>
<tr>
<th>Location</th>
<th>Stem Diameter (Inches)</th>
<th>Exit Holes Present (No/Yes)</th>
<th>Number of Stems</th>
<th>Elderberry Seeding Ratio</th>
<th>Elderberry Seeding Plantings</th>
<th>Associated Native Plant Ratio</th>
<th>Associated Native Plantings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-riparian</td>
<td>1-3</td>
<td>N</td>
<td>8</td>
<td>1:1</td>
<td>8</td>
<td>1:1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3-5</td>
<td>N</td>
<td>7</td>
<td>2:1</td>
<td>14</td>
<td>1:1</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>&gt; 5</td>
<td>Y</td>
<td>1</td>
<td>4:1</td>
<td>4</td>
<td>2:1</td>
<td>8</td>
</tr>
<tr>
<td>Riparian</td>
<td>1-3</td>
<td>N</td>
<td>20</td>
<td>2:1</td>
<td>40</td>
<td>1:1</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>3-5</td>
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<td>3:1</td>
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<td>&gt; 5</td>
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<td>0</td>
<td>6:1</td>
<td>0</td>
<td>2:1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>62</td>
<td>157</td>
<td>177</td>
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</tr>
</tbody>
</table>

ii. Purchase valley elderberry longhorn beetle credits from a Service-approved conservation bank.

h. Two elderberry shrubs are located within 100 feet of the limit of disturbance. These shrubs will be protected by:
24. The following measures are intended to avoid and minimize direct and indirect effects to California red-legged frog.

a. Caltrans will compensate for harm resulting from adverse effects to the California red-legged frog and 97.80 acres of its habitat, and the adverse effects critical habitat for the California red-legged frog by providing appropriate habitat compensation.

The compensation will be based on the amount of permanent and temporary loss of red-legged frog habitat. Temporary habitat loss will be compensated at rates based on the amount of time it takes to restore the habitat to baseline conditions following the date of initial habitat disturbance and whether the restored habitat will be subjected to ongoing Caltrans routine maintenance activities, e.g. mowing, that may affect the species.

The maintained ROW is defined as the ROW between the edge of pavement or denuded road shoulder and the Caltrans ROW fence. Permanent effects will occur in areas of maintained ROW that include barriers to frog movement. Areas of ROW within and adjacent to retaining walls will be permanently affected by the project. Caltrans commits to installing a Service-approved frog exclusion fence along the proposed Business Center Drive Extension from the existing Business Center Drive to Jameson Canyon Road in order to direct California red-legged frogs to the three proposed undercrossings. Since the exclusion fence will likely prevent individuals of this threatened species from entering the maintained ROW, the entirety of the ROW within this area will be permanently affected by the proposed project. However, less compensation is necessary as the directional fence also results in a beneficial effect to California red-legged frogs by directing them to safe undercrossings. Off-site compensation is proposed to offset temporary impacts within the maintained R-O-W since habitat will continue to be impacted by on-going routine maintenance activities, e.g. mowing. Lastly, additional off-site compensation is necessary for temporal loss of habitat.
Caltrans will compensate for the loss of habitat of the California red-legged frog by implementing the following:

### California Red-Legged Frog Habitat Compensation

<table>
<thead>
<tr>
<th>Level of Effect</th>
<th>Location of disturbance</th>
<th>Duration</th>
<th>Compensation Ratio</th>
<th>Acres of Effects</th>
<th>Acres of Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>Within or beyond maintained ROW</td>
<td>Permanent</td>
<td>3:1</td>
<td>78.48</td>
<td>235.44</td>
</tr>
<tr>
<td></td>
<td>Within maintained ROW and excluded by directional fence</td>
<td>Permanent</td>
<td>2:1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Temporary</td>
<td>Within the maintained ROW</td>
<td>Within 1 year</td>
<td>1:1 on-site 1:1 off-site</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Beyond the maintained ROW</td>
<td>Within 1 year</td>
<td>1:1 on-site 0.5:1 off-site</td>
<td>19.32</td>
<td>9.66</td>
</tr>
<tr>
<td></td>
<td>Within the maintained ROW</td>
<td>Within 2 years</td>
<td>1:1 on-site 1:1 off-site</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Beyond the maintained ROW</td>
<td>Within 2 years</td>
<td>1:1 on-site 1:1 off-site</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Within or beyond maintained ROW</td>
<td>Greater than 2 years</td>
<td>3:1 off-site OR: 2:1 off-site AND 1:1 on-site</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>97.80</td>
<td>245.1</td>
</tr>
</tbody>
</table>

1. Period of time from the date of initial ground disturbance until the success criteria described in the restoration/vegetation plan are met.
2. As per GIS map dated March 2012, potential to be adjusted at final project design, with subsequent initiation.
3. Acres of compensation = off-site lands.

Compensation implemented within areas that are both California red-legged frog habitat and Callippe silverspot butterfly habitat may be overlaid on common acreage as long as the area is appropriate habitat for each species. With Service approval, the conservation lands would receive compensation credit from the Service for both species.

Compensation will be implemented with in-perpetuity preservation of California red-legged frog habitat with high conservation values, consistent with the parameters described in the Draft Solano HCP (SCWA 2009) within sixty (60) calendar days prior to the date of initial ground disturbance at the project.

California red-legged frog habitat used for conservation will be: (1) preferably located within the California Red-Legged Frog Conservation Area defined in the Draft Solano HCP (SCWA 2009), (2) within 0.7 mile of unobstructed California red-legged frog breeding habitat and non-breeding aquatic habitats, (3) within a California red-legged frog critical habitat unit or within the vicinity of frog critical habitat, and (4) approval by the Service.

b. The Resident Engineer will stop work at the request of the Service-approved biologist(s) if activities are identified that may result in take of a California red-legged frog. Should the biologist(s) or Resident Engineer exercise this authority, the Service will be notified by telephone and email within one working day. The Service contact will be the Coast-Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600.
c. The Resident Engineer will halt work immediately and contact the Service-approved project biologist and the Service in the event that a California red-legged frog is found within the construction zone. The Resident Engineer will suspend all construction activities in the immediate construction zone until the animal leaves the site voluntarily or is removed by the biologist to a release site using Service-approved transportation techniques.

d. To the extent practicable, initial ground-disturbing activities will be avoided between November 1 and March 31 to avoid the period when California red-legged frogs are most likely to be moving through upland areas. When ground-disturbing activities must take place between November 1 and March 31, daily monitoring will occur for California red-legged frogs.

e. Exclusionary fencing will be placed at the edge of active construction areas (cleared by biological surveys) in areas identified as California red-legged frog habitat. The fencing is intended to restrict frog access from the adjacent upland and riparian habitat. The fence will consist of taut silt fabric: 24 inches high, stacked at 10-foot intervals, with the bottom buried 6 inches below grade. The bid solicitation package Special Provisions will clearly describe acceptable fencing material and proper fence installation and maintenance. The wildlife exclusion fence will remain in place throughout the duration of construction activities and will be regularly inspected and fully maintained. The fence will be completely removed upon completion of project-related activities within these areas and the areas returned to preconstruction condition or better.

f. California red-legged frogs that need to be relocated outside the construction area will be released beyond the exclusion fence within the same riparian area or watershed by the Service-approved biologist. If relocation of the frog outside the fence is not feasible (i.e., there are too many frogs observed per day), the biologist will relocate frogs to a preapproved location determined by Caltrans and the Service. Prior to construction, Caltrans will obtain approval of the relocation protocol from the Service in the event that a California red-legged frog is encountered and needs to be relocated away from the immediate project area.

g. To prevent inadvertent entrapment of a California red-legged frog during construction, all excavated, steep-walled holes or trenches more than 1 foot deep will be covered at the close of each working day with plywood or similar material, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the onsite biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service will be contacted by telephone for guidance. The Service will be notified of the incident by telephone and email within one working day.

h. Within and adjacent to California red-legged frog habitat, all construction equipment or construction debris left overnight within the action area will be inspected for
California red-legged frogs by the Service-approved biologist prior to the beginning of each day’s activities and prior to being moved.

i. Injured California red-legged frogs will be cared for by a licensed veterinarian or other qualified person such as the onsite biologist; dead individuals of any listed species will be preserved according to standard museum techniques and held in a secure location. The Service will be notified within one working day of the discovery of death or injury to a listed species that results from project-related activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a U.S. Geological Survey (USGS) 7.5-minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead frogs will be placed in a sealed plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag will be placed in a freezer located in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Coast-Bay/Foothill Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600 and the Resident Agent-in-Charge of Service’s Law Enforcement Division at (916) 414-6600.

j. To the extent practicable, nighttime construction will be minimized, especially for those areas adjacent to California red-legged frog habitat. When nighttime work is to be conducted in areas adjacent to potential habitat, all lighting will face away from potential habitat.

k. Plastic monofilament netting (erosion control matting) or similar material will not be used in the action area because California red-legged frogs can become entangled and trapped in it. Instead, Caltrans will use alternative materials such as coconut coir matting or pacified hydroteeering compounds.

l. Vehicle and equipment speed will be limited to 20 miles per hour in unpaved portions of the action area.

m. No pets will be permitted in the action area.

n. For onsite storage of pipes and conduits and other materials that could provide shelter for California red-legged frogs, an open-top trailer will be used to elevate the materials above ground. This is intended to reduce the potential for animals to climb into the conduits and other materials.

25. Caltrans will provide a Funding Assurance Letter stating that sufficient funds for habitat compensation have been budgeted in the Interstate I-80/I-680/SR 12 Interchange Phase 1 Project Expenditure Authorization. The Funding Assurance Letter will be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering. The Funding Assurance Letter provides
evidence that Caltrans has allocated sufficient funding to implement the proposed compensation.

26. Land used for habitat compensation will include a Service-approved conservation easement. An approved ecologically-based conservation easement will include managed public access, a management plan, and an in-perpetuity endowment or other permanent non-wasting management fund based on a PAR-like property analysis. The management plan will include a description of the site, management needs (e.g. grazing plan, non-native vegetation and animal control, etc), when the management activities will be implemented, how often and to what level monitoring of the site will occur, and a action/contingency plan to address potential management issues.

27 Caltrans will provide a restoration and revegetation plan for each construction package to be reviewed and approved by the Service no later than sixty (60) calendar days prior to date of its initial groundbreaking of each construction package. The plan will include, but will not be limited to: schedule, methodology, a list of the seed mixes and container plants, plant material source, irrigation, maintenance schedule, monitoring program, success criteria, control of invasive, noxious weeds, and remediation and adaptive management. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service following the completion for each construction package. The reports will be submitted on or before December 31 of each year monitoring is conducted.

The revegetation plan will include a photo monitoring plan. The plan will include, but is not limited, to the following:

a. An adequate number of photo monitoring stations will be established to provide representative views of project restoration and construction activities. Stations will be located in areas that allow for unobstructed views and a field of vision of approximately 2000 feet, to the extent allowed by surrounding vegetative cover and topography. Each station will provide a representative panoramic view of the restoration footprint. Caltrans will ensure that photo monitoring stations numbers and locations are sufficient to document restoration success.

b. Baseline photographs will be taken during the spring growing season prior to construction. Following the completion of ground disturbance, photo documentation will be conducted quarterly to document restoration relative to four seasons. Photo documentation will conclude when the Service has agreed that success criteria have been met.

c. Photo monitoring station locations will be provided to the Service in an acceptable geographic format with the coordinate system identified.

d. If the Service or the biological monitor(s) determines that additional monitoring stations are necessary, the locations will be added to the inventory of photo monitoring stations prior to the date of the next photo documentation.
c. During each photo monitoring cycle all stations will be visited within a two day period.

f. At the conclusion of restoration, the acreage of restored areas will be tabulated and provided to the Service. The extent of restoration will be delineated with a handheld GPS device and a trackfile provided to the Service Representative.

28. Routine maintenance activities will be identified in the Restoration/Revegetation Plan. Maintained R-O-Ws may include routine maintenance activities that are short in duration, such as spraying and mowing. Specific restrictions may apply for the valley elderberry longhorn beetle, callippe silverspot butterfly, California red-legged frog, and the showy Indian clover.

**Action Area**

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed action, the action area includes: (1) all lands associated with the approximately 258.14-acre construction footprint (of which 136.72 acres is existing hardscape) including roads (except for County roads, and State and Federal highways) and other areas accessed by project vehicles, and (2) lands within 1,000 feet of the construction footprint subjected to project-related lighting, noise, vibration, runoff, and fugitive dust.

**Analytical Framework for the Jeopardy and Adverse Modification Analysis**

**Jeopardy Determination**

The following analysis relies on four components to support the jeopardy determination for the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog: (1) the *Status of the Species*, which evaluates the species’ range wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the role of the action area in the species’ survival and recovery; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the species’ current status and, for non-Federal activities in the action area, those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.
The following analysis places an emphasis on using the range-wide survival and recovery needs of the species and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

**Adverse Modification Determination**

This Biological Opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR §402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this Biological Opinion relies on four components: (1) the *Status of Critical Habitat*, which evaluates the range wide condition of designated critical habitat for Contra Costa goldfields and California red-legged frog in terms of PCEs, the factors responsible for that condition, and the intended recovery function of the critical habitat at the provincial and range-wide scale; (2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and how that will influence the recovery role of affected critical habitat units; and (4) *Cumulative Effects* which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on Contra Costa goldfields and California red-legged frog critical habitats are evaluated in the context of the range-wide condition of the critical habitat at the provincial and range-wide scales, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for Contra Costa goldfields and the California red-legged frog.

The analysis in this Biological Opinion places an emphasis on using the intended range-wide recovery function of Contra Costa goldfields and California red-legged frog critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

**Status of the Species**

*Vernal Pool Fairy Shrimp*

Refer to the *Vernal Pool Fairy Shrimp 5-Year Review* for status and life history information (Service 2007a). This document can be downloaded from the world wide web at: http://www.fws.gov/cno/es/images/Graphics/VPFS_5-yr%20review%20CNO%20FINAL%2027Sept07.pdf
Vernal Pool Tadpole Shrimp

Refer to the *Vernal Pool Tadpole Shrimp 5-Year Review* for status and life history information (Service 2007b). This document can be downloaded from the world wide web at:

Callipe Silverspot Butterfly

Refer to the *Callippe Silverspot Butterfly 5-Year Review* for status and life history information (Service 2009). This document can be downloaded from the world wide web at:

Valley Elderberry Longhorn Beetle

Refer to *Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) 5-Year Review: Summary and Evaluation* (Service 2006b) for status and life history information. This document can be downloaded from the world wide web at:

California Red-Legged Frog

The California red-legged frog was listed as a threatened species on May 23, 1996 (61 FR 25813). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002). A revised critical habitat was designated for this species on March 17, 2010 (75 FR 12816). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010).

The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellows 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the Central California Coast. Isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the
southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (CDFG 2011a).

California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger et al. 2003, Stebbins 2003). However, California red-legged frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. California red-legged frogs also can be found in disturbed areas such as channelized creeks and drainage ditches in urban and agricultural areas. For example, an adult California red-legged frog was observed in a shallow isolated pool on North Slough Creek in the American Canyon area of Napa County (Christine Gaber/PG&E personal communication with Chris Nagano/Service on October 22, 2008). This frog location was surrounded by vineyard development. Another adult California red-legged frog was observed under debris in an unpaved parking lot in a heavily industrialized area of Burlingame (Patrick Kobernus/Coast Ridge Ecology communication with Michelle Havens/Service on October 16, 2008). This Burlingame frog was likely utilizing a nearby drainage ditch. Caltrans also has discovered California red-legged frog adults, tadpoles, and egg masses within a storm drainage system within a major cloverleaf intersection of Millbrae Avenue and State Route 101 in a heavily developed area of San Mateo County (Caltrans 2007). The California red-legged frog has the potential to persist in disturbed areas as long as those locations provide at least one or more of their life history requirements.

California red-legged frogs typically breed between November and April, although earlier breeding records have been reported in southern localities. Breeding generally occurs in still or slow-moving water often associated with emergent vegetation, such as cattails, tules or overhanging willows (Storer 1925, Hayes and Jennings 1988). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984).

Habitat includes nearly any area within 1 to 2 miles of a breeding site that stays moist and cool through the summer including vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees (Fellers 2005). Sheltering habitat for California red-legged frogs potentially includes all aquatic, riparian, and upland areas within the range of the species and includes any landscape feature that provides cover, such as animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water. Some individuals remain at breeding sites year-round, while others disperse to neighboring water features. Dispersal distances are typically less than 0.5-mile, with a few individuals moving up to 1 to 2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move
directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger et al. (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred from one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger et al. (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, i.e., California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger et al. 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment in eastern Contra Costa County, Tatarian (2008) noted that the majority of frogs (57 percent) fitted with radio transmitters in the Round Valley study area stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. Her study reported a peak seasonal terrestrial movement occurring in the fall months associated with the first 0.2-inch of precipitation and tapering off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the base of trees or rocks, logs, and under man-made structures; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from one to four days; however, one adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Upland refugia closer to aquatic sites were used more often and were more commonly associated with areas exhibiting higher object cover, e.g., woody debris, rocks, and vegetative cover. Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after six to 14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings et al. 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand resulted in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3½ to seven months following hatching and reach sexual maturity two to three years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than one percent of eggs laid reaching metamorphosis (Jennings et al. 1992). Under favorable conditions, California red-legged frogs may live eight to ten years (Jennings et al. 1992). Populations can fluctuate from year to year; favorable conditions allow the species to have extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the animal may temporarily disappear from an area when conditions are stressful (e.g., during periods of drought, disease, etc.).
The diet of California red-legged frogs is highly variable and changes with the life history stage. The diet of the larvae is not well studied, but is likely similar to that of other ranid frogs, which feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have preyed on Pacific chorus frog, three-spined stickleback and, to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods; juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination, feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forrys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more “permeable” areas (Buechner 1987; Stamps et al. 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a “corridor” must be determined from the perspective of the animal (Forrys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldorn 1990; Verboom et al. 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the “rescue” effect (Hanski 1982; Gotelli 1991, Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with
disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit et al. 1995; Buza et al. 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic “drain” for many amphibians. Furthermore, Bonnet et al. (1999) found that snake species that frequently make long-distance movements have higher mortality rates than do sedentary species.

Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (Rana aurora), and suggested that bullfrogs could prey on subadult California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with California red-legged frog reproduction by eating adult male California red-legged frogs. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; Jennings 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to California red-legged frog habitat has also affected the threatened amphibian. These declines are attributed to channelization of riparian
areas, enclosure of the channels by urban development that blocks dispersal, and the introduction of predatory fishes and bullfrogs. Diseases may also pose a significant threat, although the specific effects of disease on the California red-legged frog are not known. Pathogens are suspected of causing global amphibian declines (Davidson et al. 2003). Chytridiomycosis and ranaviruses are a potential threat because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson et al. 2003; Lips et al. 2006). Mao et al. (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric threespine sticklebacks in northwestern California. Non-native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner et al. 2006). Humans can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e., contaminated boots, waders or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from vehicle-related mortality, habitat degradation, noise and light pollution, and invasive exotic species. Forman and Deblinger (1998) described the area affected as the “road effect” zone. One study along a four-lane road in Massachusetts determined that this zone extended for an average of 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. However, in some areas they detected an effect greater than 0.6-mile from the road. The road effect zone can also be subtle. Van der Zandt et al. (1980) reported that lapwings and black-tailed godwits feeding at 1,575 to 6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increases near roads (MacArthur et al. 1979). Trombulak and Frissell (2000) described another type of “road-zone” effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads and elevated levels of metals in soil and plants were detected at 660 feet of roads. The “road-zone” varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the road-zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The road-zone with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads and well-used large paved areas in the landscape. Amphibians appear especially vulnerable to traffic mortality because they readily attempt to cross roads, are small and slow-moving, and thus are not easily avoided by drivers (Carr and Fahrig 2001). Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. High-volume highways pose a nearly impenetrable barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana*
*arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (Ashley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road mortalities from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but may be an incorrect assumption for small animals, such as the California red-legged frog. The carcasses of small soft-bodied amphibians like frogs are quickly decimated under passing tires and are less likely to be detected by researchers and are unlikely to persist for more than a day (Santos *et al.* 2011).

The recovery plan for the California red-legged frog identifies eight recovery units (Service 2002). The establishment of these recovery units is based on the determination that various regional areas of the species’ range are essential to its survival and recovery. These recovery units are delineated by major watershed boundaries as defined by USGS hydrologic units and the limits of its range. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations. Thus when combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitats within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

**Environmental Baseline**

*Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp*

The majority of the action area, including the eastern end of the Business Center Drive Extension is located within the Solano-Colusa vernal pool region, which was designated based largely on presence of endemic vernal pool species identified in the Service’s *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (Recovery Plan) (Service 2005a). The vernal pool fairy shrimp and vernal pool tadpole shrimp have been adversely affected by development and modification of vernal pool and grassland habitat within the Solano-Colusa vernal pool region and are present in much of the undeveloped areas within the region.

Most of the seasonal wetland habitat in Solano County has not been surveyed for listed branchiopods. Of the 23 vernal pool fairy shrimp records in Solano County, the CNDDB includes at least three occurrences within 5 miles of the action area (CDFG 2011a, 2011b). Three of the 30 records for vernal pool tadpole shrimp occur within 5 miles of the action area (CDFG 2011a, 2011b).

Although Caltrans did not perform protocol-level surveys for listed branchiopods, they identified at least 14 seasonal wetland features within 250 feet of the construction footprint that provide habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. According to Caltrans, half
of these habitat features would be directly affected by the proposed project.

The Service has determined that the vernal pool fairy shrimp and vernal pool tadpole shrimp are likely to occur within the action area due to the presence of appropriate seasonal wetland habitat within the action area such as impervious soils, the seasonal hydroperiod, and topographical features that provide the necessary habitat attributes to support one or all of these species’ life history stages. Caltrans identified 14 seasonal wetland features within the action area. Furthermore, wading birds, that visit this and other nearby occupied wetlands, ponds and swales to forage or drink water, act as vectors to transport cysts or adults from one pond to another through their feces or on their feathers or legs. For these reasons, the Service has determined that it is reasonable to conclude that vernal pool fairy shrimp and vernal pool tadpole shrimp to inhabit the identified seasonal wetlands within 250 feet of the construction footprint.

*Callippe Silverspot Butterfly*

Much of the undeveloped land in Solano County is privately owned and knowledge of the current distribution of callippe silverspot butterfly in the county’s remaining areas of potential habitat is limited.

Reported records of the callippe silverspot butterfly in Solano County are located in the hills between Vallejo and Cordelia and northward into Jameson Canyon (SCWA 2009; CDPG 2011a, 2011b). Most of the current knowledge in Solano County is derived from SLT’s Swett and King Ranch properties south of I-80 where management activities are being proposed and implemented to enhance callippe silverspot butterfly habitat (SCWA 2009; Service personal communication with SLT 2011).

As defined by the Solano Draft HCP’s *Callippe Silverspot Butterfly Conservation Area* the likely distribution of the callippe silverspot butterfly in Solano County extends from Vallejo to at least 4 to 5 miles north of I-80 towards Green Valley and includes the rolling hills south and north of Jameson Canyon Road (SCWA 2009). This conservation area encompasses the proposed project footprint for the Business Center Drive Extension. The 3,300-acre conservation area includes core silverspot habitat and connectivity between these core areas. Approximately 7,870 acres of the conservation area is currently managed as open space by SLT and the Greater Vallejo Recreation District and an additional 660 acres has been preserved as “mitigation lands” (SCWA 2009). These open space lands are subject to varying degrees of public access for the purpose of recreation. Funding for additional surveys, monitoring, management, and enhancement of callippe silverspot butterfly habitat within the conservation area has been limited and inconsistent.

The draft Solano HCP acknowledges that steep slopes are important to the life history of the callippe silverspot butterfly (SCWA 2009). Of the approximately 1,560 acres of callippe silverspot butterfly habitat identified within the urban growth zone in the draft HCP, it was estimated that at least 350 acres of those would be conserved for the species because the slopes were too steep to develop. According to the Solano draft HCP, the cities of Vallejo and Fairfield have adopted restrictions in their general plans that limit development on slopes greater than
30 percent. The analysis in the draft HCP assumes that development would be avoided on all slopes greater than 30 percent and approximately half of those greater than 20 percent.

A key element to callippe silverspot butterfly occupation is the distribution of their larval host plant, Johnny jump-up. This perennial violet is found throughout much of the grassland and oak woodlands of coastal California but little is known about its distribution within Solano County. Silverspot butterflies may rely on Johnny jump-up stands of a few to several acres. The annual densities of this rhizomous herb on the King and Swett Ranches is highly variable (Service personal communication with SLT 2011) which is likely true throughout the Callippe Silverspot Conservation Area. In 2004, Monk & Associates (Caltrans 2011) found two previously unrecorded Johnny jump-up stands immediately adjacent to the construction footprint for the proposed Business Center Drive Extension. Caltrans was still able to observe a violet flower in 2011 when they attempted to follow-up on the Monk & Associates 2004 observations. However, the investigation was conducted after the plant’s prime blooming period at the King/Swett Ranches reference stands (May 17, 2011 Memo from ICF International to Caltrans). Monk & Associates’ 2004 observation confirmed that the larval host plant occurs within the conservation area north of I-80 and there are at least two stands adjacent to the proposed action area. Much of the proposed construction footprint for the Business Center Drive Extension is located on eastern-facing slopes. Johnny jump-ups appear to remain in bloom longer on eastern-facing slopes which likely increase the potential for larvae to mature into adulthood (SCWA 2009).

Adult callippe silverspot butterflies are less limited in their use of nectar plants. They are known to utilize native and exotic flowers depending upon availability. The butterflies show particular preference for California buckeye, coyote wildmint, and various thistles within the King and Swett Ranches (personal communication with SLT, 2011). California buckeye occurs within the various riparian areas north of I-80 and along Jameson Canyon Creek. ICF International reported numerous thistle and other adult silverspot butterfly nectar plants in the proposed Business Center Drive Extension area in May 2011 (May 17, 2011 Memo from ICF International to Caltrans).

The Callippe Silverspot Butterfly Conservation Area is characterized by rolling hills associated with silverspot butterfly “hill-topping” breeding behavior. Adult butterflies congregate on ridgelines and hilltops for breeding purposes and adult males will defend territories along these topographical features. The majority of the proposed construction footprint for the Business Center Drive Extension includes these associated topographical features.

Caltrans did not conduct surveys for callippe silverspot butterfly but Monk & Associates identified two Viola populations during general biological surveys for a former Business Center Drive Extension alignment. Monk & Associates mapped Viola stands approximately 20 feet south and 300 feet north of the construction footprint. Monk & Associates did not indicate how many violets they observed in each population. Caltrans was unable to successfully monitor the Viola populations following the 2004 observations. In addition to finding the larval host plant, Caltrans also identified numerous adult nectar plants throughout the area.

The Service believes that the callippe silverspot butterfly is reasonably certain to occur within the action area because: (1) it is located within the species’ range; and (2) larval host plants, adult nectar plants, and topographical breeding habitat features are located within and/or adjacent
to the proposed construction footprint.

**Valley Elderberry Longhorn Beetle**

The action area is located within the current range of the valley elderberry longhorn beetle. There are at least five known occurrences of valley elderberry longhorn beetle within 5 miles of the action area (CDFG 2011a, 2011b). The draft Solano HCP states that any elderberry shrub in Solano County has the potential to support the valley elderberry longhorn beetle even though a specific plant may not show evidence of beetle use (SCWA 2009). Caltrans identified the listed beetle’s host plant, the elderberry shrub, in the action area as potential habitat (Caltrans 2011). According to the BA, ten elderberry shrubs will be directly affected by the project and will be removed and transplanted. Caltrans found a potential valley elderberry longhorn beetle exit hole in two of the shrubs with stems 1 inch or greater in diameter at ground level. Therefore, the Service has determined that the valley elderberry longhorn beetle is reasonably certain to occur within the action area because of the biology and ecology of the animal, and the presence of suitable habitat.

**California Red-Legged Frog**

The entirety of the proposed project is located within the species’ range and current distribution. The proposed project cuts through a mosaic of industrial, residential, agricultural, fallow, and open space land uses, representing a range of highly modified and degraded to high quality California red-legged frog habitat. The alignment crosses and is adjacent to several creeks (Jameson Canyon Creek, Dan Wilson Creek, Suisun Creek, Ledgewood Creek, and Green Valley Creek), numerous constructed drainage features, and perennial and seasonal ponds and marshes that provide breeding and non-breeding aquatic habitat for the California red-legged frog. Riparian vegetation along creeks and drainages and landscape vegetation in the action area provide valuable refuge, forage, and dispersal habitat for red-legged frogs. Upland grassland areas with rodent burrows and other cover sites along constructed drainage features, in fallow, and grazed fields also provide refuge, forage, and dispersal habitat for the species.

The western portion of the action area, including the Business Center Drive Extension, is within and bisects Core Area #15 (Jameson Canyon-Lower Napa River) of the California red-legged frog Recovery Unit 3 (North Coast and North San Francisco Bay) (Service 2002). The conservation needs for the Jameson Canyon-Lower Napa River core area are: (1) protecting existing populations from current and future urbanization; (2) create and manage alternative breeding habitats; and (3) protecting dispersal corridors. The Jameson Canyon-Lower Napa River Core Area is described in the recovery plan as an important source population for the species.

The Business Center Drive Extension bisects the southeastern quarter of the SOL-2 California red-legged frog designated critical habitat unit (Jameson Canyon Unit). SOL-2 is considered essential for the California red-legged frog because it provides connectivity from Napa County south to unit SOL-3 (American Canyon Unit) which occupies a wedge of habitat located between Jameson Canyon Road and Interstate 80. Critical habitat unit SOL-1 (the Sky Valley Unit) is the southernmost unit in Solano County and extends south to Suisun Bay. The connectivity function
of the three Solano County units is dependent upon maintaining red-legged frog passage across I-80 and Jameson Canyon Road (SR 12W). The construction footprint also enters the eastern corner of SOL-3 at the proposed intersection of the Business Center Drive/Redtop Road and I-80.

The *California Red-Legged Frog Conservation Strategy* in the draft Solano HCP represents the most complete regional scientific data and analysis for the California red-legged frog in Solano County (SCWA 2009). The western portion of the construction footprint, beginning at the SR 12W/I-80 intersection, is located within the *California Red-Legged Frog Conservation Area* defined in the draft HCP. According to the draft HCP analysis, the existing Jameson Canyon Road and Interstate 80 create barriers between the SOL-1, -2, and -3 critical habitat units and “severely restrict or eliminate the natural dispersal and migratory movements of individuals between these three blocks of habitat, reducing the resiliency of populations and limiting genetic diversity.” One of the objectives of the draft HCP is to conserve 20 percent of the historic range of the California red-legged frog within Solano County which amounts to approximately 99 percent of the Jameson Canyon-Lower Napa River core recovery area.

Relatively little is known about the California red-legged frog population in Solano County. Much of the red-leg frog habitat in Solano County occurs on private land and has not been subject to protocol-level or other surveys. As directed by the draft Solano HCP, regional surveys will be conducted for California red-legged frogs within the Jameson Canyon-Lower Napa River Core Recovery Area within two years of adopting the final HCP and will continue every five years for the life of the HCP (SCWA 2009). The first California red-legged frog CNDDB record for Solano County was not recorded until 1993 (SCWA 2009). There are only two reported observations of the species in the SOL-2 critical habitat unit and both records are the result of surveys conducted by Monk & Associates for the former alignment of the Business Center Drive Extension (Caltrans 2011). The records are located between the proposed Business Center Drive Extension and I-80. One record includes adult and juvenile red-legged frogs found approximately 400 feet from the construction footprint in a plunge pool of an ephemeral drainage. The second record includes adult frogs and tadpoles in Mangle’s Pond, approximately 300 feet north of the construction footprint and south of the Business Center Drive Extension. The CNDDB record identified red-legged frog breeding on the Mangels’ Property. The Mangels’ pond is likely the primary breeding pond within the SOL-2 California red-legged frog critical habitat unit. There are at least 13 other California red-legged frog occurrences reported to the CNDDB within 1 to 5 miles from the construction footprint (CDFG 2011a, 2011b).

Caltrans did not conduct standardized or protocol-level frog or other wildlife surveys in the action area or a wildlife movement analysis to support their baseline analysis for the project. Due to limited access, Caltrans and the Service used aerial photography and field observations from available access locations to independently assess habitat throughout the action area vicinity.

In addition to the Mangels’ Pond, Caltrans determined that the marsh immediately south of the Mangels’ Pond is potential red-legged frog breeding habitat. The southern edge of this marsh is within the construction footprint for work occurring at the SR 12W/I-80 interchange. Caltrans also identified a marsh immediately north of Green Valley Creek and I-80 as potential breeding
habitat.

There are numerous barriers and impediments to California red-legged frog movement in the action area vicinity. Existing roads, business, and other development fragments the landscape and prevent or encumber access between aquatic and upland habitat for foraging, movement, dispersal, refuge, and breeding. SR 12, I-80, I-680, and surrounding surface streets do not include barriers to exclude red-legged frogs from the roadway or direct them towards safe undercrossings. Frogs that attempt to cross these roads risk mortality due to vehicle collision and exposure.

The land west of I-80, north and south of SR 12W is primarily open grassland for grazing, with interspersed ranches and vineyards. This area is characterized by large expanses of rolling hills with ephemeral drainages, riparian corridors, stock ponds, and agricultural basins. Critical habitat units SOL-2 and SOL-3 are found within these contiguous blocks of habitat.

The Service believes that the California red-legged frog is reasonably certain to occur within the action area because: (1) it is located within the species’ range and current distribution; (2) suitable aquatic, riparian, and upland California red-legged frog habitat intersect the action area in multiple locations; (3) the construction footprint is immediately adjacent to recent California red-legged frog observations; (4) the project is within the California Red-Legged Frog Conservation Area identified in the draft Solano HCP (SCWA 2009); (5) the project will construct a linear barrier between a recorded breeding pond and adjacent upland habitat; (6) all the elements needed to support the species’ life history are located within the construction footprint; and (6) the biology and ecology of the animal, especially the ability of adults to move considerable distances.

**Critical Habitat Status and Baseline**

Critical habitat is defined in Section 3 of the Act as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species’ conservation and that may require special management considerations or protection (50 CFR 424.12(b)). The Service is required to list the known Primary Constituent Elements (PCE’s) together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

1. Space for individual and population growth, and for normal behavior;
2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
3. Cover or shelter;
4. Sites for breeding, reproduction, rearing of offspring, or dispersal; and

5. Generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

**Contra Costa Goldfields Critical Habitat**

The Service designated 14,730 acres of critical habitat for Contra Costa goldfields in 2005 (Service 2005b). In determining which areas to designate as critical habitat, the Service considers those physical and biological features (PCEs) that are essential to the conservation of the species, and that may require special management considerations and protections (50 CFR §424.14).

Critical habitat PCEs for goldfields are the habitat components that provide:

1. Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools, providing for dispersal and promoting hydroperiods of adequate length in the pools; and

2. Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominately annual native wetland species and typically exclude both native and non-native upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.

The proposed project includes direct effects to 3.83 acres of Contra Costa goldfields critical habitat Unit 5B. This unit encompasses 736.72 acres and is essential to the conservation of the species because it is needed to maintain the current geographic and ecological distribution of the species. The project area lies along the northern boundary of Unit 5B whose boundary is defined by SR 12E. The action area parallels the existing SR 12E and the intrusion into Unit 5B is primarily limited to the existing SR 12E road embankment sloping down to the Gentry Suisun wetland.

**California Red-Legged Frog Critical Habitat**

The Service designated critical habitat for the California red-legged frog on April 13, 2006 (71 FR 19244) (Service 2006a) and a revised designation to the critical habitat was published on March 17, 2010 (75 FR 12816) (Service 2010).

The PCE's defined for the California red-legged frog provide aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PCE's and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California red-
legged frog ecology. Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PCE’s essential to the conservation of the California red-legged frog are:

1. Aquatic Breeding Habitat. Standing bodies of fresh water (with salinities less than 7.0 parts per thousand), including: natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.

2. Non-Breeding Aquatic Habitat. Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats that would be considered to meet these elements include, but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.

3. Upland Habitat. Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of 1 mile in most cases and comprised of various vegetational series such as grasslands, woodlands, wetland, or riparian plant species that provide the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of pool inundation for larval frogs and their food sources, and provide breeding, non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter.

4. Dispersal Habitat. Accessible upland or riparian dispersal habitat within designated units and between occupied locations within a minimum of 1 mile of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers (e.g., heavily traveled road without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres in size, or other areas that do not contain those features identified by PCE’s 1, 2, or 3 as essential to the conservation of the subspecies.

With the revised designation of critical habitat, the Service intends to conserve the geographic areas containing the physical and biological features that are essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the

...
PCE’s sufficient to support the life-history functions of the species. Because not all life-history functions require all the PCE’s, not all areas designated as critical habitat will contain all the PCE’s. Refer to the final designation of critical habitat for California red-legged frog for additional information (75 FR 12816).

The action area is within critical habitat units SOL-2 and SOL-3. The proposed action will directly affect 12.75 acres of SOL-2 and 0.46 acre of SOL-3.

SOL-2 comprises approximately 3,360 acres in southwestern Solano County and a portion of extreme southeastern Napa County, south of I-80 and west of I-680. SOL-2 is essential for the conservation of the species because it provides connectivity to adjacent units to the south in the interior Coast Range north of the Suisun Bay and is expected to prevent further fragmentation of habitat in this portion of the species’ range. The unit contains high-quality permanent and ephemeral aquatic habitats (PCE 1 and PCE 2) consisting of stream and plunge pools as well as large freshwater marsh surrounded by open grassland, willow, and oak that provide for breeding, and upland areas (PCE 3 and PCE 4) for dispersal, shelter, and foraging. The unit consists entirely of private land.

The physical and biological features essential to the conservation of California red-legged frog in the SOL-2 unit may require special management considerations or protection due to nonnative animal species, over grazing of habitat, urbanization, habitat alteration from invasive plant species, and recreational use which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults due to habitat modification and predation.

SOL-3 comprises approximately 4,597 acres in southwestern Solano County and a portion of extreme southeastern Napa County, north of I-80 and south of SR 12W. The unit contains high-quality permanent and ephemeral aquatic habitats (PCE 1 and PCE 2), consisting of pools, stream, and spring habitat surrounded by riparian tree species and annual grasslands that provide for breeding, and upland areas for dispersal, shelter, and foraging (PCE 3 and PCE 4). The designation of this unit was expected to prevent further fragmentation of habitat in this portion of the species’ range and provides connectivity to other units farther north and south in the interior Coast Range north of the Suisun Bay. The unit consists of 1,087 acres of local nonprofit ownership and 3,510 acres of private land.

The physical and biological features essential to the conservation of California red-legged frog in the SOL-3 unit may require special management considerations or protection due to overgrazing of aquatic and riparian habitats, and loss and alteration of habitat due to urbanization, which may alter or eliminate aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

**Effects of the Proposed Action**

The DEIR/EIS (Caltrans 2010) notes that a HCP has been prepared for Solano County. The draft Solano HCP is based on a conservation strategy that has been developed for a number of species, including the vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, callippe silverspot butterfly, the Central Valley Distinct Population Segment of the
California tiger salamander, and California red-legged frog (SCWA 2009). The participants in this strategy include the cities of Vallejo, Fairfield, Suisun City, and the County of Solano. The goal of the conservation strategy is to establish a framework for complying with the Federal and State endangered species acts while accommodating future urban growth, development of infrastructure, and on-going operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken under the permitting authority of the strategy participants within Solano County over the next 30 years. The amount and type of loss and destruction of habitat and the concomitant effects on the covered species is based on a comprehensive analysis of the biology and ecology of the taxa, amount and location of habitat types, and mitigation measures that are necessary to mitigate the adverse effects. The implementation of large scale projects that are not consistent with the strategy, specifically the type, amount, location and in-perpetuity management of appropriate habitat, likely will compromise the ability of the strategy to meet the conservation requirements of the species.

Vernal Pool Fairy Shrimp/ Vernal Pool Tadpole Shrimp

According to Caltrans, construction of the proposed project will result in the loss of 1.45 acres of seasonal wetland habitat suitable for vernal pool fairy shrimp and vernal pool tadpole shrimp (Caltrans 2010). All vernal pool crustaceans occupying the 1.45 acres will be killed due to earth-moving activities and permanent filling of seasonal wetland habitat.

Indirect effects to 0.26 acre of vernal pool crustacean habitat will likely result from changes in hydrology or degradation of water quality resulting from upstream construction activities. The biota of vernal pools and swales can change when the hydrologic regime is altered and small changes can have deleterious effects on entire populations of vernal pool crustaceans (Bauder 1986, 1987). Survival of aquatic organisms like vernal pool fairy shrimp and vernal pool tadpole shrimp is directly linked to the water regime of their habitat (Zedler 1987). Although vernal pool hydrology is driven by the input of precipitation, water input to vernal pool basins also occurs from surface and subsurface flow from the swale and upland portions of the complex (Zedler 1987, Hanes et al. 1990, Hanes and Stromberg 1998). Surface flow through the swale portion of the complex allows vernal pool species to move directly from one vernal pool to another. Upland areas are a critical component of vernal pool hydrology because they directly influence the rate of vernal pool filling, the length of the inundation period, and the rate of vernal pool drying (Zedler 1987; Hanes and Stromberg 1998).

The timing, frequency, and duration of inundation are critical to the survival of vernal pool species. Alterations of the hydrology can be particularly harmful to vernal pool crustaceans due to premature pool dry-down before the life cycles of the species are completed, preventing reproduction and disrupting gene flow. Also longer periods of inundation and/or changes in water depth could effectively change seasonal wetland functions (e.g., change from vernal pool to perennial/permanent wetlands). Therefore, construction activities within vernal pool areas will result in the decline of vernal pool crustaceans, including these two listed species.

Caltrans proposes to install and properly maintain erosion control (including dust control) and water quality protection measures that will minimize downstream effects on seasonal wetlands and listed branchiopods that occupy them.
The proposed landscape and habitat restoration is important in minimizing the indirect effects to seasonal wetland habitat and the surrounding uplands. However, restoration of hydrological conditions linked to vernal pools may be difficult if not impossible to achieve in areas such as the proposed Business Center Drive Extension where a dramatic cut will be made through the rolling topography in order to achieve an acceptable road grade. Removal of topographical features will also remove watershed and other functions that influence the inundation and character of the seasonal wetlands within at least 250 feet of the construction footprint.

Caltrans proposal to compensate for permanent and temporal habitat loss with in-perpetuity preservation of 1.71 acres and restoration of 1.45 acres of vernal pool fairy shrimp and vernal pool tadpole shrimp habitat in Solano County will likely offset the adverse effects of the project and provide a benefit for the species.

Conservation measures proposed along SR 12E, including the work window, retaining wall, erosion control and stormwater protection, off-limits fencing, and biological monitoring are likely to be effective in minimizing adverse effects to listed branchiopod habitat in the Gentry Suisun wetlands.

**Callippe Silverspot Butterfly**

The proposed project will result in the permanent loss of 38.82 acres of callippe silverspot butterfly habitat due to construction of the Business Center Drive Extension from approximately 500 feet west of the existing western terminus of Business Center Drive to the existing Red Top Road/1-80 Intersection as callippe silverspot habitat. Establishment of this new road will require extensive grading and recontouring of rolling grasslands that provide topographical features important for callippe silverspot butterfly hill-topping breeding behavior, foraging, and possible larval development. Construction of the road will result in replacement of butterfly habitat with hardscape and maintained ROW that will likely be inhospitable for the listed butterfly. In addition to the harm and harassment associated with the destruction of callippe silverspot butterfly habitat, the project is also likely to result in effects associated with habitat fragmentation.

Construction of the Business Center Drive Extension will also result in the temporary loss of 19.32 acres of callippe silverspot butterfly habitat. This habitat will be temporarily lost due to construction access, staging, and recontouring for borrow material. Successful restoration of temporarily disturbed areas with a grassland seed mix that includes callippe silverspot butterfly nectar plants is likely to limit the habitat loss to less than one year following the initial ground disturbance.

The construction of Business Center Drive Extension will result in the loss of hilltops and ridgelines likely utilized by the callippe silverspot butterfly for reproduction. The adults of this animal frequently engage in hilltopping (Murphy and Weiss undated; Shields 1967; Thomas Reid Associates 1982), which is the behavior where adults congregate on hilltops for the purpose of locating mates. Males are more likely than females to spend time on hilltops. In a study at San Bruno Mountain in San Mateo County, 62 percent of male callippe silverspot butterflies were caught on hilltops, while only 48 percent of females were caught on hilltops (Thomas Reid
After mating, females spend less time hilltopping, and more time searching for oviposition sites and nectar sources. Males tended to utilize hilltops throughout their lifespans (Thomas Reid Associates 1982). Males actively patrol hilltops and ridgelines searching for females. Females are mated almost immediately upon emergence from pupae, because males emerge first and doggedly pursue females (Mattoon et al. 1971).

Hilltops and ridgelines play an important role in callippe silverspot butterfly breeding behavior. The importance of hilltops may vary with population density; at high population levels, males may patrol below hilltops, and congregate on them during periods of low population levels (Shields 1967; Baughman et al. 1988). Hilltops and ridge lines should be considered integral components of callippe silverspot butterfly habitat. Losing hilltops from habitat areas likely decreases mate location and genetic mixing over the long-term.

The callippe silverspot butterfly conservation strategy in the draft Solano HCP did not consider the adverse impacts associated with activities such as the proposed 1.3-mile Business Center Drive Extension from the western terminus of Business Center Drive to I-80. Construction of this road extension will involve the removal of topographical features with slopes greater than 20 or 30 percent. These slopes were identified in the draft Solano HCP as important butterfly hilltop habitat that would be conserved for the species. Based on topographical maps it appears that the majority of the 58.14 acres of callippe silverspot habitat that will be directly affected by the project is characterized by slopes that could be used by the callippe silverspot butterfly for breeding purposes.

Clearing and grading may result in temporary adverse effects to some or all the life history stages through crushing or burial during larval diapauses as the process often occurs in leaf litter at the base of the plant. The caterpillars are small and difficult to find. This inability to detect caterpillars prevents any form of site survey or capture and hold of caterpillars during construction.

Use of heavy earthmoving equipment and other ground-disturbing activity resulting in habitat destruction, dust, and prolonged disturbance will likely cause adult butterflies both in and near the construction footprint to flee the area, especially during the approximate mid-May to mid-July flight season for adult butterflies. These disturbances could disrupt essential behaviors such as reproduction and foraging which could lead to adverse effects such as decreased reproductive success due to moving to less suitable areas or increased difficulty in locating a mate.

Adult callippe silverspot butterflies are strong fliers. After road construction is complete, butterflies would likely avoid collision with vehicles by flying over road cuts for the Business Center Drive Extension. However, they would be susceptible to harm and mortality when crossing in areas where habitat on either side of the new road is at or near grade with the road. Road mortality can result in significant reliable loss of adult butterflies over time.

Construction and grading activities may produce dust which can interfere with the respiration and foraging of active adults. Insects breathe via spiracles and inhalation of small particles, such as dust, could prevent their respiration and result in their asphyxiation. Ehrlich (1984) speculated that the decline of the common alpine butterfly in the upper East River drainage of
Gunnison County, Colorado, was the result of an increase in dust from increased vehicular traffic.

*Viola* populations have been recorded adjacent to the construction footprint but the extent of the populations is not well known. There have been no additional larval host plant surveys since the reconnaissance-level surveys conducted in 2003 and 2004. The food plants of the callippe silverspot butterfly adult nectar plants could be eliminated by construction. Destruction of larval host and larval and adult nectar plants would result in a decrease in the amount of habitat available for reproduction and development of immature butterflies.

Successful propagation and establishment of *Viola* has not been successful to date. Therefore loss of larval host plants cannot be minimized through restoration alone. Successful establishment of adult food plants is feasible and will be an integral part of Caltrans' restoration plan.

Another potential effect of the proposed project on the listed butterfly is the elimination of their habitat due to non-native vegetation invading areas where restoration has not been implemented or is inadequate. Soil disturbance, such as that associated with project associated activities, facilitates the invasion of areas by non-native species. Increased human activity introduces new non-native species. These plants could eventually displace or otherwise out-compete the plants which are depended upon by the callippe silverspot butterfly.

The Business Center Drive Extension construction footprint is immediately adjacent to two previously identified *Viola* populations. The proximity of construction activities may deter livestock grazing in these locations and temporary and permanent road ROW fencing will exclude livestock from accessing these areas. The removal of livestock grazing pressure from patches of vegetation supporting *Viola* could result in a reduction in the abundance and distribution of this plant. This in turn could result in a reduction in available habitat for the early stages of callippe silverspot butterfly.

Caltrans' proposal to compensate for permanent and temporal habitat loss with in-perpetuity preservation or restoration of 126.12 estimated acres of callippe silverspot butterfly habitat in Solano County. This will likely offset the adverse effects of the project and provide a benefit for the species. This habitat will be permanently protected and a management plan will be implemented which will aid the species.

*Valley Elderberry Longhorn Beetle*

The proposed project will directly affect ten elderberry shrubs that are suitable habitat for the valley elderberry longhorn beetle within the proposed project area. Transplantation of the elderberry shrubs may cause them to die, experience stress, or become unhealthy due to changes in soil, hydrology, microclimate, or associated vegetation. This may reduce their quality as habitat for the valley elderberry longhorn beetle, or impair their production of habitat-quality stems in the future. Branches containing larvae may be cut, broken, or crushed as a result of the transplantation process. The actions described in the *Conservation Measure 23* will reduce, but not eliminate, the potential for these effects. Additionally, the proposed project will ultimately increase the value of the valley elderberry longhorn beetle habitat in the area chosen for
transplantation.

*California Red-Legged Frog*

The proposed project will likely adversely affect the threatened California red-legged frog during the construction and operational phases of the project. According to Caltrans, the proposed project will result in the permanent loss of 78.48 acres and the temporary loss of 19.32 acres of California red-legged frog habitat that is used by all life stages for breeding, feeding, sheltering, and dispersal. In addition to the harm and harassment associated with the destruction of California red-legged habitat (described further below), the project is also likely to result in effects associated with habitat fragmentation.

Caltrans proposes to minimize construction related effects by implementing the *Conservation Measures* and design features (undercrossings and directional fencing along the proposed Business Center Drive Extension) included in the project description section of this biological opinion. However, in spite of these measures the project has the potential to result in a variety of adverse effects that would result in take of the California red-legged frog.

Construction could result in the killing, harming and/or harassment of juveniles and adults inhabiting areas of suitable aquatic and upland habitat. The project as proposed by Caltrans in the project description of this biological opinion would result in the loss of approximately 97.8 acres of California red-legged frog habitat. The Service has determined that the permanent and temporary loss and/or degradation of California red-legged frog habitat will result in the take of all frogs within these areas as a direct result of habitat loss.

During the construction phase, permanent and temporal loss of aquatic and upland habitat will result from the removal and/or disturbance of soil and vegetation. Construction noise, vibration, lighting used for possible night work, and increased human activity during construction may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individual California red-legged frogs exposed during excavations likely will be crushed and killed or injured by construction-related activities. Even with biological monitoring, overall awareness, and proper escape ramps, California red-legged frogs could fall into the trenches, pits, or other excavations, and then risk being directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation.

Red-legged frogs can be expected to fall or willingly enter into excavations created as a result of the project. Juvenile and adult frogs may have difficulty escaping pits. Entrapment may cause frogs to be more susceptible to predation and desiccation due to exposure. Frogs may take refuge in excavations, increasing their likelihood of being crushed, entombed, or otherwise injured. Such excavations are not part of the baseline environmental conditions and therefore Caltrans would have created a feature that could lead to harm and possible frog mortality.

Proper trash disposal is often difficult to enforce on a large construction site and is a common
non-compliance issue. Improperly disposed edible trash could attract predators, such as raccoons, crows, and ravens, to the sites, which could subsequently prey on the listed amphibian. Caltrans commitment to not use erosion control devices with mono-filament should be effective in avoiding the associated risk of entanglement that can result in death by predation, starvation, or desiccation (Stuart et al. 2001).

Caltrans proposes to limit initial ground-disturbing activities in California red-legged frog habitat (Caltrans 2011) between April 1 and November 1, when feasible. This measure would primarily avoid the wettest time of year and the onset of the breeding season when frogs are more likely to be involved in upland dispersal. When the work window is not feasible, biological monitoring will be performed when activities occur between November 1 and March 31. Frogs are more likely to move at night and more likely to be taking cover during the day. California red-legged frogs are cryptic and can be difficult for even experienced biological monitors to find. Monitoring will be occurring during the day when most frogs will be taking cover, making them even more difficult to find. Frogs that have moved into work areas at night and taken cover are unlikely to be found by biological monitors and will most likely be killed or harmed by activities. Frogs that are found, captured, and moved will be subjected to displacement and harassment that may lead to death or injury. Therefore allowing ground-disturbing activities with the implementation of biological monitoring during the wet and cool season (November 1 to March 31) likely will result in increased take relative to limiting ground-disturbing activities to the dry season.

Caltrans states they will attempt to minimize adverse effects by locating construction staging, storage and parking areas outside of California red-legged frog habitat; clearly marking construction work boundaries with high-visibility fencing, conducting preconstruction surveys and biological monitoring, and revegetating temporarily disturbed areas. The effects of construction activities and the removal of habitat will be partially minimized by installing wildlife exclusion fencing to deter frogs from wandering onto construction sites; educating workers; and requiring a Service-approved biologist to be present to monitor construction activities.

If unrestricted, the proposed construction activities could result in the introduction of chemical contaminants to frog habitat. Exposure pathways could include inhalation, dermal contact, direct ingestion, or secondary ingestion of contaminated soil, plants or prey species. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced productivity or mortality. However, Caltrans proposes to minimize these risks by implementing erosion control, stormwater control, and spill prevention plans to minimize the potential degradation of aquatic and upland habitat that could lead to mortality and harm of California red-legged frogs. If unrestricted, biologists and construction workers traveling to the action area from other project sites may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytridiomycosis, caused by chytrid fungus, may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (e.g., water pH) that reduce normal immune response capabilities (Bosch et al. 2001, Weldon et al. 2004).
Preconstruction surveys and the relocation of individual California red-legged frogs may avoid injury or mortality; however, capturing and handling frogs may result in stress and/or inadvertent injury during handling, containment, and transport. Caltrans proposes to minimize these effects by using Service-approved biologists and relocating amphibians to suitable nearby habitat.

The Business Center Drive Extension will likely result in significant fragmentation of the landscape and ecosystem functions. Bridge work within the aquatic and riparian California red-legged frog habitat associated with Jameson Canyon Creek, Ledgewood Creek, and Green Valley Creek will include earth-moving, vegetation clearing, habitat loss, general disturbance, and temporary creek diversions. These activities have the potential to harm and harass frogs that use these areas for year-round refuge, dispersal, and foraging.

The majority of the approximately 1.3-mile road segment from Business Center Drive to SR 12W and then south to I-80 will be bordered by road cuts which limit the potential for wildlife movement or incorporating safe wildlife passage across the road. In conjunction with directional fencing, the three undercrossings will likely provide safe crossing for most wildlife, including the California red-legged frog; however, connectivity will be greatly reduced compared to existing conditions and we anticipate that fewer frogs will successfully find and successfully navigate the new undercrossings.

Of primary concern, the Business Center Drive Extension will limit movement to and from the Mangels’ pond which is likely the primary population source for the western portion of the SOL-2 critical habitat unit. Isolation of this breeding pond from the remainder of the surrounding habitat will reduce the size and distribution of California red-legged frogs in the SOL-2 unit by severing or limiting connectivity of what is now largely contiguous habitat north and south of the proposed Business Center Drive Extension. With the addition of the three proposed undercrossings and directional fencing, frogs and other wildlife will be limited to 35 feet of crossing opportunities along the 0.79-mile Business Center Drive Extension from the western terminus of the existing Business Center Drive and Jameson Canyon Road (SR 12W). Construction of this barrier will reduce dispersal to 0.8 percent of the original topography that was available for movement. This adverse effect could be partially minimized if one or more breeding ponds would be constructed north of the Business Center Drive Extension.

The Business Center Drive Extension is within the City of Fairfield’s urban growth boundary and establishment of the road will enable access for future industrial, residential, and recreational development within California red-legged frog habitat. This development is likely to result in additional habitat fragmentation, degradation, and loss. Caltrans has not proposed any measures to minimize this take from increased development due to this road extension.

The development associated with the proposed Business Center Drive Extension will further reduce available foraging and dispersal habitat for California red-legged frogs that breed in Mangels’ pond and disperse widely to the north and west. This development, when combined with reduced connectivity of habitat caused by construction of the road extension itself, is likely to significantly reduce the size and distribution of frogs that occupy the area from Mangels’ pond northward into Napa County as animals will become less successful at reaching Mangels’ pond.
to breed and disperse north as juveniles and lose the ability to live in the area south of the road extension as habitat is lost to development. The keys to minimizing these effects include:

1. Easements south of the proposed Business Center Drive Extension that connect Mangels’ pond and the Business Center Drive Extension underpasses, and

2. Easements north of the Business Center Drive Extension.

The proposed project further precludes a key conservation need for the Jameson Canyon Lower Napa River Core Recovery Area, which is to protect the dispersal corridors between Jameson Canyon Creek and surrounding upland and breeding habitat. Planned infrastructure changes to SR 12W are likely to exacerbate the barrier effects as the roadway is widened and median barriers are installed.

Caltrans proposal to compensate for permanent and temporal habitat loss with in-perpetuity preservation of 245.1 acres of California red-legged frog habitat in Solano County will likely offset the adverse effects of the project and provide a benefit for the species. This habitat will be permanently protected and a management plan will be implemented which will aid the species.

*Contra Costa Goldfields Critical Habitat*

The proposed action is not expected to appreciably diminish the conservation and recovery value of critical habitat for Contra Costa goldfields. The proposed project will result in the loss of 3.83 acres (1.31 permanent + 2.52 temporary) of the 736.72-acre critical habitat unit 5B. The permanent loss is approximately 0.2 percent of the total unit. The effects will be limited to the northern edge of the unit and will occur on the existing raised SR 12E roadbed and parallel to the bottom of the slope. The completed project will not expand southward into Gentry Suisun wetland and has been designed to sustain existing hydrology. The project will avoid adverse effects to topographical features that influence the hydrology (PCE 1) and will not result in the modification of depressional features (PCE 2) within Contra Costa goldfields habitat.

*California Red-Legged Frog Critical Habitat*

The proposed action is expected to diminish the value of the SOL-2 critical habitat in its intended function for the conservation and recovery of the California red-legged frog. The proposed project will result in the direct loss of 12.75 acres (8.30 permanent + 4.45 temporary) of the 3,360-acre unit.

The proposed project will result in the isolation of the only verified California red-legged frog breeding habitat (Mangels’ Pond) in the SOL-2 unit. Mangels’ Pond is also the largest pond in the unit. The Business Center Drive Extension will include three undercrossings and fencing intended to exclude frogs from the roadway and direct them towards the undercrossings. Movement, including juvenile dispersal from breeding habitat and adult movement to and from breeding habitat will be substantially limited due to a 99.2 percent reduction in the available north-south dispersal corridor.
Establishing the new road is also likely to be growth inducing, allowing access for development that will further constrict, degrade, and eliminate upland habitat adjacent to Mangels' Pond and the road undercrossings. Therefore, the proposed project has the potential to completely isolate what is likely a population source breeding pond from the remainder of SOL-2.

The Business Center Drive Extension along with the road widening and vertical barrier construction on SR 12W will severely limit connectivity that now exists between SOL-2 and SOL-3. Therefore, the proposed project is likely to negatively modify the function of the SOL-2 unit by limiting or eliminating access to a primary breeding pond (PCE 1) and by severely limiting dispersal within the SOL-2 unit and between SOL-2 and SOL-3 (PCE 4). Caltrans' Proposed Conservation Measures are unlikely to sufficiently avoid adverse modification of these PCEs because the project includes limited features and the project creates limited potential for maintaining connectivity.

For purposes of the adverse modification determination, the effects on California red-legged frog critical habitat is evaluated in the context of the range-wide condition of the critical habitat at the provincial and range-wide scales. Although the proposed project is likely to significantly impair the habitat function and recovery value of the SOL-2 and SOL-3 units, it is unlikely to adversely modify the range-wide recovery role and functions of overall California red-legged frog critical habitat designation.

**Cumulative Effects**

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Although not a covered activity, the proposed project area is included in the zone of covered activities for the draft Solano HCP. The Fairfield General Plan designates much of this area for planned development. Adverse effects to showy Indian clover, Contra Costa goldfields and its critical habitat, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, Central California Distinct Population Segment of the California tiger salamander, and California red-legged frog and its critical habitat including habitat loss and further fragmentation in this area due to non-Federal actions would result in cumulative effects to listed species and their critical habitat. Realignment of the interchanges, particularly extension of Business Center Drive is likely to enhance urban growth potential.

**Conclusion**

After reviewing the current status of the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog, the environmental baseline for the action area; the effects of the proposed I-80/I-680/SR 12 Interchange Phase 1 Project and the cumulative effects; it is the Service’s biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of these listed species.
However, the proposed project likely will result in significant negative effects to critical habitat unit SOL-2 of the California red-legged frog. We based these determinations on the following: (1) pre-construction surveys will be conducted for listed species; (2) a Service-approved biologist will monitor all activities for compliance with this biological opinion; (3) effects to the valley elderberry beetle will be addressed by implementing programmatic conservation measures, including transplantation of elderberry shrubs; (4) directional fencing along and undercrossings across Business Center Drive will avoid complete isolation of a California red-legged frog breeding pond; (5) California red-legged frogs found in the project work area will be relocated to nearby suitable habitat; (6) habitat loss will be compensated with in-perpetuity preservation of vernal pool tadpole shrimp, vernal pool fairy shrimp, and California red-legged frog habitat; (7) callippe silverspot butterfly habitat loss will be compensated with in-perpetuity preservation of callippe silverspot butterfly habitat and/or enhancement of occupied habitat; and (8) other conservation measures, as described in the Proposed Conservation Measures of this biological opinion, that will be fully implemented by Caltrans.

The Service has also determined that the proposed action is not likely to result in the destruction or adverse modification of critical habitat for the Contra Costa goldfields due to limiting permanent effects to the existing road embankment.

The proposed action is not likely to result in the destruction or adverse modification of critical habitat for the California red-legged frog because although it will significantly reduce access to the only known breeding pond in this critical habitat unit, the effects likely will diminish the recovery but not the survival value, of critical habitat units SOL-2 and SOL-3.

**INCIDENTAL TAKE STATEMENT**

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, movement, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including movement, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Caltrans: (1) fails to adhere to the
terms and conditions of the incidental take statement through enforceable terms that are added to
the permit or grant document; and/or (2) fails to retain oversight to ensure compliance with these
terms and conditions, the protective coverage of section 7(o)(2) may lapse.

**Amount or Extent of Take**

*Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp*

The Service expects that incidental take of vernal pool fairy shrimp and vernal pool tadpole
shrimp may occur during this action. The extent of the take will be difficult to detect or quantify
because of the ecology and biology of these species. Additionally, their size and cryptic nature
makes the finding of a dead specimen unlikely. Seasonal population fluctuations also may mask
the ability to determine the exact extent of take. Due to the difficulty in quantifying the number
of vernal pool crustaceans that will be taken as a result of the proposed action, the Service is
quantifying take incidental to the proposed project as the number of acres of seasonal wetlands
(vernal pool crustacean habitat), that will become unsuitable for vernal pool crustaceans due to
direct effects as a result of the action. Therefore, the Service estimates that the proposed action
will result in the direct take of all vernal pool crustaceans inhabiting 1.45 acres of vernal pool
habitat. Anticipated take is expected to be in the form of harm and mortality from habitat loss
and modification, construction related disturbance, and reduced fitness.

*Callepippe Silverspot Butterfly*

The Service anticipates incidental take of callepippe silverspot butterfly will be difficult to detect or
quantify because it is unlikely an injured or dead specimen will be found due to the elusive and
cryptic nature of the early stages of this species (eggs, larvae, pupae), the difficulty of non-
specialist to observe and identify the adults, and their small size. However, the level of
incidental take of this animal can be anticipated by the effects to cover, foraging, and breeding
habitat. Conservation measures in this biological opinion will reduce, but are unlikely to
eliminate, the potential for incidental take of this listed species. The Service, therefore,
anticipates incidental take of callepippe silverspot butterfly will result from the proposed project.
Upon implementation of the reasonable and prudent measures, all individuals of callepippe
silverspot butterfly inhabiting 58.14 acres of identified habitat will be subject to incidental take
in the form of harm, harassment, injury, and mortality.

*Valley Elderberry Longhorn Beetle*

The Service expects that incidental take of the valley elderberry longhorn beetle will be difficult
to detect or quantify because the life cycle of the beetle and its small body size make discovery
of a dead specimen unlikely, losses may be masked by seasonal fluctuations in numbers or other
causes, and the species occurs in habitat that makes them difficult to detect. It is not possible to
make an accurate estimate of the number of valley elderberry longhorn beetles that will be
harassed, harmed, injured, or killed as a result of construction activities. In instances when take
is difficult to detect, the Service often estimates take relative to the number of elderberry stems,
1 inch or greater in diameter, that are lost or degraded as a result of the action. Therefore, the
Service estimates that all valley elderberry longhorn beetles inhabiting the 62 stems of 1 inch or
greater in the ten identified elderberry shrubs in the action area may be harassed, harmed, injured, or killed, as a result of the proposed action.

California Red-Legged Frog

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their small size, wariness, and cryptic nature. Finding an injured or dead California red-legged frog is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Losses of this species may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action as: (1) the injury and mortality of two adult or juvenile California red-legged frogs; and (2) the capture, harm and harassment of all California red-legged frogs within the construction footprint.

Upon implementation of the following Reasonable and Prudent Measures, vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterflies, valley elderberry longhorn beetles, and California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

This biological opinion does not authorize take for Federal and non-Federal actions associated with the maintenance of roadways included in this action, and the associated Caltrans and STA ROWs. Routine Caltrans and STA maintenance activities such as the removal/displacement of sand, silt, sediment, debris, rubbish, vegetation, and other obstruction flow, the control of weeds, grasses and emergent vegetation, minor repair of existing facilities, rip-rap replacement, and culvert replacement may affect listed species. Such maintenance activities and their potential effects to listed species are not evaluated in this biological opinion.

Effect of the Take

The Service has determined that the level of anticipated take for the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog is not likely to jeopardize the continued existence of this species.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog. Caltrans will be responsible for implementation of and compliance with these measures:

1. Caltrans will minimize the effect of take to the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog.
Terms and Conditions
In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):
   a. Caltrans shall minimize the potential for harm, harassment, or killing of vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog resulting from project related activities by implementing the conservation measures as described in the Description of the Proposed Action of this Biological Opinion.

   b. Caltrans shall require all contractors to comply with the Act in the performance of the action and shall perform the action as outlined in the Description of the Proposed Action of this Biological Opinion and all other supporting documentation submitted to the Service.

   c. Caltrans shall include language in their contracts that expressly requires contractors and subcontractors to work within the boundaries of the project footprints identified in this biological opinion, including vehicle parking, staging, laydown areas, and access roads.

   d. The Service, and/or their designated agents shall have direct access at any time or immediately upon verbal request to the action area and all Service-approved biologists to ensure compliance with this Biological Opinion. Access to areas outside of the Caltrans ROW or easements shall be coordinated by Caltrans with the respective property owners.

   e. Qualifications of proposed biological monitor(s) shall be submitted to the Service for approval at least 30 calendar days prior to initiating construction activities for the proposed project.

   f. Prior to approval, the biologist(s) shall submit a letter to the Service verifying that they possess a copy of this biological opinion and understand its Terms and Conditions. The biologist(s) shall keep a copy of this Biological Opinion in their possession when on-site.

   g. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and Terms and Conditions of this Biological Opinion and shall be the point of contact for the project. The Resident Engineer or their designee shall maintain a copy of this Biological Opinion onsite whenever construction is taking place. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking for each of the construction packages. Prior to groundbreaking, the Resident Engineer must submit a letter to the Service verifying that they possess a copy of this Biological Opinion and have read the Terms and Conditions.

   h. An outline of the Worker Environmental Awareness Training Program shall be submitted to the Coast-Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife
Office within 30 days prior to the initial onset of construction activities. As needed, training will be conducted in Spanish for Spanish language speakers.

i. A Service-approved biologist(s) shall be onsite during all activities that may result in take of vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog as determined by the Service. A minimum of one Service-approved biologist shall be onsite throughout the project duration. The Service will consider the implementation of specific project activities without the oversight of a Service-approved biologist on a case-by-case basis.

j. During construction activities outside the existing hardscape, the Service-approved biologist shall conduct clearance surveys at the beginning of each day within or adjacent to suitable listed species habitat and regularly throughout the workday when construction is occurring within or adjacent to suitable habitat.

k. Vegetation clearing and construction operations shall be limited to the minimum necessary in areas of temporary access, work areas, and staging. Trees, snags, shrubs, other vegetation, woody debris, and uncompacted forest litter will be protected to the maximum extent practicable. Tree and shrub trimming shall be minimized to the extent possible. Trees shall be pruned, or shrubs that interfere with construction or project operation shall be pruned or topped. Shrubs shall be trimmed above ground and roots will be left intact. All vegetation trimmings shall either be hauled off-site and disposed of properly, or chipped and left on-site as determined by the Caltrans Resident Engineer. When possible, stockpiles of trimmed vegetation shall be kept at least 50 feet from the bed and bank.

l. In areas where valley elderberry longhorn beetle will be affected, within sixty (60) calendar days prior to the initiation of ground disturbance, Caltrans shall provide a written description of how the valley elderberry longhorn beetle buffer areas will be restored, protected, and maintained after construction is completed.

m. The following measures are intended to minimize the effect of take in the form of harassment on the California red-legged frog.

i. Each California red-legged frog encounter shall be treated on a case-by-case basis in coordination with the Service but general guidance is as follows: (1) leave the non-injured frog if it is not in danger; or (2) move the frog to a nearby location if it is in danger.

These two options are further described below.

a) When a California red-legged frog is encountered in the action area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, harassment, injury, or death of the individual. Then the monitor needs to assess the situation in order to select a course of action that will minimize adverse effects to the individual. Contact the Service once the site is
secure. The contacts for this situation are Ryan Olah (ryan_olah@fws.gov) or John Cleckler (john_cleckler@fws.gov). They can be reached at (916) 414-6600. If you get voicemail message for these contacts then contact John Cleckler on his cell phone at (916) 712-6784. The issue of contacting people on the weekend or after office hours is addressed later.

The first priority is to avoid contact with the frog and allow it to move out of the action area and hazardous situation on its own to a safe location. The animal should not be picked up and moved based on it not moving fast enough or an inconvenience for construction activities. This guidance only applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frogs that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California red-legged frog should the frogs move outside the immediate area.

Avoidance is the preferred option if a California red-legged frog is not moving and is using aquatic habitat or is within some sort of burrow or other refugia. The area should be well marked for avoidance by construction and a Service-approved biological monitor should be assigned to the area when work is taking place nearby.

b) The animal should be captured and moved when it is the only option to prevent harm.

If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short-distance relocation to that habitat. This must be coordinated with the Service but the general guidance is the frog should not be moved outside of the radius it would have traveled on its own. Under no circumstances should a frog be relocated to another property without the owner’s written permission. It is Caltrans’ responsibility to arrange for that permission.

The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow or other suitable refugia and in certain circumstances pools without non-native predators may be suitable.

Only Service-approved biologists for the project can capture California red-legged frogs. Nets or bare hands may be used to capture California red-legged frogs. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when they are capturing and relocating California red-legged frogs. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the frogs, Service-approved biologists must use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from
the Declining Amphibian Population Task Force’s Code which can be found in their entirety at: http://www.open.ac.uk/daptf/

1) All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, must be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water and/or an amphibian. Cleaned items should be rinsed with clean water before leaving each site.

2) Boots, nets, traps, etc., must then be scrubbed with either a 70 percent ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a six percent sodium hypochlorite solution and rinsed clean with water between sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. All traces of the disinfectant must be removed before entering the next aquatic habitat.

3) Used cleaning materials (liquids, etc.) must be disposed of safely, and if necessary, taken back to the lab for proper disposal.

4) Service-approved biologists must limit the duration of handling and captivity. While in captivity, individual California red-legged frogs shall be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. Containers used for holding or transporting should not contain any standing water.

ii. The Service-approved biologist(s) shall perform a California red-legged frog clearance survey immediately prior to the initial ground disturbance. Safety permitting, the Service-approved biologist(s) will investigate areas of disturbed soil for signs of the listed species within 30 minutes following the initial disturbance of that given area.

iii. Construction crews shall review the dewatering plan prior to any in-stream work within the bed and banks that requires the construction of coffer dams and/or dewatering.

iv. Removal of vegetation shall be accomplished by a progressive cutting of vegetation from the overstory level to the ground level to allow California red-legged frogs more opportunity move out of the work area under their own volition. Vegetation shall be cleared only where necessary and will be cut approximately 4 inches above soil level except in areas that will be excavated for roadway construction. This is intended to encourage plants that reproduce vegetatively to resprout after construction. All clearing and grubbing of woody vegetation shall be done using hand tools, small mechanical tools, or backhoes and excavators. All cleared vegetation shall be removed from the project footprint to prevent attracting animals to the project site.
v. If pumping is used for dewatering, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent frogs from entering the pump.

vi. The Service-approved biologist(s) shall permanently remove, from the project site, any aquatic exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.

n. Erosion control materials other than seeding only shall consist of hydraulically applied erosion control products, organic mulches free of non-native seeds, organic mulch control nettings with loose weave construction (the strands slide along cross strands) and openings over 4 centimeters, staked in straw bales or temporary erosion control fencing. Materials utilizing fixed weaves (strands cannot move), polypropylene, polymer or other synthetic materials shall not be used.

o. Through the Resident Engineer or their designee, the Service-approved biological monitor(s) will be given the authority to communicate either verbally, by telephone, e-mail message, or hardcopy with Caltrans personnel, construction personnel or any other person(s) at the project site or otherwise associated with the project to ensure that the terms and conditions of this biological opinion are being met. If situations arise where the terms and conditions may not be met or are not being met, the biological monitor will inform the Resident Engineer, who has the authority to stop work. If the Resident Engineer exercises this authority, the Service will be notified by telephone and e-mail message within one working day. The Service contact is the Coast-Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600. Discussions with the Resident Engineer, biological monitor, Caltrans staff and Service staff, will take place to identify and inform actions to resolve the issue and to document decisions.

**Reporting Requirements**

Caltrans shall report to the Service any information about take or suspected take of listed wildlife species. Caltrans must notify the Service via an e-mail or telephone message within 24 hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The individual animal shall be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Coast-Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600, and the Resident Agent-in-Charge of the Service’s Law Enforcement Division at (916) 414-6660.

Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within sixty (60) calendar days of the date of the completion of each Construction Package. This report shall detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the vernal pool tadpole shrimp, vernal pool fairy
shrimp, callipe silver spot butterfly, valley elderberry longhorn beetle, and California red-legged frog, if any; (v) occurrences of incidental take to any listed species, if any; and (vi) other pertinent information. The final construction acreage of permanent and temporary habitat loss will be tabulated separately and provided to the Service. The extent of permanent and temporary habitat loss will be delineated with a handheld GPS device and a track file of each will be provided to the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases. The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. Enhancing habitat connectivity and wildlife passage across roads as well as reducing road effects should be included in the Purpose and Need section of environmental documents. FHWA agreed to coordinate with the Service on wildlife movement issues in a June 2, 2010, letter addressed to Mr. Greg Costello of the Western Environmental Law Center. As their NEPA delegate, Caltrans District 4 is expected to adopt the commitments made by FHWA to consider wildlife movement in transportation planning and project development.

2. Caltrans District 4 should include a wildlife passage section in their BAs that includes an analysis of the existing passage and how the project will affect passage. The analysis should include identification of the species’ resources on both sides of the project boundaries, an appropriately timed road mortality survey to identify “hot spots,” and strategic locations where the species could benefit from the enhancement of an existing crossing or the installation of a new crossing. Caltrans District 4 should coordinate with their headquarters office and the University of California at Davis Road Ecology Center to develop a passage and road effects approach. Further guidance is provided by FHWA’s Wildlife Vehicle Collision Reduction Study (available at: http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm) and Caltrans’ Wildlife Crossings Guidance Manual (http://www.dot.ca.gov/hq/env/bio/wildlife_crossings/).

3. Efforts should be made to establish upland culverts designed specifically for wildlife movement as well as making accommodations for terrestrial wildlife movement through culverts that convey hydrology. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

4. Caltrans should reference their internal system they have developed to keep track of road mortality records and the University of California at Davis, Road Ecology Center’s
California Roadkill Observation System (http://www.wildlifecrossing.net/california/). Information from these databases should be referenced in road project assessments.

5. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the vernal pool tadpole shrimp, vernal pool fairy shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog and other listed species. Such banking systems also may be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with established or planned wildlife crossings.

6. Caltrans should continue to develop and implement their Early Statewide Biological Mitigation Planning Project that has been developed by the University of California at Davis, Road Ecology Center to offset the effects of Caltrans’ projects on listed species.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the I-80/I-680/SR 12 Interchange Phase 1 Project. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, including work outside of the project footprint analyzed in this opinion and including vehicle parking, staging, lay down areas, and access roads; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion including use of rodenticides or herbicides; relocation of utilities; and use of vehicle parking, staging, lay down areas, and access roads; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this biological opinion for the I-80/I-680/SR 12 Interchange Phase 1 Project, please contact John Cleckler or Ryan Olah at the letterhead address or at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor
cc:
Scott Wilson and Brenda Blinn, California Department of Fish and Game, Yountville, California
Janet Adams, Solano Transportation Authority, Suisun City, California
Brendan Thompson, San Francisco Bay Regional Water Quality Control Board, Oakland, California
Carolyn Mulvihill, U.S. Environmental Protection Agency, San Francisco, California
Paula Gill, U.S. Army Corps of Engineers, San Francisco, California
Joe Heublein, National Marine Fisheries Service, Santa Rosa, California
Christopher States, Jeffrey Jenson, Frances Malamud-Roam, and Howell Chan, California
   Department of Transportation, Oakland, California
Shahira Ashkar, ICF International, Sacramento, California
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2006b. Valley elderberry longhorn beetle (Desmocerus californicus dimorphus) 5-year review: summary and evaluation. Sacramento, California

2007a. Vernal pool fairy shrimp (Branchinecta lynchii) 5-year review: Summary and evaluation. Sacramento, California

2007b. Vernal pool tadpole shrimp (Lepidurus packardi) 5-year review: summary and evaluation. Sacramento, California


James Richards, Deputy District Director  
Department of Transportation  
Caltrans District 4  
Office of Environmental Analysis  
111 Grand Avenue  
Oakland, California 94610

Dear Mr. Richards:

Thank you for your letter of December 8, 2010, requesting initiation of consultation with NOAA’s National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Effective July 1, 2007, the Federal Highway Administration assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the Federal action agency for ESA consultations with NMFS for Federally funded projects. This letter also serves as consultation under the authority of, and in accordance with, the Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act (MSA), and the provisions of the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended. These consultations pertain to Caltrans’ proposed Interstate-80/Interstate-680/State Route 12 Interchange Improvement Project in Solano County, California.

The Interstate-80/Interstate-680/State Route 12 (I-80/I-680/SR 12) Interchange Improvement Project covers several miles of roadway around the City of Fairfield in Solano County, California. The western boundary of the Project is the Red Top Road crossings of I-680, I-80, and SR 12; the eastern boundary of the Project is the Suisun Valley Road crossing on I-80 and the Ledgewood Creek road crossing on SR 12. Surface water in the action area includes Green Valley Creek and Ledgewood Creek. The purpose of the project is to improve the I-80/I-680/SR 12 interchange complex to meet traffic demands and alleviate cut-through traffic on local roads. The project consists of construction or realignment of the following interchanges: 1) I-80/I-680/SR 12 West; 2) I-680 and Red Top Road; 3) I-80 and Green Valley Road; 4) I-80/Red Top Road and Business Center Drive; and 5) and SR 12 West and Red Top Road. Construction will also involve widening of I-80 and a new lane on eastbound SR 12, which will require a new bridge and off-ramp over Green Valley Creek, and widening of the culvert over Ledgewood Creek. All proposed in-stream work will occur during the dry season (June 1 through October 15).
Green Valley Creek originates in Green Valley, northwest of Rockville Hills Regional Park, and flow south to Cordelia Slough which is a tributary of Grizzly Bay. At the existing I-80 and I-680/I-80 West Interchange overcrossing, Green Valley Creek flows in a concrete-lined, trapezoidal channel approximately 670 feet long and 70 feet wide. The proposed action will remove the existing I-80 West bridge and replace it with a single span structure measuring approximately 103 feet long and 133 feet wide. Additionally, a single span structure to carry the Green Valley Road off-ramp over the creek will replace the existing I-680/I-80 West interchange.

In-stream construction at Green Valley Creek is proposed to occur between June 1\textsuperscript{st} and October 15\textsuperscript{th}, over approximately four construction seasons. Construction at Green Valley Creek will occur within a 10-20 year time frame. The first phase will involve construction of the outside (northernmost) westbound lanes on I-80 while maintaining traffic flow on the existing structure. Demolition of the existing I-80 West bridge, and completion of the new I-80 West bridge and the new off-ramp structure will follow.

Piles for the new free-spanning structures will be located at the top of the creek bank and are anticipated to be 12-inch square piles driven to a depth of approximately 70 feet. Approximately 40 piles per abutment will be installed for the westbound I-80 bridge, and approximately 24 piles per abutment will be installed for the new off-ramp structure. Vibratory hammers will be used for pile driving to the maximum practicable extent. Pile driving will only occur during low precipitation periods (June 1 to October 15) and any work occurring before June 1 or after October 15 will be restricted to road or bridge surface only, with water quality control measures in place.

Ledgewood Creek originates in the Vaca Mountains, north of the Solano/Napa County line, and flows south to Paytonia Slough which is a tributary of Grizzly Bay. In the vicinity of the existing SR 12 overcrossing, Ledgewood Creek is confined to a levee-lined trapezoidal channel. Beneath the five-span bridge at SR 12, Ledgewood Creek is conveyed through concrete-lined box culverts. Within the action area, riparian and riverine cover is limited to areas downstream of these culverts. The culverts at SR 12 and Ledgewood Creek is proposed to be extended 15 feet to the south (downstream) to accommodate an additional lane on SR 12; this would permanently impact 15 linear feet of the existing earthen channel. Construction associated with the culvert is expected to last only one season from June 1 to October 15.

Dewatering of both Ledgewood Creek and Green Valley Creek will involve construction of the following in-channel features: 1) temporary cofferdams (made of gravel and fabric) constructed 20-50 feet beyond the limit of bridge/culvert widening; and a pipe diversion to facilitate dewatering of the channel and bypass creek flow; 2) cofferdams constructed utilizing the same methods to facilitate excavation of existing bridge/culvert footings; and 3) falsework placed within the banks and channel to support construction of the cast-in-place concrete box girder structures of the new bridges/culverts. No construction related material (including dewatering and bypass structures) will remain in the channel between October 15 and June 1. When construction is completed, falsework will be removed and any disturbed portions of the creek bed and bank temporarily affected during construction will be restored to pre-project conditions. Additionally, the channel under the new bridges at Green Valley Creek will be restored to an
earthen channel; and a concrete fish passage structure involving a low flow channel and possibly baffles will be constructed in the culvert at SR 12 and Ledgewood Creek.

Standard best management practices (BMPs) for construction site and sediment and stormwater runoff control will be utilized on this project. Biofiltration swales and biostrips will be used when possible to control runoff. Vegetation will be trimmed rather than removed when possible. Temporarily disturbed riparian areas will be replanted with the native species prior to October 15 to minimize erosion and creek sedimentation, and revegetation will be monitored annually for 3 years.

**Endangered Species Act**

In its December 8, 2010, letter Caltrans asked for concurrence with a finding that the project is not likely to adversely affect Central California Coast (CCC) steelhead (Oncorhynchus mykiss). Reaches of Green Valley Creek and Ledgewood Creek within the project area are not designated critical habitat for CCC steelhead. Available information indicates the following DPS may occur in the project area:

**Central California Coast steelhead Distinct Population Segment (O. mykiss) DPS**

Threatened (January 5, 2006; 71 FR 834).

The life history of steelhead is summarized in Busby et al. (1996). Steelhead typically immigrate to tributaries of San Francisco Bay between November and April, peaking in January and February (Fukushima and Lesh 1998). Adult CCC steelhead are generally not present in streams between May and October; warm summer water temperature and poor habitat quality within the project area further reduce the likelihood of adult steelhead presence during summer months. Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating CCC steelhead use Green Valley Creek and portions of the San Francisco Bay for rearing and as a migration corridor to the ocean. In summer months, reaches of Green Valley Creek and Ledgewood Creek within the action area are unsuitable for salmonid rearing due to poor water and habitat quality. Although data regarding the emigration timing of steelhead smolts from Green Valley Creek and Ledgewood Creek is lacking, steelhead from other streams draining to San Francisco Bay typically emigrate from March through June (Fukushima and Lesh 1998). NMFS assumes that steelhead from Green Valley Creek and Ledgewood Creek emigrate at the same time and smolting steelhead should be absent during the in-channel construction window of June 1 through October 15.

O. mykiss have been collected in Green Valley Creek from the 1950s to the present, and unpublished data indicates O. mykiss were collected 1 mile upstream of I-80 in January 1997 (Leidy et al. 2005). Therefore, it is likely that steelhead spawning and rearing occur above the I-80 crossing of Green Valley Creek. Beneath I-80 and the I-680/I-80 West interchange Green Valley Creek passes through a 670 foot long, concrete-lined trapezoidal channel and primarily provides a migration corridor for salmonids at this location. This crossing contains an engineered low-flow channel and concrete weirs to enhance fish passage, but lacks significant riparian canopy and natural instream cover due to the concrete channel invert.
Caltrans proposes to restore approximately 300 feet of Green Valley Creek to natural earthen channel and in the process enhance habitat at the site. Proposed actions will not inhibit fish passage at the site, and could provide additional rearing habitat for juvenile salmonids. Salmonids are not likely to be present during summer in-channel construction and pile driving work windows. Construction activities that are proposed to occur when migratory steelhead are likely to be present will be restricted to road or bridge surfaces only, with water quality control measures in place. Therefore, CCC steelhead are not likely to be adversely affected by the proposed actions at Green Valley Creek.

In the vicinity of the SR 12 crossing, levees line both banks of Ledgewood Creek and the channel has a trapezoidal cross section. SR 12 crosses Ledgewood Creek over a five-span bridge. At low flows Ledgewood Creek passes through the second culvert from the east bank, which forms a V-shaped channel to maximize water depths at low flows. No observations of steelhead have been reported in Ledgewood Creek. The Ledgewood Creek drainage, however, is adjacent to the Suisun Creek Watershed which is known to support steelhead populations. Furthermore, Chinook salmon have been observed spawning in Ledgewood Creek above the project site, indicating that Ledgewood Creek supports migratory habitat for anadromous salmonids (NMFS 2011).

Proposed activities at Ledgewood Creek involve widening the SR 12 crossing by 15 linear feet to the south. This will permanently impact 15 linear feet of the existing earthen channel by converting it to a concrete invert slab. This action will exacerbate the existing shallow water depth issues at low flows; and concrete low-flow walls and potentially baffles will be constructed to enhance low-flow fish passage of the culvert. Ledgewood Creek is not designated critical habitat for CCC steelhead, and there is no confirmed documentation of *O. mykiss* within the drainage. The proximity of Ledgewood Creek to the Suisun Creek watershed, however, indicates migratory steelhead could be present during periods of higher flows. All construction activities associated with the culvert will occur over one dry season, from June 1 to October 15. Therefore, the presence of CCC steelhead is unlikely during proposed construction activities, and CCC steelhead are not likely to be adversely affected by the proposed actions at Ledgewood Creek. Proposed passage improvements at Ledgewood Creek will address the addition of 15 linear feet of hardened creek bottom, and potentially make higher quality habitat above the culvert more accessible to CCC steelhead.

Based on the best available information, NMFS concurs with Caltrans’ determination that threatened CCC steelhead are not likely to be adversely affected by the I-80/I-680/SR 12 Interchange Improvement Project. This concludes informal consultation in accordance with 50 CFR 402.13(a) for the proposed I-80/I-680/SR 12 Interchange Improvement Project in Solano County, California. However, further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.
Magnuson-Stevens Fishery Conservation and Management Act

The project area is located within an area identified as EFH for Central Valley fall/late fall-run Chinook salmon, managed with the Pacific Coast Salmon Fishery Management Plan under the MSA. As discussed in the above ESA section, no in-water construction will take place when Chinook salmon are likely to be present. However, adverse effects to EFH could occur from increased sedimentation and turbidity following construction activities. While these impacts are considered minor and temporary, NMFS has made the determination that the proposed action would adversely affect EFH for this species. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset any adverse effects to EFH. Therefore, NMFS has no additional EFH Conservation Recommendations to provide.

This concludes EFH consultation for Caltrans’ proposed I-80/I-680/SR 12 Interchange Improvement Project, Solano County, California. Pursuant to 50 CFR 600.920(l) of the EFH regulations, Caltrans must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS’ EFH Conservation Recommendations.

Fish and Wildlife Coordination Act

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development [16 U.S.C. 661]. The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage [16 U.S.C 662(a)]. Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources. With implementation of the previously-referenced EFH conservation recommendations, NMFS has no further comments to provide.

Please contact Mr. Joseph Heublein at (707) 575-1251, or via e-mail at joe.heublein@noaa.gov should you have any questions.

Sincerely,

Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS, Long Beach
    Bob Hoffman, NMFS, Long Beach
    Bryant Chesney, NMFS, Long Beach
    Ahmad Hashemi, Caltrans District 4
    Copy to File ARN: 151422-SWR-2010-SR00524
Literature Cited


NEPA/Section 404 Integration
Memorandum

To: NEPA/404 Integration Participants
(See attached distribution list.)

Date: March 22, 2007

File: 04-Sol-80
EA-04-0A5300
I-80/I-680/SR 12 Interchange

From: MELANIE BRENTE
Senior Environmental Planner
Office of Environmental Planning

Subject: Summary of NEPA/404 Integration MOU Checkpoint Meeting and Request for Response

I-80/I-680/SR 12 Interchange Project

NEPA/404 Integration Participants
Thursday March 15, 2007, 10 am–1:30 pm

The California Department of Transportation (Caltrans), on behalf of the Federal Highway Administration (FHWA), held a Checkpoint Meeting for the above referenced project on Thursday, March 15, 2007 at the Solano County Government Center in the City of Fairfield, from 10 am to 1:30 pm, to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of the National Environmental Policy Act (NEPA) and the Clean Water Act (CWA) Section 404, consistent with the memorandum of understanding (MOU) signed into effect in May 2006. Invitations to the meeting along with information packets were sent out on February 23, 2007.

Project History

FHWA, Caltrans, and the Solano Transportation Authority (STA) published a notice of intent (NOI) and notice of preparation (NOP) in May 2003, describing the preliminary alternatives and potential environmental effects of the project and soliciting input from agencies on the scope of the environmental impact report/environmental impact statement (EIR/EIS). A public scoping meeting was also held on May 12, 2003 to seek additional input from agencies and the public on the Draft EIR/EIS. Since that time, FHWA, Caltrans, and STA have conducted numerous field studies of the project’s existing conditions and prepared maps of various constraints in the project area. The lead agencies have also prepared a detailed traffic study, a purpose and need statement, developed screening criteria, and have considered a number of preliminary alternatives.
Meeting Participants

The distribution list below shows the agencies invited to attend the Checkpoint Meeting. The following individuals attended the March 15, 2007 meeting:

1. Mike Monroe, U.S. EPA
2. Carolyn Muhlvihiill, U.S. EPA
3. Hal Durio, U.S. Army Corps of Engineers
4. Brendan Thompson, San Francisco Bay Regional Water Quality Control Board
5. Leland Dong, FHWA
6. Dale Jones, Caltrans Headquarters
7. Melanie Brent, Caltrans District 4
8. Nicolas Endrawos, Caltrans District 4
9. Joe Douglas, Caltrans District 4
10. Ahmad Hashemi, Caltrans District 4
11. Janet Adams, Solano Transportation Authority
12. Dale Dennis, Solano Transportation Authority
13. Mike Lohman, Mark Thomas & Company
14. Andrea Glerum, Nolte Associates
15. Matt Henry, Fehr & Peers
16. Scott Steinwart, Circle Point
17. Chris Colwick, Circle Point
18. Maggie Townsley, Jones & Stokes
19. Lisa Webber, Jones & Stokes

A summary of the meeting is provided below. For agencies that could not attend, additional materials (i.e., hand-outs from the March 15 meeting) are enclosed in this meeting summary and request for comments.

Request for Response

Pursuant to Item 11 in Section III, The NEPA/404 Integration Process, in the signed NEPA/404 MOU, Caltrans is requesting the signatory federal agencies’ response to:

➢ the Purpose and Need, and

➢ the alternatives proposed for inclusion in the Draft EIR/EIS.
NEPA/404 Integration Participants
March 22, 2007
Page 3

The type of response currently requested depends on the agency and the Checkpoint—as shown below (and identified in Table 1 of the signed MOU for the NEPA and Clean Water Act Integration Process for Federal Aid Surface Transportation Projects in California [signed 2006]). In addition, the non-federal agencies invited to participate (i.e., the Regional Water Quality Control Board and the California Department of Fish and Game) are encouraged to provide comments on the Purpose and Need Statement and the alternatives proposed for inclusion in the Draft EIR/EIS. Table 1 summarizes the only types of response an agency may give at a checkpoint.

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<td>CDFG</td>
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*Identifies signatory agency.

Next Steps

Per the NEPA/404 MOU, each agency has 30 days (i.e., by April 23, 2007) to review and provide written responses to this Request for Response. Within 90 days of April 23, 2007, Caltrans will send each agency a letter identifying the status of any issue that received a negative comment or disagreement from the agencies.

Please call me at 510.286.5231 if you have any questions. We look forward to receiving your comments by Monday, April 23. Thank you!
Distribution List

Project Sponsors

Federal Highway Administration
California Division Office
650 Capitol Mall, #4-100
Sacramento, CA 95814
Attention: Mr. Leland Dong, 916.498.5860

Federal Highway Administration
California Division Office
650 Capitol Mall, #4-100
Sacramento, CA 95814
Attention: Larry Vinzant, 916.498.5040

Caltrans District 4
111 Grand Avenue
P. O. BOX 23660
Oakland, CA 94623-0660
Attention: Melanie Brent, Office Chief, Environmental Branch, 510.286.5231

Federal Agencies

National Oceanic and Atmospheric Administration
National Marine Fisheries
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404
Attention: Gary Stern, San Francisco Bay Team Leader, 707.575.6060

U.S. Army Corps of Engineers
1455 Market Street, Regulatory Branch
San Francisco, CA 94103-1398
Attention: Jane Hicks, Project Manager, 415.977.8438

U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, CA 94103-1398
Attention: Hal Durio, Caltrans Liaison, 415.503.6785
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Sacramento, CA  95825
Attention:  Cay Goude, 916.414.6600

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA  94105
Mail Code CED-2
Attention:  Connell Dunning, Environmental Review Office, 415.947.4161

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA  94105
Mail code WTR-8
Attention:  Mike Monroe, Wetlands, 415.972.3453

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA  94105
Mail code CED-2
Attention:  Carolyn Mulvihill, NEPA Review, 415.972.3597

State Agencies

Regional Water Quality Control Board
SF Bay Regional Water Quality Control Board
1515 Clay St, Suite 1400
Oakland, CA  94612
Attention:  Brendan Thompson, Environmental Specialist, 510.622.2506

California Department of Fish and Game
DFG, Central Coast-Region 3
P.O. Box 47
Yountville, CA  94599
Attention:  Robert W. Floerke, Regional Manager, 707.944.5517
I-80/I-680/SR 12 Interchange Project

NEPA 404 MOU Checkpoint Meeting
March 15, 2007
Summary of Discussion

Caltrans, on behalf of the FHWA, hosted a Checkpoint meeting to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of NEPA, as well as CWA Section 404, consistent with the MOU signed into effect in May 2006.

The purpose of the March 15, 2007 meeting was to present an overview of the project, discuss the purpose and need, screening criteria, and preliminary alternatives, and seek input from the signatory agencies on the NEPA/404 MOU process.

This meeting summary below is intended to provide an overview of the comments and questions discussed at the meeting grouped by topic.

I. Project Background
Janet Adams of the STA provided an overview of the project background, including the project’s origination in the context of the STA’s Comprehensive Transportation Plan and the I-80/I0680/I-780 Major Investment and Corridor Study.

Discussion Questions:
No discussion questions.

II. Purpose and Need
Scott Steinwert of CirclePoint provided an overview of the development of the Purpose and Need statement including current and future traffic demands, deficient levels of service, traffic diversion to local roads, and accident data in the project area. Mr. Steinwert also provided an overview of the public participation during the Scoping process.

Discussion Questions:
- What are the biological differences between the primary and secondary marsh? There is no specific biological difference, but in most instances, the secondary marsh is not wet and is more of an upland environment.
- Where are potential Steelhead runs? Rivers or creeks include Suisun, Jameson, Ledgewood, and American Canyon.
- Have you found vernal pools? There are some areas that could be classified as vernal pools.
• Could you find Vernal Shrimp? Yes.

III. Alternatives Development and Screening
Maggie Townsley, of Jones & Stokes, reviewed the environmental constraints with the project area and explained how these were considered in the evaluation of alternatives. Dale Dennis of STA provided details of the alternatives development and screening process including eight (8) alternatives considered but withdrawn from further study as part of the Tier 1 analysis.

Discussion Questions
• Where is the most/greatest environmental impacts? North of I-80 there is a biological mitigation site that was created as part of a local development project, and in the area of SR 12 East there are Contra Costa goldfields as well as a large wetlands area.
• Where are the riparian sections? Riparian habitat is located along the creeks in the area. The riparian zone along each creek is very narrow due to the surrounding agricultural and suburban development patterns.
• Are any of the habitat areas in the screening matrix overlapping? Yes, some habitat may overlap such as riparian areas overlap waters of the US.
• How did you calculate the delineated acreage? The waters of the US and wetlands that have been mapped were done so through field surveys, using aerial photos and from prior delineations done in the project area for other projects. A formal delineation will be done as part of the EIS/EIR, but the approach used to-date should provide a conservative estimate.
• In the matrix, you should include vernal pools and seasonal wetlands under regulated habitat as these are under Corps jurisdiction.
• How certain are you SR 12 East will be part of the final project? In developing the project scope, it became clear that improvements would be needed on SR 12 East to ensure that traffic would not back up on SR 12 East to a point that it would affect I-80 and the interchange. So improvements on SR 12 East have been included as part of the project. The project will most likely be built in phases, and improvements on SR 12 East would probably be built as a separate phase of the overall interchange improvements.
• Will SR 12 East eliminate the signalized intersection at Pennsylvania and the railroad? Yes.
• Suisun Creek is essential habitat for the Chinook salmon. Yes, it was inadvertently left out of the matrix.

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IV. **Recommended Alternatives**

Mike Lohman of Mark Thomas & Company presented the four (4) Alternatives A-D, studied in the Tier 2 screening and the two (2) options for SR 12 East. Maggie Townsley reviewed the Tier 2 Screening Matrix.

**Discussion Questions**

- **How will Alt. C affect traffic operations and how will phasing work?** Alt C provides the most improvement and allows for more effective phasing due to realigning the interchange.
- **What is the public’s reaction to Alt B?** The public has expressed concern about possibly losing the connection from 680 to SR 12 west.
- **How and why are you looking at ways to connect Fairfield and Suisun City?** Suisun City has expressed concern that a direct connection with Fairfield is vital for economic reasons.
- **What will happen to the ramp area if Webster/Jackson ramps are removed?** The existing ramps would be removed and this area would be excess right-of-way that could be used for mitigation.
- **How flexible is your design for taking Meyer Way through the Goldfields?** There is some flexibility in the precise alignment of Meyer Way. The alignment would need to consider potential land use changes in this area and try to support the locally planned land-use pattern.
- **What is the difference in Option 1 and Option 2 for SR 12 East regarding impacts to I-80 mainline?** No discernable difference.
- **What is the cost difference between Option 1 and Option 2?** We currently only have rough estimates; the costs are equivalent.
- **What about having Goldfields between the roadways?** It may be possible to design the interchange area on SR 12 East to avoid direct impacts to the Goldfields; however, there still may be some indirect effect on the plants.
- **What is the status of the Goldfields?** They are a federally listed endangered species.
- **What is your design year?** 2035.
- **Clarification on the no-build option:** This would still include planned or necessary improvements to the highway system. These improvements, however, are very limited within the planning horizon.
- **What will happen to the portion of I-680 that is no longer used as freeway in Alt C?** It will be retained for use as a local road, but will not connect to I-80.
- **What is the difference in effects that the alternatives have on the primary marsh?** None of the alternatives would directly affect the primary marsh.
- **Which alternatives provide for greater stormwater treatment such as bioswales?** We haven’t looked at that in great detail, but Alt C could have greater opportunities to address water quality. Consideration will be given to groundwater levels, swales, and other related issues.
- **In the matrix, what does Objective ED3 and Policy ED 2.1 and 2.2 refer to?** These are the General Plan objectives and policies regarding economic development and land use for the city and county.
Do your cost estimates include mitigation? We have included allowances for mitigation.

The intent of NEPA 404 MOU Checkpoint meetings is to get the resource agencies involved early on in the process of developing a Purpose and Need and alternatives. Resource agencies would have preferred this meeting 6-12 months ago. With that said, the recommendation to drop Alternatives A and D seems to be well thought out.

Concerned about marsh impacts, but current alternatives seem to minimize or eliminate impacts to marsh.

Regional Water Quality Control Board is concerned with riparian impacts. Can you identify restoration of creeks as possible mitigation? Restoration of riparian areas along local creeks could be included as a mitigation requirement to reduce project-specific impacts. There may be several locations within the project area where this approach could be feasible.

Would like to see an addition to the Purpose and Need: Avoid/minimize environmental impacts to sensitive habitat, including the Suisun Marsh. (Noted, and will be included.)

For conceptual mitigation plans, please talk to the resource agencies early in the process of considering possible mitigation sites.

Next Steps
Resource agencies will have approximately 4 weeks to review the materials and request additional information. On March 22, Caltrans will send a letter to the resource agencies, requesting comments on the Purpose and Need and on the recommended alternatives by April 23, 2007.
Ms. Melanie Brent  
California Department of Transportation  
PO Box 23660  
Oakland, CA. 94623-0660

SUBJECT: Comments Relating to the I-80/I-680/SR 12 Interchange Project NEPA/404 Integration MOU Checkpoint Meeting

Dear Ms. Brent:

The Regional Water Quality Control Board (Water Board) would like to thank the California Department of Transportation (Department) and the Solano Transportation Authority (STA) for giving staff the opportunity to participate in the I-80/I-680/SR 12 Interchange Project (Project) NEPA/404 meeting held on March 15, 2007. We look forward to participating in future meetings and offer the following comments.

As you know, there is a significant amount of new and redevelopment either occurring or planned to occur in the vicinity of the Project. It is the Water Board’s intent to ensure that the beneficial uses of Suisun, Green Valley, Dan Wilson and Ledgewood Creeks, and Suisun Marsh and Bay are protected as development projects in the area move forward. The proposed Project has the potential to impact beneficial uses through permanent impacts to federal and state jurisdictional wetlands and waters, as well as through the introduction of new and impervious surfaces.

At the meeting, three “preferred-build” alternatives were presented that included permanent impacts to federal jurisdictional wetlands and other jurisdictional waters between 6.3 and 10.2 acres. It is staff’s understanding that the majority of the impacts will be to riparian waters. After the Department and STA demonstrate full avoidance and minimization of potential impacts to wetland and waters, the Water Board will consider mitigation options. Currently, there are not mitigation banks in the Project’s service area offering riparian mitigation credits acceptable to the Water Board. As such, the Department and the STA should evaluate mitigation opportunities from a watershed perspective and identify riparian restoration needs within the local area. Staff recommends working with either the Solano County Resource Conservation District or another local agency, such as the Solano Land Trust, to identify potential mitigation projects. Please note that the Water Board primarily evaluates impacts to riparian waters and the associated compensatory mitigation in terms of linear feet, as opposed to acres. Impacts to such waters

California Environmental Protection Agency

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should be characterized in both areal and linear extents in the Project’s application for Water Quality Certification.

The Water Board requires that projects within the Department’s right-of-way provide appropriate treatment of stormwater runoff from the entirety of the area of new and any redeveloped impervious surface. The Water Board recommends the Department identify on-site treatment options for roadway runoff as soon as possible, in the early phases of Project design.

If you have any questions, please contact Brendan Thompson of my staff at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

Sincerely,

Keith H. Lichten, P.E.
Senior Engineer

cc: Mr. Mike Monroe, USEPA, San Francisco
    Mr. Hal Durio, U.S. Army Corps of Engineers, San Francisco
    Ms. Anna Holmes, California Department of Fish and Game, Stockton
    Mr. John Cleckler, U.S. Fish and Wildlife Service, Cottage Way, Sacramento
    Ms. Jodie Salz, Solano County Resource Conservation District, 1170 N. Lincoln St., Suite 110 • Dixon, California 95620
    Ms. Janet Adams, Solano Transportation Authority, One Harbor Center, Suite 130, Suisun City, CA 94585
    Mr. Dale Dennis, Solano Transportation Authority
    Mr. Rob Goldstein, Solano Land Trust, 1001 Texas St., Suite C, Fairfield, CA 94533
    Mr. Hardeep Takhar, California Department of Transportation, Oakland
Reply to:
Regulatory Branch

Subject: File Number 400401N

Melanie Brent
Department of Environmental Planning
California Department of Transportation
111 Grand Avenue
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your memorandum of March 22, 2007 requesting the U.S. Army Corps of Engineers' (USACE) signatory response to the purpose and need and proposed alternatives of the I-80/I-680/SR12 Interchange Project in Solano County for inclusion in the Draft EIR/EIS pursuant to Item 11 in Section III, NEPA/404 Integration Process, defined in the signed NEPA/404 MOU. This project and the issues were discussed at the Checkpoint Meeting held on March 25, 2007 in Fairfield, California.

The USACE appreciates the opportunity to make comments on the purpose and need and the alternative studies that were demonstrated at the meeting. The USACE at this time however is unable to respond in agreement or disagreement until there is a USACE verified jurisdictional determination of the waters of the U.S. and wetlands that fall within the proposed boundaries of the project.

The USACE acknowledges the hard work you demonstrated in your well organized and informative meeting. The purpose and need was clearly demonstrated and the alternative analysis seemed inclusive. The USACE looks forward to working with you in the near future on the jurisdictional verification process.

Should you have any questions regarding this matter, please call Hal Durio of our Regulatory Branch at 415-503-6785. Please address all correspondence to the Regulatory Branch and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Branch
20 May 2009

Ms. Andrea Meier, Regulatory Project Manager
U. S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, CA 94103-1398

Dear Ms. Meier,

The California Department of Transportation (Caltrans), under its assignment of NEPA responsibilities from the Federal Highway Administration (FHWA) per 23 U. S. C. 237, held a second checkpoint meeting for the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) Interchange Project at the offices of the Solano Transportation Authority in Suisun City, on Tuesday, 10 February 2009, from 2:00 to 4:00 pm. The purpose of the meeting was to present the alternatives for inclusion in the Draft Environmental Impact Statement for the project and the criteria for the selection of the alternatives.

Meeting Participants

Appendix A lists the participants at the meeting.

Meeting Summary

A summary of the meeting is provided as Appendix B. For agencies that did not attend, additional materials (hand-outs from the February 10 meeting) are enclosed.

Request for Response

Pursuant to Item 11 in Section III, The NEPA/404 Integration Process, in the signed NEPA/404 MOU, Caltrans is requesting the signatory federal agencies’ response to:

➢ the alternatives proposed for inclusion in the Draft EIR/EIS.

The type of response currently requested depends on the agency and the Checkpoint—as shown below (and identified in Table 1 of the signed MOU for the NEPA and Clean Water Act Integration Process for Federal Aid Surface Transportation Projects in California)
[signed 2006]). In addition, the non-federal agencies invited to participate (i.e., the Regional Water Quality Control Board and the California Department of Fish and Game) are encouraged to provide comments on the alternatives proposed for inclusion in the Draft EIR/EIS. Table 1 summarizes the only types of response an agency may give at a checkpoint.

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*Identifies signatory agency.

Next Steps

Per the NEPA/404 MOU, each agency has 30 days (by 22 June 2009) to review and provide written responses to this Request for Response. Within ninety days of 22 August 2009, Caltrans will send each agency a letter identifying the status of any issue that received a negative comment or disagreement from the agencies.

Please call me at 510.286.5231 if you have any questions. We look forward to receiving your comments by 22 June. Thank you!

Sincerely,

MELANIE BRENT
District Office Chief
Office of Environmental Analysis

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Distribution List

Project Sponsors

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Attention: Dale Jones, Environmental Coordinator (Districts 4 and 7), 916.531.0058

Federal Agencies

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National Marine Fisheries
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U.S. Fish and Wildlife Service
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U.S. Environmental Protection Agency, Region 9
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Mail Code CED-2
Attention: Carolyn Mulvihill, Environmental Review Office, 415.947.3554

"Caltrans improves mobility across California"
Ms. Andrea Meier
20 May 2009
Page 4
APPENDIX B

I-80/I-680/SR 12 Interchange Project
NEPA 404 MOU Checkpoint Meeting #2
February 10, 2009
Summary of Discussion

The California Department of Transportation (Caltrans), under assignment from the Federal Highway Administration (FHWA), hosted a Checkpoint meeting to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of the National Environmental Policy Act (NEPA) and the Clean Water Act Section 404, consistent with the memorandum of understanding (MOU) signed into effect in May, 2006.

The purpose of the February 10, 2009 meeting was to present an overview of the project alternatives, discuss the purpose and need, present expected impacts on biological and aquatic resources, and seek input from the signatory agencies on the NEPA/404 MOU process.

This meeting summary below is intended to provide an overview of the comments and questions discussed at the meeting grouped by topic.

I. Purpose of Checkpoint Meeting

Maggie Towsnley provided an overview of the previous checkpoint meeting in March 2007, which addressed the screening process and the purpose and need. She then discussed the purpose of this meeting, which is to obtain input and request concurrence regarding the Alternatives to be addressed in the Draft Environmental Document. She stated that the purpose and need for the project has not changed since the 2007 meeting and that that public draft document was on an aggressive schedule, to be released in the late summer/early fall of 2009.

Discussion Q and A:
No discussion questions.

II. Project Description

Mike Lohman of Mark Thomas & Company provided an overview of the two full build project alternatives and their first phases (Phase 1s). Maggie Towsnley noted that the project footprints haven’t changed substantially in the last 2 years; the project alternatives have been refined.

Discussion Q and A:
- **Question:** (EPA) What about the I-80 Eastbound Truck Scales and Jameson Canyon projects?
  **Answer:** They are separate projects. A copy of the I-80 Eastbound Truck Scales EIR/EA was provided.
- **Question:** Was there originally a third alternative?
  **Answer:** There were actually two additional alternatives discussed at the March 2007 Checkpoint Meeting, Alternatives A & D. Alternative A, which was similar to Alternative B, proposed outside connectors for the I-80/I-680 connection. Based on the traffic operations analysis for Alternative A, a consensus was reached that Alternative A would not perform satisfactorily and was therefore screened out. A fourth alternative (D) proposed a raised viaduct along I-80 from I-680 to Suisun Valley Road. This alternative was not well received by the public and was not cost effective. **Note:** After researching information provided at the previous March 2007 Checkpoint Meeting, it should
be noted that Alternatives A and D were discussed as having already been screened out. It was made clear at that time that only Alternatives B and C would be evaluated in the EIR/EIS.

- **Question**: Have Alternatives B and C changed much in the past two years?
  **Answer**: Alternatives B & C have been refined, but have not changed substantially. The biggest changes are at Red Top Road, where the interchange has been moved to the west and at Lopes Road where the road alignment has changed. Additionally, the Options on SR 12 East were conceptual at the last meeting and those have been refined.

- **Question**: Where do the “options” begin and are they interchangeable?
  **Answer**: The options start just east of the I-80/SR 12 East interchange and they are interchangeable. They have been paired (Alternative B/Option 2 and Alternative C/Option 1) for the purposes of analysis. Impacts will be separated out so that they can be easily paired differently at the end of the process, if a different pairing is determined to be preferred.

### III. Sensitive Plant and Animal Species

Shahira Ashkar of ICF Jones and Stokes reviewed the potential sensitive plant and animal species habitat within the project area. She noted that habitat for the following species were located within the project area:

- California red-legged frog
- Valley elderberry longhorn beetle
- Fairy shrimp
- Steelhead/Chinook
- Contra Costa Goldfields

Habitat for salt marsh harvest mouse and Delta smelt was evaluated, but none was found.

**Discussion Q and A:**

- **Question**: What about tiger salamander and Delta green ground beetle? (Caltrans)
  **Answer**: Tiger salamander was evaluated and no habitat was found. Unsure about Delta green ground beetle, but Caltrans and ICF J&S will follow up with the project biologist. **NOTE: J&S project management staff followed-up with the ICF J&S biologist after the NEPA/404 meeting and determined that no habitat for either species was located within the project area.**

### IV. Aquatic Resources

Lisa Webber of ICF Jones & Stokes presented a summary of the wetland delineation efforts and results. She discussed the types of resources present within the project area and their locations and referenced the table provided in the hand out. Maggie Townsley summarized the acreages of jurisdictional and non-jurisdictional wetlands.

**Discussion Q and A:**

- **Question**: How will Alternative C affect traffic operations and how will phasing work?
  **Answer**: Alternatives B and C generally provide the same level of traffic operational improvement and Alternative C allows for more effective phasing due to realigning the interchange.

- **Question**: What is the public’s reaction to Alternative B?
  **Answer**: The public expressed concern about possibly losing the freeway connection from I-680 to SR 12 west.
APPENDIX B

- **Question:** Do we have the total waters in the project area, as opposed to those affected, listed somewhere?
  **Answer:** Lisa Webber stated that the total waters within the project area consisted of the temporary and permanent impacts, but would check with GIS. Note: ICF J&S staff followed up with GIS staff and obtained the final acreages from the Wetland Delineation. The total jurisdictional waters delineated = 43.49 acres. The total non-jurisdictional waters delineated = 9.82 acres. The breakdown of the areses is shown in Exhibit A of the Wetland Delineation.

- **Question:** Is there a mitigation site for Business Center Drive that will be impacted by this project?
  **Answer:** Yes.

- **Question:** Would the USACE jurisdiction have to be reviewed at later phases?
  **Answer:** Yes, unless STA got a Preliminary Jurisdiction.

- **Question:** Have any adjacent properties been considered for mitigation?
  **Answer:** To date, they have not been considered. There are USFWS approved banks in the area, but no USACE approved banks. On-site mitigation in the immediate watershed would be most desirable to the USACE and RWQCB. There are some good wetlands east of I-680 and also south of the existing eastbound truck scales that could be considered for on-site mitigation.

V. **Summary of Project Approach**

Dale Dennis of STA provided an overview of the project schedule and approach. He noted that the environmental document will analyze the ultimate alternatives even though they will not be constructed for years, so that all potential impacts will be identified and considered. Melanie Brent of Caltrans noted that Caltrans will be seeking a ROD for the fundable first phase.

**Discussion Q and A:**

- **Question:** USEPA asked about the relative time frame for construction?
  **Answer:** Phase 1 is expected to be constructed in the next 5 to 10 years, with the full build well beyond that.

- **Question:** Are any portions of this project in the RTP or TIP?
  **Answer:** The Phase 1 alternatives are in the RTP. The full build projects are expected to cost 1.5 to 2 billion dollars and will take time to finance. The Phase 1 alternatives cost in the neighborhood of $650-700 million.

- **Question:** Would mitigation be for Phase 1 only?
  **Answer:** The environmental document would look at the ultimate projects at the same level of detail as the fundable Phase 1 alternatives. All surveys cover the entire project area. Impacts would be analyzed for both ultimate alternatives and the Phase 1 alternatives. It would only be possible to mitigate for Phase 1 because the construction of the ultimate project is so far in the future. It would be necessary to do a revalidation or supplemental (depending on how much had changed) prior to the construction of future phases.

- **Question:** Would STA/Caltrans be seeking permits all at once or along the way? If along the way, does that rule out considering overall mitigation?
  **Answer:** Permits would be sought along the way. Because of the size of the project and the availability of funding later phases may be years/decades away and conditions may change. Caltrans, STA, and the County have been looking at options for mitigating impacts for multiple projects in the area at a single site, so they are looking at large scale mitigation, but it would be necessary to do so in phases. The environmental document will disclose impacts of the total project and will have proposed mitigation for only the Phase 1 alternatives. It will also consider cumulative impacts and possible mitigation.
APPENDIX B

The BA will provide specific mitigation for the Initial Construction Phase of the Phase 1 alternative and conceptual mitigation for future phases. This approach could be used for other resource areas.

VI. Next Steps
Caltrans will send a letter to the signatory/participating agencies requesting agreement/disagreement on the Proposed Alternatives within 30 days

No further formal meetings will precede the circulation of the draft environmental document, but informal meetings can be scheduled if necessary or requested.

Other Discussion Q and A:

- **Question:** USACE noted structures in ROW. Are there any issues with condemnation?
  **Answer:** There are displacements under both alternatives. Under Alternative B there are primarily commercial displacements in the Cordelia area and under Alternative C there are primarily industrial displacements in the area south of I-80. The only residential displacement that would occur under both alternatives is in the vicinity of the westbound truck scales. Property owners associated with the industrial displacements have been contacted and there has not been any significant opposition expressed to date. In fact, several property owners have indicated they see the merits of Alternative C. Both of these alternatives follow existing roads to a large extent, which minimizes other impacts.
AUG 6 - 2009

Regulatory Division

SUBJECT: File Number SPN-2007-400401 S

Ms. Melanie Brent
Office of Environmental Analysis
California Department of Transportation
Post Office Box 23660
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your request for comments following an interagency alternatives scoping meeting on February 10, 2009, for the Interstate 80/Interstate 680/State Route 12 Interchange Project. During that meeting, you requested that we consider two “build alternatives”, impacts associated with the first phase, and to provide feedback on which alternative would likely result in the least impact to aquatic resources. You also requested that we provide direction on which alternative we believe warrants additional engineering design and development. In addition to responding to those requests, we would like to take this opportunity to outline the overall project purpose that we believe should be used in developing an alternatives analysis that satisfies the US EPA’s Clean Water Act (CWA), Section 404(b)(1) Guidelines. We also will summarize what we recommend be included in the scope of analysis in the draft environmental impact statement (DEIS) to be prepared later this year.

Preliminary Alternatives Evaluation

We were unable to reach a determination on which on-site alternative we would select to be a preliminary preferred alternative based on the information we have available. The two combinations of west-end “alternatives” and east-end “options” do not appear to have comparable differences in impacts to waters of the U.S., therefore, we had difficulty in ranking those alternatives based on impacts to areas under our jurisdiction. We also did not have adequate information to balance impacts to waters of the U.S. with other factors such as impacts to water quality and endangered species. For instance, Alternative C, Option 1, appears to have the least permanent and temporary impacts to waters of the U.S., but it would have the most impacts to water quality amongst the other alternatives, based on information in the “I-80/I-680/SR-12 Interchange Project Alternatives Screening Matrix (Tier 2)”, received in March 2007. We would also like to point out that now that the wetland delineation has been verified, there will likely be differences in the estimated impacts to waters of the U.S. for the “alternatives” and “options” presented.
Generally, we would expect to have a higher level of information on the environmental setting and impacts in order to make a preliminary selection of the preferred alternative under the SAFETEA-LU authority, National Environmental Policy Act (NEPA), and the CWA Section 404(b)(1) Guidelines. A draft environmental assessment or DEIS would generally provide the necessary information to determine what the effects are proposed to the human environment, including impacts to waters of the U.S. The information we have available at this time is limited to the Alternatives Screening Matrix and the project information presented to us in the February 10, 2009, meeting. We are unable to make any determinations of what proposed impacts may be significant or to make a determination of what we believe would be preliminarily the least environmentally damaging practicable alternative (LEPA).

If you are still interested in having the Corps make a determination of a preliminary preferred alternative at this time, we would recommend that you update impact maps depicting waters of the U.S. for each “alternative” and “option”. Water quality impacts in the matrix should also include an assessment of increased runoff from impervious surfaces. We would also appreciate a clarification of the numbers presented in the Alternatives Screening Matrix for delays, cut-through traffic, truck volumes, and safety. Identifying a range of acceptable levels of service or “vehicle-hours”, would be very helpful. Also, explaining the significance of the numerical differences across alternatives in the various categories in the matrix would be helpful in determining the extent to which alternatives meet the project purpose and impact the environment.

Overall Project Purpose

The project purpose guides the scoping and determines the range of alternatives to be considered for impacts and alternatives analysis under NEPA and under the CWA Section 404(b)(1) Guidelines. Based on the information provided, the overall project purpose is to reduce congestion and improve circulation through the I-80/I-680/SR-12 corridor for local drivers, commercial traffic, and other travelers.

Scope of Analysis for Evaluating Impacts to Waters of the U.S. and Other Elements of the Human Environment

In general, the scope of analysis depends on the resource or element of the human environment being evaluated. The geographic scope of analysis for direct impacts to waters of the U.S., should include the project footprint, access roads, and staging areas. The geographic scope of analysis for indirect impacts should include the project area on the verified wetland delineation maps as well as environmentally sensitive areas, resources, and surrounding communities that may be impacted in part or in whole by the project. We encourage coordination with the Corps, the U.S. Environmental Protection Agency, and other resource
agencies as applicable, to determine the scope of the studies to be completed to evaluate the project’s impacts in preparation of the DEIS.

Traffic congestion in the corridor has resulted from extensive regional population growth, a tripling of population locally since the 1960’s, poorly planned local freeway access, and substantial increases in commercial truck traffic. Policy decisions related to land use patterns in Solano County and nearby areas like Yolo County, Sacramento County, and other parts of the north Bay Area also influence traffic conditions in the corridor. Also, economic and societal trends have impacted traffic in the corridor since it was first designed. These trends include increases in the number of cars per household, the decreasing affordability of housing near large employment centers in the Bay Area, the increasing average distance people are willing to travel for work, and the increased amount of discretionary time and income people have for recreational activities. Based on this information, the geographic scope of analysis for indirect and cumulative effects to traffic, circulation, land use, and economics, in the DEIS should a broader area than the I-80/I-680/SR-12 corridor. We recommend that the DEIS include a brief discussion of how these factors have contributed to traffic issues in the corridor and an evaluation of how these trends may further impact traffic in the corridor.

Traffic impacts from other large transportation projects in the region, such as the Jepson Parkway, North Connector Project, the high occupancy vehicle (HOV) lanes system that is currently under construction, and Fairfield Multi-modal Transportation Center, should also be considered in the cumulative impacts analysis. Even the California High-Speed Rail project may affect traffic in the Interstate 80 corridor, as noted in the Bay Area Council Economic Institute report, “California High-Speed Rail Economic Benefits and Impacts in the San Francisco Bay Area”, dated October 2008. While Solano County will not be served by California High-Speed Rail, persons in the Sacramento Valley that commute via I-80 who would normally drive alone or in vanpools/carpoole, could switch to the California High-Speed Rail. The Institute’s report suggests that as many as 6 percent of Bay Area commuters would shift from cars to high-speed rail.

Other Recommendations

We recommend that an alternative should be included in the DEIS that includes implementing transportation demand management techniques, commute trip reduction techniques, coupled with aggressive local smart growth/sustainable communities land use policies. We would be interested in knowing whether a similar capital investment in various alternative modes of transportation, modifications in land use patterns in the area, and commute trip reduction measures, could result in the same level of service outcomes as the build alternatives. A more extensive and convenient bus system, redevelopment of existing housing and commercial stock, transit-oriented/smart growth developments, paid parking at destinations, and incentives for ridesharing and telecommuting could decrease local traffic substantially. In
combination with ongoing projects such as the HOV lanes, a multi-strategy transportation demand management program may meet the project purpose and result in fewer adverse environmental impacts than the build alternatives.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks  
Chief, Regulatory Division

Copies Furnished:
US EPA, San Francisco, CA  
US FWS, Sacramento, CA  
US NMFS, Santa Rosa, CA  
CA DFG, Yountville, CA  
CA RWQCB, Oakland, CA  
STA, Suisun City, CA
13 August 2009

Ms. Carolyn Mulvihill, Environmental Review Office
U. S. Environmental Protection Agency, Region 9
75 Hawthorne Street, Mail Code CED-2
San Francisco, CA 94105

Dear Ms. Mulvihill,

In July, you left me a VoiceMail message inquiring about how the proposed I-80/I-680/State Route 12 Interchange Project would affect existing mitigation sites within the project area.

There is one existing mitigation site in the project area for the I-80/I-680/State Route 12 Interchange—the Green Valley Corporate Wetlands. The initial phase of Alternative B would result in 0.45 acres of permanent impacts and an additional 0.08 acres of temporary impacts. (Please see enclosed exhibit.) Neither the initial phase of Alternative C or the ultimate Alternative C project would affect the mitigation site.

This mitigation site provides habitat for Valley Elderberry Longhorn Beetle and California Red Legged Frog. The number and location of elderberry shrubs that will be affected is currently being determined. Mitigation ratios will be developed in consultation with the U. S. Army Corps of Engineers, the U. S. Fish and Wildlife Service and other regulatory agencies.

If you have additional questions about this project, please contact me at 510.286.5231, or Howell Chan of my staff at 510.286.5623.

Sincerely,

Melanie Brent
District Office Chief
Office of Environmental Analysis

“Caltrans improves mobility across California”
Melanie Brent  
California Department of Transportation  
District 4  
P.O. Box 23660  
Oakland, California 94623-0660

Subject: Checkpoint on Range of Alternatives for Interstate 80/ Interstate 680/State Route 12  
Interchange Project, Solano County, CA

Dear Ms. Brent:

This letter responds to your May 20, 2009 letter requesting agreement on the Range of  
Alternatives to be included in the draft environmental impact statement (DEIS) for the Interstate  
80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR-12) Interchange Project. The request is in  
accordance with the 2006 National Environmental Policy Act/Clean Water Act Section 404  
Integration Process Memorandum of Understanding (NEPA/404 MOU).

The California Department of Transportation (Caltrans) and the Solano Transportation  
Authority (STA) propose improvements to freeway-to-freeway connections between I-80, I-680,  
and SR-12 in Fairfield, Solano County. The U.S. Environmental Protection Agency (EPA)  
previously provided comments on the Purpose and Need Statement at a March 15, 2007  
interagency checkpoint meeting, and subsequently agreed with an updated Purpose and Need  
Statement and with the Range of Alternatives presented at the meeting in a June 12, 2007 letter.  
At that time, the project alternatives consisted of Alternatives B and C, with SR-12 Options 1 or  
2 possible with either alternative.

Subsequent to your May 2009 letter, EPA requested additional information on the  
project’s potential impacts to the existing Green Valley Corporate Wetlands mitigation site. Your  
response on August 13, 2009 indicated that Alternative B would result in 0.45 acre of permanent  
impacts and 0.08 acre of temporary impacts to the site, but that Alternative C would not impact  
the site.

EPA understands that the identified alternatives have not changed substantively since the  
2007 agreement point. Based on this, and the additional information we’ve received since then,  
we agree with the range of alternatives as Alternatives B and C, with Options 1 or 2. We also  
support the recommendations of the U.S. Army Corps of Engineers in their July 28, 2009 letter.
to include transportation demand management and trip reduction methods in the project alternatives.

As a next step for this project and as described in the NEPA/404 MOU, EPA will review the DEIS. We are available to continue working with the Interagency Group to further refine the design of project alternatives to avoid and minimize impacts to resources. In addition, we would like to be involved in conceptual mitigation discussions.

Thank you for requesting our agreement on the Range of Alternatives. We look forward to continued participation in this project through the NEPA/404 MOU process. If you have any questions or comments, please contact Carolyn Mulvihill at (415) 947-3554 (mulvihill.carolyn@epa.gov) or Jason Brush at 415-972-3483 (brush.jason@epa.gov), the lead reviewers for this project.

Sincerely,

[Signature]

Kathleen M. Goforth, Manager
Environmental Review Office (CED-2)

cc: Janet Adams, Solano Transportation Authority
    Andrea Meier, U.S. Army Corps of Engineers
    Jacqueline Pearson-Meyer, National Marine Fisheries Service
    Cay Goude, U.S. Fish and Wildlife Service
    Brian Wines, Regional Water Quality Control Board
    Greg Martinelli, California Department of Fish and Game
January 14, 2011

In response, refer to:
2010/06180

James Richards, Deputy District Director
Department of Transportation
Caltrans District 4
Office of Environmental Analysis
111 Grand Avenue
Oakland, California 94610

Dear Mr. Richards:

Thank you for your letter of December 8, 2010, requesting initiation of consultation with NOAA’s National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Effective July 1, 2007, the Federal Highway Administration assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the Federal action agency for ESA consultations with NMFS for Federally funded projects. This letter also serves as consultation under the authority of, and in accordance with, the Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act (MSA), and the provisions of the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended. These consultations pertain to Caltrans’ proposed Interstate-80/State Route 12 Interchange Improvement Project in Solano County, California.

The Interstate-80/State Route 12 (I-80/I-680/SR 12) Interchange Improvement Project covers several miles of roadway around the City of Fairfield in Solano County, California. The western boundary of the Project is the Red Top Road crossings of I-680, I-80, and SR 12; the eastern boundary of the Project is the Suisun Valley Road crossing on I-80 and the Ledgewood Creek road crossing on SR 12. Surface water in the action area includes Green Valley Creek and Ledgewood Creek. The purpose of the project is to improve the I-80/I-680/SR 12 interchange complex to meet traffic demands and alleviate cut-through traffic on local roads. The project consists of construction or realignment of the following interchanges: 1) I-80/I-680/SR 12 West; 2) I-680 and Red Top Road; 3) I-80 and Green Valley Road; 4) I-80/Red Top Road and Business Center Drive; and 5) and SR 12 West and Red Top Road. Construction will also involve widening of I-80 and a new lane on eastbound SR 12, which will require a new bridge and off-ramp over Green Valley Creek, and widening of the culvert over Ledgewood Creek. All proposed in-stream work will occur during the dry season (June 1 through October 15).
Green Valley Creek originates in Green Valley, northwest of Rockville Hills Regional Park, and flow south to Cordelia Slough which is a tributary of Grizzly Bay. At the existing I-80 and I-680/I-80 West Interchange overcrossing, Green Valley Creek flows in a concrete-lined, trapezoidal channel approximately 670 feet long and 70 feet wide. The proposed action will remove the existing I-80 West bridge and replace it with a single span structure measuring approximately 103 feet long and 133 feet wide. Additionally, a single span structure to carry the Green Valley Road off-ramp over the creek will replace the existing I-680/I-80 West interchange.

In-stream construction at Green Valley Creek is proposed to occur between June 1st and October 15th, over approximately four construction seasons. Construction at Green Valley Creek will occur within a 10-20 year time frame. The first phase will involve construction of the outside (northernmost) westbound lanes on I-80 while maintaining traffic flow on the existing structure. Demolition of the existing I-80 West bridge, and completion of the new I-80 West bridge and the new off-ramp structure will follow.

Piles for the new free-spanning structures will be located at the top of the creek bank and are anticipated to be 12-inch square piles driven to a depth of approximately 70 feet. Approximately 40 piles per abutment will be installed for the westbound I-80 bridge, and approximately 24 piles per abutment will be installed for the new off-ramp structure. Vibratory hammers will be used for pile driving to the maximum practicable extent. Pile driving will only occur during low precipitation periods (June 1 to October 15) and any work occurring before June 1 or after October 15 will be restricted to road or bridge surface only, with water quality control measures in place.

Ledgewood Creek originates in the Vaca Mountains, north of the Solano/Napa County line, and flows south to Paytonia Slough which is a tributary of Grizzly Bay. In the vicinity of the existing SR 12 overcrossing, Ledgewood Creek is confined to a levee-lined trapezoidal channel. Beneath the five-span bridge at SR 12, Ledgewood Creek is conveyed through concrete-lined box culverts. Within the action area, riparian and riverine cover is limited to areas downstream of these culverts. The culverts at SR 12 and Ledgewood Creek is proposed to be extended 15 feet to the south (downstream) to accommodate an additional lane on SR 12; this would permanently impact 15 linear feet of the existing earthen channel. Construction associated with the culvert is expected to last only one season from June 1 to October 15.

Dewatering of both Ledgewood Creek and Green Valley Creek will involve construction of the following in-channel features: 1) temporary cofferdams (made of gravel and fabric) constructed 20-50 feet beyond the limit of bridge/culvert widening; and a pipe diversion to facilitate dewatering of the channel and bypass creek flow; 2) cofferdams constructed utilizing the same methods to facilitate excavation of existing bridge/culvert footings; and 3) falsework placed within the banks and channel to support construction of the cast-in-place concrete box girder structures of the new bridges/culverts. No construction related material (including dewatering and bypass structures) will remain in the channel between October 15 and June 1. When construction is completed, falsework will be removed and any disturbed portions of the creek bed and bank temporarily affected during construction will be restored to pre-project conditions. Additionally, the channel under the new bridges at Green Valley Creek will be restored to an
earthen channel; and a concrete fish passage structure involving a low flow channel and possibly baffles will be constructed in the culvert at SR 12 and Ledgewood Creek.

Standard best management practices (BMPs) for construction site and sediment and stormwater runoff control will be utilized on this project. Biofiltration swales and biostrips will be used when possible to control runoff. Vegetation will be trimmed rather than removed when possible. Temporarily disturbed riparian areas will be replanted with the native species prior to October 15 to minimize erosion and creek sedimentation, and revegetation will be monitored annually for 3 years.

Endangered Species Act

In its December 8, 2010, letter Caltrans asked for concurrence with a finding that the project is not likely to adversely affect Central California Coast (CCC) steelhead (Oncorhynchus mykiss). Reaches of Green Valley Creek and Ledgewood Creek within the project area are not designated critical habitat for CCC steelhead. Available information indicates the following DPS may occur in the project area:

Central California Coast steelhead Distinct Population Segment (O. mykiss) DPS

Threatened (January 5, 2006; 71 FR 834).

The life history of steelhead is summarized in Busby et al. (1996). Steelhead typically immigrate to tributaries of San Francisco Bay between November and April, peaking in January and February (Fukushima and Lesh 1998). Adult CCC steelhead are generally not present in streams between May and October; warm summer water temperature and poor habitat quality within the project area further reduce the likelihood of adult steelhead presence during summer months. Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating CCC steelhead use Green Valley Creek and portions of the San Francisco Bay for rearing and as a migration corridor to the ocean. In summer months, reaches of Green Valley Creek and Ledgewood Creek within the action area are unsuitable for salmonid rearing due to poor water and habitat quality. Although data regarding the emigration timing of steelhead smolts from Green Valley Creek and Ledgewood Creek is lacking, steelhead from other streams draining to San Francisco Bay typically emigrate from March through June (Fukushima and Lesh 1998). NMFS assumes that steelhead from Green Valley Creek and Ledgewood Creek emigrate at the same time and smolting steelhead should be absent during the in-channel construction window of June 1 through October 15.

O. mykiss have been collected in Green Valley Creek from the 1950s to the present, and unpublished data indicates O. mykiss were collected 1 mile upstream of I-80 in January 1997 (Leidy et al. 2005). Therefore, it is likely that steelhead spawning and rearing occur above the I-80 crossing of Green Valley Creek. Beneath I-80 and the I-680/I-80 West interchange Green Valley Creek passes through a 670 foot long, concrete-lined trapezoidal channel and primarily provides a migration corridor for salmonids at this location. This crossing contains an engineered low-flow channel and concrete weirs to enhance fish passage, but lacks significant riparian canopy and natural instream cover due to the concrete channel invert.
Caltrans proposes to restore approximately 300 feet of Green Valley Creek to natural earthen channel and in the process enhance habitat at the site. Proposed actions will not inhibit fish passage at the site, and could provide additional rearing habitat for juvenile salmonids. Salmonids are not likely to be present during summer in-channel construction and pile driving work windows. Construction activities that are proposed to occur when migratory steelhead are likely to be present will be restricted to road or bridge surfaces only, with water quality control measures in place. Therefore, CCC steelhead are not likely to be adversely affected by the proposed actions at Green Valley Creek.

In the vicinity of the SR 12 crossing, levees line both banks of Ledgewood Creek and the channel has a trapezoidal cross section. SR 12 crosses Ledgewood Creek over a five-span bridge. At low flows Ledgewood Creek passes through the second culvert from the east bank, which forms a V-shaped channel to maximize water depths at low flows. No observations of steelhead have been reported in Ledgewood Creek. The Ledgewood Creek drainage, however, is adjacent to the Suisun Creek Watershed which is known to support steelhead populations. Furthermore, Chinook salmon have been observed spawning in Ledgewood Creek above the project site, indicating that Ledgewood Creek supports migratory habitat for anadromous salmonids (NMFS 2011).

Proposed activities at Ledgewood Creek involve widening the SR 12 crossing by 15 linear feet to the south. This will permanently impact 15 linear feet of the existing earthen channel by converting it to a concrete invert slab. This action will exacerbate the existing shallow water depth issues at low flows; and concrete low-flow walls and potentially baffles will be constructed to enhance low-flow fish passage of the culvert. Ledgewood Creek is not designated critical habitat for CCC steelhead, and there is no confirmed documentation of *O. mykiss* within the drainage. The proximity of Ledgewood Creek to the Suisun Creek watershed, however, indicates migratory steelhead could be present during periods of higher flows. All construction activities associated with the culvert will occur over one dry season, from June 1 to October 15. Therefore, the presence of CCC steelhead is unlikely during proposed construction activities, and CCC steelhead are not likely to be adversely affected by the proposed actions at Ledgewood Creek. Proposed passage improvements at Ledgewood Creek will address the addition of 15 linear feet of hardened creek bottom, and potentially make higher quality habitat above the culvert more accessible to CCC steelhead.

Based on the best available information, NMFS concurs with Caltran’s determination that threatened CCC steelhead are not likely to be adversely affected by the I-80/I-680/SR 12 Interchange Improvement Project. This concludes informal consultation in accordance with 50 CFR 402.13(a) for the proposed I-80/I-680/SR 12 Interchange Improvement Project in Solano County, California. However, further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.
Magnuson-Stevens Fishery Conservation and Management Act

The project area is located within an area identified as EFH for Central Valley fall/late fall-run Chinook salmon, managed with the Pacific Coast Salmon Fishery Management Plan under the MSA. As discussed in the above ESA section, no in-water construction will take place when Chinook salmon are likely to be present. However, adverse effects to EFH could occur from increased sedimentation and turbidity following construction activities. While these impacts are considered minor and temporary, NMFS has made the determination that the proposed action would adversely affect EFH for this species. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset any adverse effects to EFH. Therefore, NMFS has no additional EFH Conservation Recommendations to provide.

This concludes EFH consultation for Caltrans’ proposed I-80/I-680/SR 12 Interchange Improvement Project, Solano County, California. Pursuant to 50 CFR 600.920(l) of the EFH regulations, Caltrans must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS’ EFH Conservation Recommendations.

Fish and Wildlife Coordination Act

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development [16 U.S.C. 661]. The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage [16 U.S.C 662(a)]. Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources. With implementation of the previously-referenced EFH conservation recommendations, NMFS has no further comments to provide.

Please contact Mr. Joseph Heublein at (707) 575-1251, or via e-mail at joe.heublein@noaa.gov should you have any questions.

Sincerely,

Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS, Long Beach
    Bob Hoffman, NMFS, Long Beach
    Bryant Chesney, NMFS, Long Beach
    Ahmad Hashemi, Caltrans District 4
    Copy to File ARN: 151422-SWR-2010-SR00524
Literature Cited


March 8, 2011

Howell Chan
California Department of Transportation
District 4
P.O. Box 23660
Oakland, California 94623-0660

Subject: Preliminary Least Environmentally Damaging Practicable Alternative for the Interstate 80/Interstate 680/State Route 12 Interchange Project, Solano County, California

Dear Mr. Chan:

The California Department of Transportation (Caltrans) has asked the Environmental Protection Agency (EPA) whether we have enough information to agree upon a preliminary least environmentally damaging practicable alternative (LEDPA) for the Interstate 80/Interstate 680/State Route 12 Interchange Project. Caltrans’ request was made pursuant to the process outlined in the National Environmental Policy Act/Clean Water Act (CWA) Section 404 Integration Memorandum of Understanding (NEPA/404 MOU) of April 2006. We appreciate the interagency coordination efforts by Caltrans to identify the preliminary LEDPA.

Based on meetings with Caltrans and other resources agencies (including a Checkpoint 3 meeting on November 29, 2010 and a follow-up meeting on February 9, 2011), EPA recommends that Caltrans/Solano Transportation Authority (STA) request concurrence/agreement on Phase 1 of the proposed project, rather than the entire project. We believe that given the uncertainty, both about environmental conditions and about design options for Phase 2 construction, it would be most prudent to identify the preliminary LEDPA for Phase 1 of the project, with an understanding that additional environmental analysis and design work will be completed for the remainder of the project at a future date. Based on information provided by Caltrans/STA, we acknowledge that Phase 1 has independent utility since: 1) its function is not dependent on Phase 2 implementation, and 2) Phase 1 construction would not restrict consideration or refinement of alternatives for the future phase of the project. Also, since the NEPA Record of Decision, Clean Water Act Section 404 permit application, and U.S. Fish and Wildlife Service Biological Opinion will cover Phase 1 of the project, it is consistent that the preliminary LEDPA request be for Phase 1.
In accordance with this recommendation, we request that Caltrans/STA include a discussion of avoidance and minimization measures that will be incorporated in design and construction of Phase 1. As Phase 1 of Alternative C would impact a higher acreage of waters than Phase 1 of Alternative B (even if that difference in impacts is temporal in nature, with regard to the potential impacts of the overall alternatives), the resource agencies will need evidence that potential impacts of Alternative C, Phase 1, have been minimized to the maximum extent practicable, and that the benefits of Alternative C, Phase 1 justify the greater impacts, in order to justify identification of this alternative as the LEDPA.

We appreciate and support the analysis of the entire project in the environmental document so that the potential impacts of future phases can be thoroughly considered in the decisionmaking process.

If you have any questions about the recommendations we’ve provided, please contact Carolyn Mulvihill of my staff at (415) 947-3554 or mulvihill.carolyn@epa.gov, or Melissa Sciannia of EPA’s Wetlands Regulatory Office at 415-972-3821 or scianni.melissa@epa.gov.

Sincerely,

Connell Dunning, Transportation Team Supervisor
Environmental Review Office

cc: Andrea Meier, Army Corps of Engineers
Brendan Thompson, Regional Water Quality Control Board
John Cleckler, U.S. Fish and Wildlife Service
Melissa Escaron, California Department of Fish and Game
Regulatory Division

SUBJECT: File Number SPN-2007-400401 S

Mr. Howell Chan
Office of Environmental Review
California Department of Transportation, District 4
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Chan:

We are writing in response to your request for a preliminary determination of a least environmentally damaging practicable alternative (LEDPA) for the Interstate 80/Interstate 680/State Route 12 Interchange Project in Solano County, California. Your office asked for concurrence on the applicant’s preliminary LEDPA, Alternative C, on December 31, 2010. We stated in several meetings that we would wait for the other resource agencies to flush out their concerns and if necessary, we would ask for additional information prior to making an LEDPA concurrence at checkpoint 3 for this project. The two agencies that have had the most disagreement on the preliminary LEDPA and concerns about project impacts, the U.S. Environmental Protection Agency and the San Francisco Bay Regional Water Quality Control Board, have made it clear that they will not concur or agree on a preliminary LEDPA at this point.

The Corps understands that the purpose of determining a preliminary LEDPA in the NEPA/404 Integration Process is to move forward with the environmental document. The NEPA/404 MOU (“National Environmental Policy Act and Clean Water Act, Section 404 Integration Process for Federal Aid Surface Transportation Projects in California”, dated November 2005), states “[the NEPA/404 integration] process does not include all [the] environmental review and permitting requirements” and that “regulatory and resource agency participation in the process does not imply endorsement of all aspects of a transportation plan or project”. The request to make a preliminary LEDPA determination in our opinion is equivalent to requesting a good-faith, early review of project alternatives. For the Corps, a preliminary LEDPA determination is not binding since projects may be refined further to avoid and minimize impacts to aquatic resource prior to or during the Corps permit evaluation process.

As such, the Corps is considering concurrence that the general footprint of Alternative C, Phase 1, is the preliminary LEDPA for a fundable Phase 1 of the Interstate 80/Interstate 680/State Route 12 Interchange Project. However, your office has requested a preliminary
LEDPA concurrence which also requires a concurrence on a conceptual mitigation plan (CMP) at the same time (see section III.12.c). We agree that you are headed in the right direction with the compensatory mitigation approach discussed in the December 6, 2011, interagency meeting, but additional information is required to round out a CMP. At this point, we are concerned the mitigation approach may not adequately replace the functions and values of the aquatic resources that would be lost.

A conceptual mitigation plan sufficient to concur on a preliminary LEDPA should include your objectives; site selection criteria; site protection instruments to be used; a brief description of the site; aquatic resources are to be created, restored, enhanced, or preserved on the site; a work plan; a monitoring plan; performance standards and suitable reference sites. We also recommend providing aerial photos of proposed sites that are used to illustrate where mitigation would occur. Preparation of a conceptual mitigation plan can be done concurrently with providing additional information to the San Francisco Bay Regional Water Quality Control Board and the U.S. Environmental Protection Agency requested in their March 8, 2011 letters. We would encourage you to focus your attention on areas within the Suisun Marsh Management area, east of Interstate 680 and south of State Route 12. We would also like to respond to your suggestion of the use of mitigation bank credits as compensatory mitigation for seasonal wetlands. While the project is within the Elsie-Gridley Mitigation Bank service area, due to the scale of the impacts (Alternative C proposed 16.83 acres of permanent impacts to waters of the U.S.), this district may not authorize the purchase of credits from that bank to compensate for aquatic resources impacted.

One of the requirements in the March 8 letter from the SF Bay RWQCB is the preparation of a Clean Water Act Section 404(b)(1) alternatives analysis. While this information may be useful in determining whether alternatives have avoided and minimized impacts to waters of the U.S. to the maximum extent practicable (a major concern of the RWQCB and U.S. EPA), that request for alternatives information is generally made by the U.S. EPA or the Corps of Engineers who use that information in their alternatives analysis process prior to issuing a permit. In order to prevent unnecessary duplication, I would recommend involving the Corps and EPA in defining the information that should be provided and the framing of the alternatives analysis so that the analysis can be used for all three agencies. The level of detail required in a CWA Section 404(b)(1) alternatives analysis is not required in making a preliminary LEDPA determination, however, the other agencies have requested additional information on avoidance and minimization and we would encourage you to provide that information prior to requesting conclusion of checkpoint #3.
Should you have any questions regarding this matter, please call Andrea Meier at (415) 503-6798 or Cameron Johnson at (415) 503-6773. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Copies Furnished:

US EPA, San Francisco, CA
US FWS, Sacramento, CA
US NMFS, Santa Rosa, CA
CA DFG, Yountville, CA
CA RWQCB, Oakland, CA
DEPARTMENT OF TRANSPORTATION
P.O. BOX 23660, MS 8-B
OAKLAND, CA 94623-0660
PHONE (510) 286-5231
FAX (510) 286-5600
TTY 711
www.dot.ca.gov

23 January 2012

Paula Gill, U. S. Army Corps of Engineers
Carolyn Mulvihill, U. S. Environmental Protection Agency
Melissa Scianni, U. S. Environmental Protection Agency
John Cleckler, U. S. Fish and Wildlife Service
Chris Nagano, U. S. Fish and Wildlife Service
Joe Heublein, NOAA’s National Marine Fisheries Service
Brendan Thompson, San Francisco Bay Regional Water Quality Control Board
Dale Bowyer, San Francisco Bay Regional Water Quality Control Board
Brenda Blinn, California Department of Fish and Game

Due to the complexity of the issue surrounding the Conceptual Mitigation Plan (CMP) for the I-80/I-680/State Route 12 Interchange Project, we request for this project, that Checkpoint #3 under the NEPA/Section 404 Memorandum of Understanding (2006 MOU) be split into two separate actions: concurrence on the Least Environmentally Damaging Practicable Alternative (LEDPA); and concurrence on the CMP. This will enable the project to move forward with completion of the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) and the Record of Decision (ROD).

While the FEIR/EIS and ROD are moving forward, we will commit to working with all the agencies to obtain concurrence/agreement on the CMP. If the agencies are unable to concur/agree on the CMP, the dispute resolution procedures outlined in the 2006 MOU will be invoked. A Section 404 permit application will be submitted to the USACE only after concurrence/agreement on the CMP. Any location considered for mitigation will only be acquired after studies and after approvals of the location by the signatory agencies.

Please let us know when we can expect your written concurrence/agreement on the LEDPA.

If you have any questions, please contact me at 510.286.5231, or melanie_brent@dot.ca.gov, or Howell Chan of my staff at 510.286.5623, or howell-chan@dot.ca.gov.

Sincerely,

Melanie Brent
District Office Chief

"Caltrans improves mobility across California"
The Service is fine with splitting Checkpoint 3. Thanks.

Ryan

Ryan Olah
Coast Bay/Forest Foothill Division Chief
U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way
Sacramento, CA 95825
(916) 414-6623

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Hi Ryan,

Because there is no consensus yet on the Conceptual Mitigation Plan for the I-80/I-680/SR 12 Interchange Project, the USEPA suggested splitting Checkpoint 3 in the NEPA/Section 404 Integration Process and proceeding now with a decision on the Least Environmentally Damaging Practicable Alternative (LEDPA). This would allow the Final EIR/EIS to proceed to approval while providing time to come up with more locations for the Conceptual Mitigation Plan, which will be completed prior to the submittal of permit applications. The USACE is willing to use this approach. The NOAA’s NMFS doesn’t have any problems with it either. If you/USFWS also agree, then the USEPA and USACE will send Caltrans letters that they have decided to split Checkpoint 3 and provide a go-ahead to proceed with Alternative C, Phase 1 as the LEDPA.
If you have any questions about this matter, please contact me, or my boss (Melanie Brent, 510.286.5231, melanie_brent@dot.ca.gov), or Zachary Gifford (510.286.5610, zachary_gifford@dot.ca.gov) who works for me.

Thank you for your assistance.

Howell Chan
California Department of Transportation
District 4, Office of Environmental Analysis
510.286.5623
March 15, 2012

Melanie Brent
California Department of Transportation
District 4
P.O. Box 23660
Oakland, California 94623-0660

Subject: Preliminary Least Environmentally Damaging Practicable Alternative for the
Interstate 80/Interstate 680/State Route 12 Interchange Project, Solano County,
California

Dear Ms. Brent:

The Environmental Protection Agency (EPA) has reviewed the California Department of
Transportation’s (Caltrans’) January 23, 2012 letter requesting that Checkpoint #3 under the
National Environmental Policy Act/Clean Water Act (CWA) Section 404 Integration
Memorandum of Understanding (NEPA/404 MOU) of April 2006 be split into two separate
checkpoints: (1) agreement on the preliminary least environmentally damaging practicable
alternative (LEDPA) and (2) agreement on the Conceptual Mitigation Plan (CMP). EPA agrees
to this amendment of the NEPA/404 MOU process for this project, and agrees that Alternative C
Phase 1 is the preliminary LEDPA. Our agreement is based on information received from
Caltrans, up to and including the package sent on December 19, 2011.

While Alternative C Phase 1 would impact a higher acreage of waters than Alternative B
Phase 1, we recognize Caltrans’ assertion that due to engineering and operational issues,
Alternative B Phase 1 is not practicable. We also recognize that Caltrans has identified
avoidance and minimization measures that can lower overall impacts, as noted in the information
sent on December 19, 2011.

As we proposed in my January 17, 2012 email to you (attached), we agree to this
amendment to the NEPA/404 MOU process with the following caveats:

- The CMP checkpoint will be completed prior to Caltrans’ submission of a Clean
  Water Act Section 404 permit application to the Army Corps of Engineers;
- If the NEPA/404 signatory resource agencies are unable to concur/agree on the CMP,
  the dispute resolution procedures outlined in the NEPA/404 MOU will be applicable.
If you have any questions about the recommendations we’ve provided, please contact Carolyn Mulvihill of my staff at (415) 947-3554 or mulvihill.carolyn@epa.gov, or Melissa Scianni of EPA’s Wetlands Office at 415-972-3821 or scianni.melissa@epa.gov. If you prepare any additional materials in response to requests from other resource agencies, please provide a copy of those materials to EPA.

Sincerely,

Carolyn Mulvihill

Connell Dunning, Transportation Team Supervisor
Environmental Review Office

Attachment: January 17, 2012 email from Connell Dunning to Melanie Brent on Proposed strategy for moving forward on LEDPA agreement/concurrence on I-80/680

cc: Paula Gill, Army Corps of Engineers
    Brendan Thompson, Regional Water Quality Control Board
    John Cleckler, U.S. Fish and Wildlife Service
    Melissa Escaron, California Department of Fish and Game
Hi Melanie,

I'm following up on my call to you this morning in regard to the LEDPA/CMP checkpoint for the I-80/680/SR12. Based on conversations that we've had with the Corps and the Regional Board, we would like to propose that for this project, Checkpoint #3 in the NEPA/404 MOU, which includes concurrence/agreement on both the preliminary LEDPA and the CMP, be split into two separate checkpoints.

This is based on the fact that at this time, EPA, the Corps, and the Regional Board are able to concur/agree on the preliminary LEDPA, but are not able to concur/agree on the CMP. Splitting the checkpoint would allow Caltrans to continue the NEPA/404 process once the formal concurrence/agreement on the LEDPA has been completed. Our proposal is that the CMP checkpoint be completed prior to submission of a 404 CWA permit application to the Corps.

Changing the requirements of Checkpoint #3 is allowed under the Modification Procedures in the MOU, but requires approval by all signatory agencies. If Caltrans agrees with this proposal, we recommend the following:

1) Caltrans should request in writing that Checkpoint #3 be split. The letter should be submitted to all signatory agencies for their approval. (One letter written to all parties would be sufficient, with a copy to the Regional Board per their involvement.)

2) The request letter must include Caltrans' commitments 1) to submit a CMP prior to submission of a 404 CWA permit application to the Corps and 2) to present any proposed mitigation site to the agencies prior to completing any studies or purchasing any proposed site.

3) The letter should also acknowledge CT understanding that no 404 CWA permit application will be processed until the agencies concur/agree with the CMP. If the resource agencies are unable to concur/agree on the CMP the dispute resolution procedures outlined in the 2006 MOU will be applicable.

Please let me know if you have any questions about this proposed course of action.

Thanks,
Connell

Connell Dunning, U.S. EPA Region IX
Environmental Review Office/Transportation Lead
75 Hawthorne Street, CED-2, San Francisco, CA 94105
415-947-4161
dunning.connell@epa.gov

Learn more about EPA's role in Sustainability:
http://www.epa.gov/Sustainability/
14 March 2012

Reference: USACE File No. 400401S

Paula Gill, U. S. Army Corps of Engineers
Carolyn Mulvihill, U. S. Environmental Protection Agency
Melissa Scianni, U. S. Environmental Protection Agency
John Cleckler, U. S. Fish and Wildlife Service
Chris Nagano, U. S. Fish and Wildlife Service
Joe Heublein, NOAA's National Marine Fisheries Service
Brendan Thompson, San Francisco Bay Regional Water Quality Control Board
Dale Bowyer, San Francisco Bay Regional Water Quality Control Board
Brenda Blinn, California Department of Fish and Game

Subject: Consolidating Checkpoint #3 Materials into a Stand Alone Document

Please find accompanying this letter, a compilation of the materials and supplements that have been submitted in the process to achieve LEDPA concurrence at Checkpoint #3 for the I-80/I-680/SR 12 Interchange Project. The request for this compilation was from the U. S. Army Corps of Engineers in their letter dated 30 January 2012.

If you have any questions, please contact me at 510.286.5231, or melanie_brent@dot.ca.gov, or Howell Chan of my staff at 510.286.5623, or howell_chan@dot.ca.gov.

Sincerely,

Melanie Brent
District Office Chief

enclosures
Regulatory Division

SUBJECT: File No. 400401S

Ms. Melanie Brent, District Office Chief  
California Department of Transportation (Caltrans)  
P.O. Box 23660, MS8-B  
Oakland, California 94623

Dear Ms. Brent:

This letter serves to respond to information provided on your behalf on March 22, 2012. You have requested that Checkpoint #3 under the NEPA/Section 404 Memorandum of Understanding (2006 MOU) be split into two separate actions: 1) concurrence on the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) and 2) concurrence on the Conceptual Mitigation Plan (CMP) for the I-80/I-680/State Route 12 Interchange project.

Based on the information provided, USACE agrees that Alternative C, Phase 1 is the preliminary LEDPA. As an application for a Department of the Army permit has not been submitted at this time, further analysis may be required. We also concur with the modification of the 2006 MOU for this project which will split checkpoint #3 into two steps. Prior to any processing of a CWA Section 404 permit application for this project, USACE must also concur with a CMP. If the NEPA/404 signatory resource agencies are unable to concur/agree on the CMP then the dispute resolution procedures outlined in the 2006 MOU will be followed. Included in the provided information is document titled “Waters of the U.S. Avoidance and Minimization Assessment” dated December 14, 2011. We request that these avoidance and minimization measures be fully utilized and incorporated into subsequent 404 CWA applications for this project.

Should you have any questions regarding this matter, please call Paula Gill of our Regulatory Division at 415-503-6776. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

[Signature]

Torrey A. DiCiro, P.E., PMP  
Lieutenant Colonel, U.S. Army  
Commanding

Enclosures
Copies Furnished:

US EPA, San Francisco, CA
US FWS, Sacramento, CA
US NMFS, Santa Rosa, CA
CA DFG, Yountville, CA
CA RWQCB, Oakland, CA
Federal Clean Air Act Conformity Requirement
Bijan Sartipi, District Director
California Department of Transportation
111 Grand Avenue
P.O. Box 23360
Oakland, CA 94612

Attention: Allen Baradar, Office Chief, Chief of Environmental Engineering

Dear Mr. Baradar:

SUBJECT: FHWA Project Level Conformity Determination for the I-80/ I-680/ SR-12 Interchange Project, Solano County

On March 8, 2011, the California Department of Transportation (Caltrans) submitted to the Federal Highway Administration (FHWA) a request for a project level conformity determination for the I-80/ I-680/ SR-12 Interchange Project in Solano County. The project is in an area that is designated Nonattainment for Ozone and PM$_{2.5}$ and Maintenance for Carbon Monoxide (CO).

The project level conformity analysis submitted by Caltrans indicates that the transportation conformity requirements of 40 C.F.R. Part 93 have been met. The project is included in the Metropolitan Transportation Commission’s (MTC) currently conforming Transportation 2035 Plan (RTP) and the 2011 Regional Transportation Improvement Program (RTIP). The current conformity determinations for the RTP and RTIP were approved by FHWA and the Federal Transit Administration (FTA) on December 14, 2010. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

As required by 40 C.F.R. 93.116 and 93.123, the localized CO and PM$_{2.5}$ analyses are included in the documentation. The CO hotspot analysis was conducted using the Transportation Project-Level Carbon Monoxide Protocol. The analyses demonstrate that the project will not create any new violation of the standards or increase the severity or number of existing violations.

Based on the information provided, FHWA finds that the Conformity Determination for the I-80/ I-680/ SR-12 Interchange Project in Solano County conforms to the State Implementation Plan (SIP) in accordance with 40 C.F.R. Part 93.
If you have any questions pertaining to this conformity finding, please contact Stew Sonnenberg, FHWA Air Quality Specialist, at (916) 498-5889 or by email at Stew.Sonnenberg@dot.gov.

Sincerely,

[Signature]

For
Robert F. Tally, Jr.
Acting Division Administrator
cc: (email)
Mike Brady, Caltrans HQ
Glenn Kinoshita, D-4
Jermaine Hannon, FHWA

SSonnenberg/km
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**Note:** The table contains information on existing buildings, including their names, values, and descriptions. The data is categorized by county and includes details about the property type, address, and notes about the property. The table is structured to provide a comprehensive overview of the existing buildings and their associated values.
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# Environmental Commitment Record

## Environmental Commitments

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<th>Avoidance, Minimization, and/or Mitigation Measures</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
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<td><strong>HUMAN ENVIRONMENT</strong></td>
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<td><strong>Land Use</strong></td>
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<td>Realign Linear Park Trail to the north at the Abernathy Road/I-80 interchange prior to construction. This realignment will allow for the continued use of the trail facilities while construction activities are underway</td>
<td>Project proponent</td>
<td>Prior to construction</td>
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<td><strong>Growth</strong></td>
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<td><strong>Farmlands</strong></td>
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<td>Provide Replacement Conservation Easement Compensatory Mitigation</td>
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<td><strong>Utilities and Emergency Services</strong></td>
<td>Agreement</td>
<td>Construction contractor</td>
<td>During construction</td>
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<tr>
<td>Minimize Disruption of Utilities Services</td>
<td>Agreement</td>
<td>Project proponent</td>
<td>Prior to construction</td>
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<tr>
<td>Prepare Transportation Management Plan (TMP)</td>
<td>Agreement</td>
<td>Project proponent</td>
<td>Prior to construction</td>
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<td><strong>Traffic and Transportation/Pedestrian and Bicycle Facilities</strong></td>
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<td>Design and Construct Intersection Improvements</td>
<td>Project proponent</td>
<td>Design</td>
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<td>Design each Phase of the Project to Accommodate Existing and Planned Bicycle and Pedestrian Facilities</td>
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<td>Adjust Transit Routes and Stops as Needed</td>
<td>Project proponent</td>
<td>Design</td>
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<tr>
<td>Minimize Impacts through a Transportation Management Plan (TMP) and Construction Scheduling</td>
<td>Project proponent or construction contractor</td>
<td>Prior to and during construction</td>
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<td>• Provide TMP to emergency service providers</td>
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<td>• Provide TMP to School District for review/input</td>
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<tr>
<td>• Route Trucks away from High School when in session.</td>
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<td><strong>Visual and Aesthetic Resources</strong></td>
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<td>Replace Landscaping as Appropriate</td>
<td>Follow up project</td>
<td>Project proponent</td>
<td>After project completion</td>
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<td>Direct Lighting Only Where Needed, and Away from Residences</td>
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<td>Design Westbound Truck Scales to be Visually Compatible with Local Architectural Features of the Surrounding Community</td>
<td>Standard Specification</td>
<td>Project proponent or construction contractor</td>
<td>Design/ construction</td>
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<td>Incorporate Aesthetic Recommendations in Design of Freeway-Related Structures</td>
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<td><strong>Cultural Resources</strong></td>
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<tr>
<td>Implement Programmatic Agreement and Historic Properties Treatment Plan</td>
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## Appendix J. Environmental Commitment Record

### PHYSICAL ENVIRONMENT

#### Hydrology and Floodplain

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<th>Avoidance, Minimization, and/or Mitigation Measures</th>
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<tbody>
<tr>
<td>Construct Upstream Inlet Structure and Underground Flood Control Storage</td>
<td>Project proponent</td>
<td>Design</td>
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<tr>
<td>Work with Appropriate Agencies to Address Flooding Issues Related to Raines Drain.</td>
<td>Project proponent</td>
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#### Water Quality and Stormwater Runoff

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<th>Permanent Design Pollution Prevention BMPs</th>
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<td>Slope/Surface Protection Systems</td>
<td>Standard Specifications</td>
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<tr>
<td>Concentrated Flow Conveyance Systems</td>
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<td>Preserve existing vegetation</td>
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<tr>
<td>Permanent treatment BMPs</td>
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<tr>
<td>Biofiltration Swales/Stripes</td>
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<tr>
<td>Dry weather diversions</td>
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<tr>
<td>Infiltration devices</td>
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<tr>
<td>Detention devices</td>
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<tr>
<td>Gross solids removal devices</td>
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<tr>
<td>Traction sand traps</td>
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<td>Media filters</td>
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<tr>
<td>Wet basins</td>
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<tr>
<td>Drain inlet stenciling</td>
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<tr>
<td>Hydromodification control</td>
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</table>

<table>
<thead>
<tr>
<th>Construction site BMPs</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic mulch</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>Prior to Construction</td>
</tr>
<tr>
<td>Hydroseeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Binders</td>
<td></td>
<td></td>
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<tr>
<td>Silt fence</td>
<td></td>
<td></td>
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<tr>
<td>Sediment traps</td>
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<tr>
<td>Sand bags</td>
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<tr>
<td>Fiber rolls</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Straw bale barrier</td>
<td></td>
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</tbody>
</table>

For substantial dewatering - obtain a project-specific Low Threat Discharge and Dewatering NPDES permit from the RWQCB

<table>
<thead>
<tr>
<th>Geology/Soils/Seismic/Topography</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structures will be Designed to Meet the Regulations and Standards Associated with UBC Seismic Hazard Zone 4/ CBSC Standards, Department Standards, and (if applicable) County General Plan Standards to Minimize Potential Ground Shaking Risks on Associated Project Features</td>
<td>Standard Specifications</td>
<td>Project proponent</td>
<td>Design</td>
</tr>
<tr>
<td>Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities</td>
<td>Agreement</td>
<td>Project proponent</td>
<td>Design</td>
</tr>
<tr>
<td>Design Structures and Facilities to Account for Unstable Materials</td>
<td>Standard Specifications</td>
<td>Project proponent</td>
<td>Design</td>
</tr>
<tr>
<td>Incorporate Specific Recommendations Pertaining to Cut Slopes and Fill Slopes/Embankments into the Project Design.</td>
<td>Project proponent</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Avoidance, Minimization, and/or Mitigation Measures</td>
<td>Implementation Means</td>
<td>Responsible Party</td>
<td>Timing</td>
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<tr>
<td>----------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction</td>
<td>Project proponent</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities</td>
<td>Project proponent</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Consolidation Settlements on Project Facilities</td>
<td>Project proponent</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Paleontology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct Preconstruction Surveys</td>
<td>Standard Specification</td>
<td>Project proponent</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>Train Construction Personnel in Recognizing Fossil Material</td>
<td></td>
<td>Project proponent or construction contractor</td>
<td>Immediately prior to and during construction</td>
</tr>
<tr>
<td>Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities</td>
<td></td>
<td>Project proponent or construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Stop Work and Consult a Qualified Paleontologist if Fossil Remains Are Encountered During Construction</td>
<td>Standard Specifications</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Hazardous Waste/Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Groundwater for Contaminants</td>
<td>Project proponent</td>
<td>Prior to construction</td>
<td></td>
</tr>
<tr>
<td>Implement a Health and Safety Plan</td>
<td>Standard Specification</td>
<td>Project proponent or construction contractor</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>Handle, Remove, Store and Dispose of Yellow Striping According to Health and Safety Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispose of Soils Contaminated with ADL, Arsenic, Pesticides, and Herbicides in Accordance with Appropriate Regulations</td>
<td>Standard Specification</td>
<td>Construction contractor</td>
<td>During and after construction</td>
</tr>
<tr>
<td>Coordinate Timing of Construction Activities with Local Growers to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Air Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement Measures to Reduce MSAT and Criteria Pollutant Emissions</td>
<td>Project proponent</td>
<td>Prior to and during construction</td>
<td></td>
</tr>
<tr>
<td>Implement California Department of Transportation Standard Specification Section 14</td>
<td>Standard Specifications</td>
<td>Construction contractor</td>
<td>Prior to and during construction</td>
</tr>
<tr>
<td>Implement Additional Control Measures when Practicable for Construction Emissions of Fugitive Dust</td>
<td>Agreement</td>
<td>Project proponent and construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment</td>
<td>Agreement</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Noise</td>
<td></td>
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</tr>
<tr>
<td>Minimize Construction Noise</td>
<td>Standard Specification</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
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</table>
### Avoidance, Minimization, and/or Mitigation Measures

<table>
<thead>
<tr>
<th>Energy</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
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</tbody>
</table>

### BIOLOGICAL ENVIRONMENT

#### Natural Communities
- **Install Fencing around the Construction Area to Protect Sensitive Biological Resources to be Avoided**
  - Permit
  - Construction contractor/biologist
  - Prior to and during construction
- **Conduct Environmental Awareness Training for Construction Employees**
  - Permit
  - Project proponent or construction contractor
  - Prior to and during construction
- **Retain a Biological Monitor to Conduct Visits during Construction in Sensitive Habitats**
  - Permit
  - Project proponent or construction contractor
  - During construction
- **Avoid and Minimize Potential Disturbance of Riparian Communities**
  - Permit
  - Construction contractor
  - During construction
- **Compensate for Temporary and Permanent Loss of Riparian Vegetation**
  - Compensatory Mitigation
  - Project proponent
  - After project completion

#### Wetlands and Other Waters
- **Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands**
  - Permit
  - Project proponent or construction contractor
  - During construction
- **Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat**
  - Permit
  - Construction contractor
  - After project completion
- **Restore Temporarily Disturbed Perennial Marsh**
  - Permit
  - Construction contractor
  - After project completion
- **Compensate for Permanent Loss of Wetlands**
  - Compensatory Mitigation
  - Project proponent
  - After project completion
- **Construct a Retaining Wall on the South Side of SR 12E**
  - Project proponent
  - Design

#### Plant Species
- **Conduct Preconstruction Surveys for Special-Status Plants**
  - Project proponent
  - Prior to construction
- **Compensate for Loss of Special-Status Plants**
  - Project proponent
  - Prior to construction

#### Animal Species
- **Conduct Clearance Surveys for Western Pond Turtle**
  - Project proponent or construction contractor
  - Immediately prior to construction
- **Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary**
  - Project proponent or construction contractor
  - Immediately prior to construction
- **Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary**
  - Permit
  - Project proponent or construction contractor
  - Immediately prior to construction
- **Compensate for Loss of Burrowing Owl Nesting Habitat**
  - Compensatory mitigation
  - Project proponent
  - After project completion
<table>
<thead>
<tr>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct Preconstruction Nesting Surveys for Northern Harrier in the Annual Grassland Habitat North of SR 12W</td>
<td></td>
<td>Project proponent or construction contractor</td>
<td>After project completion</td>
</tr>
<tr>
<td>Prevent Swallows from Nesting Adjacent to New Bridge Construction</td>
<td></td>
<td>Project proponent or construction contractor</td>
<td>After project completion</td>
</tr>
<tr>
<td>Conduct Preconstruction Surveys for Roosting Bats in Mature Trees</td>
<td></td>
<td>Project proponent or construction contractor</td>
<td>After project completion</td>
</tr>
<tr>
<td>Prevent Contaminants and Hazardous Materials from Entering the Stream Channel</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Minimize Impacts on Creek Channels</td>
<td>Standard specifications</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Provide Alternate Migration Corridor through Creek Channels</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Minimize Noise Impacts on Special-Status Fish Species</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Avoid Potential Fish Spawning Habitat</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Implement Culvert Retrofit at the SR 12 Crossing on Ledgewood Creek</td>
<td></td>
<td>Project proponent</td>
<td>Design</td>
</tr>
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</table>

**Threatened and Endangered Species**

<table>
<thead>
<tr>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensate for the Loss of Contra Costa Goldfields</td>
<td>Compensatory mitigation</td>
<td>Project proponent</td>
<td>After project completion</td>
</tr>
<tr>
<td>Conduct Protocol-level Surveys for Showy Indian Clover</td>
<td>Permit</td>
<td>Project proponent</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Showy Indian Clover</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Conduct Surveys for Larval Host Plants for Callippe Silverspot Butterflies</td>
<td>Permit</td>
<td>Project proponent</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>Minimize Potential Direct and Indirect Disturbance of Populations of Callippe Silverspot Butterflies</td>
<td>Permit</td>
<td>Project proponent</td>
<td>During construction</td>
</tr>
<tr>
<td>Compensate for Direct and Indirect Effects on Callippe Silverspot Butterflies</td>
<td>Permit</td>
<td>Project proponent/Construction contractor</td>
<td>After project completion</td>
</tr>
<tr>
<td>Avoid and Minimize Potential Indirect Disturbance of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Compensate for Loss of Direct and Indirect Impacts on Vernal Pool Fairy Shrimp or Vernal Pool Tadpole Shrimp Habitat</td>
<td>Compensatory mitigation</td>
<td>Project proponent</td>
<td>After project completion</td>
</tr>
<tr>
<td>Minimize Direct and Indirect Effects on Valley Elderberry Longhorn Beetle</td>
<td>Permit</td>
<td>Construction contractor</td>
<td>During construction</td>
</tr>
<tr>
<td>Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat</td>
<td>Compensatory mitigation</td>
<td>Project proponent</td>
<td>After project completion</td>
</tr>
<tr>
<td>Conduct Preconstruction Surveys and Monitor Construction Occurring Near Potential California Red-Legged Frog Habitat</td>
<td>Permit</td>
<td>Project proponent/Construction contractor</td>
<td>Prior to and during construction</td>
</tr>
</tbody>
</table>
## Avoidance, Minimization, and/or Mitigation Measures

<table>
<thead>
<tr>
<th>Avoidance, Minimization, and/or Mitigation Measures</th>
<th>Implementation Means</th>
<th>Responsible Party</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensate for Loss and Disturbance of California Red-Legged Frog Habitat</td>
<td>Compensatory mitigation</td>
<td>Project proponent</td>
<td>After project completion</td>
</tr>
<tr>
<td>Conduct Protocol-level Surveys for California Tiger Salamander</td>
<td>Permit</td>
<td>Project proponent</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>Avoid and Minimize Potential Disturbance of Populations of California Tiger Salamander</td>
<td>Permit</td>
<td>Project proponent/Construction contractor</td>
<td>Prior to and during construction</td>
</tr>
<tr>
<td>Compensate for Loss of Swainson's Hawk Foraging Habitat</td>
<td>Compensatory mitigation</td>
<td>Project proponent</td>
<td>After project completion</td>
</tr>
</tbody>
</table>

### Invasive Species

<table>
<thead>
<tr>
<th>Avoid the Introduction and Spread of Invasive Plants</th>
<th>Standard specification</th>
<th>Construction contractor</th>
<th>During construction</th>
</tr>
</thead>
</table>

### Native Trees

| None                                                                                                               |                        |                         |                    |

<table>
<thead>
<tr>
<th>Suisun Marsh Secondary Management Area</th>
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<tbody>
<tr>
<td>None</td>
<td></td>
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</tbody>
</table>
### CEQA Mitigation Measures

<table>
<thead>
<tr>
<th>To mitigate impact to important farmland (those lands classified as &quot;prime farmlands&quot;), long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County at a 1:1 ratio (1 acre protected for every 1 acre directly affected). Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area. As such, the mitigation for the loss of lands under easement will be implemented at a higher ratio of 1.25:1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to mitigation presented above for conversion of agricultural land to non-agricultural uses.</td>
</tr>
</tbody>
</table>
Appendix K  Glossary

Action – An “action,” a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms “project”, “proposal” and “action” are used interchangeably unless otherwise specified. An action may be categorized as a “categorical exclusion” or a “major federal action.”

Area of Potential Effect – A term used in Section 106 to describe the area in which historic resources may be affected by a federal undertaking.

Attainment Area – An area that meets air quality standards.

Auxiliary Lane – A traffic lane downstream of an entrance ramp to accommodate merging traffic, a lane upstream of an exit ramp to accommodate diverging traffic, or a lane between two closely spaced interchanges to accommodate weaving traffic.

Beneficial Use – A use of a natural water resource that enhances the social, economic, and environmental well-being of the user. Twenty-one beneficial uses are defined for the waters of California, ranging from municipal and domestic supply to fisheries and wildlife habitat.

Best Management Practice (BMP) – Any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution.

California Department of Fish and Game (DFG) – The state agency that manages California’s wildlife and plant resources.

California Department of Transportation (Department) – Responsible for planning, designing, building, operating, and maintaining California’s state highway system.

California Environmental Quality Act (CEQA) – A California law that requires state, local, and other agencies to evaluate the environmental implications of their actions.

California Register of Historic Resources (CRHR) – A comprehensive listing of documented cultural resources that meet the criteria for a “historical resource” (as defined in the California Administrative Code), maintained by the State Office of Historic Preservation. Any historic property determined eligible for listing in the National Register of Historic Places qualifies automatically for the CRHR.

Candidate Species – Any species of fish, wildlife, or plant which has been determined to be candidates for listing under Section 4 of the Endangered Species Act of 1972 (amended).

Clean Water Act – A federal law that regulates the discharge of pollutants into waters of the United States.

Cooperating Agency – Under NEPA, any agency other than the lead agency which has jurisdiction by law of special expertise with respect to any environmental impact involved in a
proposal for any action significantly affecting the human environment. Under CEQA, the term “responsible agency” is used.

**Corridor** – A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes.

**Criteria air pollutant** – A pollutant that has standards that have been established to meet specific public health and welfare criteria.

**Cultural Resources** – Archaeological and historic resources, including buildings, sites, districts, structures, or objects having historical, architectural, archaeological, or cultural association.

**Cumulative Impact** – The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

**dBA** – A sound level in decibels, measured with a sound level meter, having metering characteristics and frequency weighting specified in American National Standard Specifications for sound level meters (ANSI S1.4-1971). It is common to refer to numerical units of an A-weighted sound level as “dBA”.

**Decibel** – A numerical expression of the relative loudness of a sound.

**Draft Environmental Impact Report (DEIR)** – A draft report, circulated for public review, that analyzes potential environmental impacts of a proposed project in compliance with CEQA.

**Draft Environmental Impact Statement (DEIS)** – A draft report, circulated for public review, that analyzes environmental effects of a proposed project in compliance with NEPA.

**Encroachment (floodplain)** – An action within the limits of the 100-year floodplain.

**Endangered Species** – A plant or animal species that is in danger of extinction throughout all or a significant portion of its range.

**Environmental Document** – A draft or final Environmental Impact Report (EIR), Environmental Impact Statement (EIS), Finding of No Significant Impact (FONSI), Environmental Assessment (EA), Initial Study (IS) or Negative Declaration (ND).

**Equivalent Sound Level (L_{eq})** – A measure of sound energy over a period of time, or a sound level which, in a stated period of time, would contain the same acoustical energy as the time-varying sound during the same period.

**Erosion** – The wearing away of the land surface by running water, wind, ice, or other geologic agents.

**4(f) Resources** – Resources protected by Section 4 (f) of the Department of Transportation Act. These include public park and recreation lands, wildlife and waterfowl refuges, and cultural resources eligible for listing or listed on the National Register.
**Federal Highway Administration (FHWA)** – The federal agency that coordinates highway transportation programs in cooperation with states and other partners. It provides federal financial assistance to the states to construct and improve the National Highway System, urban and rural roads, and bridges.

**Federal Register** – A federal publication that provides official notice of Federal administrative hearings and issuance of proposed and final federal administrative rules and regulations.

**Floodplain** – The part of the ground surface inundated with water on a recurring basis, usually associated with the one percent recurrence interval (100-year) flow.

**Freeway** – A divided arterial highway with full control of access and with grade separations at intersections.

**General Plan** – A document that contains policies used to implement the goals of a community.

**Geomorphic** – Of the earth’s surface configuration.

**Geomorphic Province** – A topographic-geologic grouping of land based on landforms, rock types, and geologic structure.

**Groundwater** – Water beneath the earth’s surface between saturated soil and rock that supplies wells and springs.

**Habitat** – The place or type of site where a plant or animal naturally or normally lives and grows.

**High Occupancy Vehicle (HOV)** – Vehicles occupied by two (sometimes three) or more persons such as carpools and busses.

**High Occupancy Vehicle Lane (HOV Lane)** – A system of exclusive lanes signed and striped for use by vehicles with multiple occupants (two or more, or three or more, persons). HOV lanes are designed on roadways to reduce traffic congestion, improve safety, reduce fuel consumption, and improve air quality.

**Historic Property** – Any prehistoric or historic sited, building, structure, object, or district included in or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by Secretary of the Interior.

**Hot Spot** – A location where air pollutant emissions from specific sources may expose individuals to elevate risks of adverse health effects.

**Inversion** – A layer of warm air over cooler air that traps air pollution below it.

**Intactness** – The visual integrity of the natural and built landscape.
Leq – A unit used for evaluation of sound impacts; the measurement of the fluctuating sounds level received by a receptor averaged over a time interval (usually one hour).

Landscape Unit – A geographically distinct portion of an area that has a particular visual characteristics.

Lead Agency – The public agency which has primary responsibility for carrying out or approving a project and preparing the environmental document.

Level of Service (LOS) – The qualitative description of operating level of an intersection or roadway segment based on delay and maneuverability. It can range from “A,” representing free flow conditions, to “F,” representing gridlock.

Liquefaction – The loss of strength that can occur in loose, saturated soil during or following seismic shaking. This condition can produce a number of ground effects, including lateral spreading boils, ground lurching, and settlement of fill material.

Maintenance Area – An area that had previously been designated a non-attainment area, but now meets applicable air quality standards.

Metropolitan Transportation Commission (MTC) – The transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. It functions as both the region’s metropolitan transportation planning agency and as the region’s metropolitan planning organization – state and federal designations, respectively.

Migratory Bird Act of 1918 – Reflects agreements involving the United States, Great Britain (for Canada), Mexico, Japan, and the former Soviet Union to protect migratory bird populations.

Mitigation – Compensation for an impact by replacement or provision of substitute resources or environments. Measures taken to minimize adverse environmental impacts. Mitigation could reduce the magnitude and extent of an impact from a level of significance to a level of insignificance.

National Environmental Policy Act (NEPA) – The United States’ basic national charger for protection of the environment. It established policy, sets goals, and provides means for carrying out the policy.

National Historic Preservation Act of 1966 (NHPA) – The primary federal law pertaining to protection of cultural resources.

National Pollution Discharge Elimination System (NPDES) permit – A permit required by the Regional Water Quality Control Board that is required if more than one acre of original ground is graded to prevent harmful pollutants from being washed by storm water runoff into local water bodies. One condition of this permit is that the contractor must submit a Storm Water Pollution Prevention Plan (SWPPP), which is similar to the Water Pollution Control Plan required by Caltrans’ Standard Specification 7-1.01G.
National Register of Historic Places (NRHP) – A federal listing of historic resources protected under the National Historic Preservation Act of 1966.

Native American Heritage Commission (NAHC) – In California, the NAHC consists of nine members appointed by the Governor with the consent of the Senate. The NAHC is authorized and charged to preserve and protect Native American cemeteries, sacred sites, and traditional cultural properties. One function of the NAHC is to identify the Most Likely Descendant (MLD) whenever Native American human remains are discovered, except on tribal or federal land in California.

Non-attainment Area – An area that does not meet air quality standards.

Noise Abatement Criteria (NAC) – Noise level standards above which noise reducing actions should be considered.

Notice of Availability – A formal public notice under NEPA announcing the availability of a completed EA, DEIS or FEIS. Such a notice is to be published in local newspapers. For EISs, publication of such notice in the Federal Register is also required.

Notice of Completion – The CEQA notice submitted to the State Clearinghouse when an EIR is completed.

Notice of Determination (NOD) – A “Notice of Determination” is a formal written notice under CEQA filed by a lead state agency when approving any project subject to the preparation of an ND or EIR.

Notice of Intent (NOI) – A notice than an Environmental Impact Statement (EIS) will be prepared and considered. The NOI is published in the Federal Register by the Lead Agency. The CEQA equivalent of this is called a Notice of Preparation.

Porter-Cologne Water Act of 1969 – A California law that provides a framework for protecting the quality of waters in California for the use and enjoyment of the people of the state.

Practicable – An action that is possible after taking into consideration cost, existing technology and logistics in light of overall project purposes.

Project – CEQA (Section 21065) defines a “project” as an activity which may cause either a direct physical change in the environment, or reasonably foreseeable indirect physical change in the environment, and which is any of the following:

- An activity directly undertaken by any public agency.
- An activity undertaken by a person which is supported, in whole or in part, throughout contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
- An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one of more public agencies.
Receptors – Term used in air quality and noise studies that refers to houses or businesses that could be affected by a project.

Record of Decision (ROD) – A formal written statement, required under NEPA, wherein a federal lead agency must present the basis for its decision to approve a selected project alternative, summarize mitigation measures incorporated into the project, and document any required Section 4(f) approval.

Regulatory Agency – An agency that has jurisdiction by law.

Responsible Agency – A “public agency other than the lead agency which has responsibility for carrying out or approving a project” (PRC 21069). All public agencies which have discretionary approval power over the project (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.

Right-of-way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Riparian – Pertaining to the banks and other adjacent terrestrial (as opposed to aquatic) environs of freshwater bodies, watercourses, estuaries, and surface-emergent aquifers, whose transported freshwater provides soil moisture sufficient in excess of that available through local precipitation to potentially support the growth of vegetation.

RTP – Regional Transportation Plan, prepared by the regional agency responsible for transportation planning and funding. In Solano County, the RTP is prepared by the Metropolitan Transportation Commission to identify transportation improvement priorities.

San Francisco Bay Regional Water Quality Control Board (RWQCB) – An agency with the California Environmental Protection Agency that is responsible for regulating pollutants to protect the water resources of the Bay Area.

Scoping – The process of determining the scope, focus, and content of an EIR/S.

Section 106 – This section of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

Special Status Species – Any species of fish, wildlife, or plant that is officially listed as rare, threatened, endangered, or candidate for rare, threatened, or endangered species listing under the state or federal Endangered Species Acts.

State Implementation Plan – A plan for attaining national ambient air quality standards required by the Clean Air Act.

State Historic Preservation Officer (SHPO) – The official appointed or designated pursuant to Section 101 (b)(1) of the National Historic Preservation Act to administer the State historic
preservation program. In California, the SHPO manages the Office of Historic Preservation (OHP) and serves as executive secretary of the State Historical Resources Commission (SHRC).

**State Transportation Implementation Program (STIP)** – Program updated every two years describes the California Transportation Commission’s priorities for improvement on and off the state highway system.

**Storm Water Pollution Prevention Plan (SWPPP)** – A plan to reduce the potential impacts of erosion and sedimentation from construction.

**Surface Runoff** – Water that runs off streets and land and enters a body of water.

**Threatened Species** – A species that is likely to become endangered in the foreseeable future in the absence of special protection.

**Transportation Management Plan (TMP)** – A plan to manage traffic during construction of projects to reduce congestion.

**Transportation System Management (TSM)** – Changes to existing roadways and services, such as geometric and striping improvements and expanded transit service, to improve traffic operations.

**Undertaking** – A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including: those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency. Federal agencies must ensure that their undertakings comply with Section 106 of the National Historic Preservation Act.

**Unity** – The visual cohesion and compositional harmony of the viewshed.

**U.S. Army Corps of Engineers (ACOE)** – Federal agency with jurisdiction over waters of the United States.

**U.S. Environmental Protection Agency (EPA)** – The federal agency responsible for maintaining environmental quality, including air quality, noise, and hazardous waste management.

**U. S. Fish and Wildlife Service (USFWS)** – The federal agency that administers the federal Endangered Species Act and is involved in protection of fish and wildlife habitat, including wetland areas.

**Vividness** – The visual power or memorability of landscape components as they combine in striking an distinctive visual patterns.
**Waters of the United States** – As defined by the ACOE in 33 Code of Federal Regulations 328.3(a):

1. All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use degradation or destruction of which could affect interstate commerce, including any such waters:
   i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   iii. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundment of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs 1-4;
6. The territorial seas; and
7. Wetlands adjacent to waters (waters that are not wetlands themselves) identified in paragraphs 1-6.

**Watershed** – The point of high ground dividing different drainage systems.

**Weaving** – The crossing of traffic streams, moving in the same general direction, accomplished by merging and diverging.

**Wetlands** – According to regulations of the U.S. Army Corps of Engineers, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, under normal conditions, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and similar areas and are subject to protection under Executive Order 11990 and Section 404 of the Clean Water Act.
Appendix L  Responses to Comments
## Appendix L  Responses to Comments

I-80/I-680/SR12 comments received on the Draft EIR/EIS.

### Table L-1. List of Commenters

<table>
<thead>
<tr>
<th>Comment Number</th>
<th>Commenter</th>
<th>Date</th>
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<tbody>
<tr>
<td>1</td>
<td>Neal Johnson</td>
<td>08/17/10</td>
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<tr>
<td>2</td>
<td>Edgar V. Salire, P.E.</td>
<td>08/29/10</td>
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<tr>
<td>3</td>
<td>Lynn J. Zhang</td>
<td>09/07/10</td>
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<td>4</td>
<td>Steven Kays</td>
<td>09/21/10</td>
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<tr>
<td>5</td>
<td>Jessica Davenport, Coastal Planner, State of California, San Francisco Bay Conservation and Development Commission</td>
<td>10/01/10</td>
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<tr>
<td>7</td>
<td>Nicole Byrd, Executive Director, Solano Land Trust</td>
<td>10/05/10</td>
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<td>8</td>
<td>Richard Wirth, Assistant Civil Engineer, Solano Irrigation District</td>
<td>10/06/10</td>
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<td>9</td>
<td>Justin Hopkins, E.I.T., Assistant Civil Engineer, Solano Irrigation District</td>
<td>10/07/10</td>
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<td>10</td>
<td>John Futini</td>
<td>09/11/10</td>
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<td>11</td>
<td>Paul Wiese, Engineering Manager, Solano County, Department of Resource Management, Public Works Engineering</td>
<td>10/08/10</td>
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<tr>
<td>12</td>
<td>Jackie Kepley</td>
<td>10/11/10</td>
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<td>13</td>
<td>Jeff Dittmer</td>
<td>10/11/10</td>
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<td>14</td>
<td>Dee Swanhuyser, North Bay Trail Director, Bay Area Ridge Trail Council</td>
<td>10/11/10</td>
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<td>15</td>
<td>Andrea Meier, Sr. Regulatory Project Manager, San Francisco District, U.S. Army Corps of Engineers</td>
<td>10/14/10</td>
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<td>16</td>
<td>Cay C. Goude, Assistant Field Supervisor, Endangered Species Program, United States Department of the Interior, Fish and Wildlife Service</td>
<td>10/18/10</td>
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<td>17</td>
<td>George R. Hicks, Public Works Director, City of Fairfield, Public Works Department</td>
<td>10/11/10</td>
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<td>18</td>
<td>Michael Jaeger and Bob McHugh, Jaeger McHugh &amp; Company, LLC</td>
<td>10/15/10</td>
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<td>19</td>
<td>Connell Dunning, Transportation Team Supervisor, Environmental Review Office, United States Environmental Protection Agency</td>
<td>10/18/10</td>
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<td>20</td>
<td>Kim VanGundy, Fairfield-Suisun Unified School District</td>
<td>10/26/10</td>
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<td>21</td>
<td>Brendan Thompson, Environmental Specialist, California Regional Water Quality Control Board</td>
<td>10/27/10</td>
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<td>22</td>
<td>Manoj Sahni, Comment Sheet</td>
<td>09/23/10</td>
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<td>23</td>
<td>Woody Darnelle, SuperStore Ind. Sunnyside Farms, Comment Sheet</td>
<td>09/23/10</td>
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<td>24</td>
<td>Lesley Brunner, HOA Green Valley Lake, Comment Sheet</td>
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<td>25</td>
<td>Linda Mellor, Comment Sheet</td>
<td>09/23/10</td>
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<td>26</td>
<td>Walter Permann, Oral Comment</td>
<td>09/23/10</td>
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<td>27</td>
<td>Michelle Valine, Oral Comment</td>
<td>09/23/10</td>
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<tr>
<td>28</td>
<td>Pam Sahni, Oral Comment</td>
<td>09/23/10</td>
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</tbody>
</table>
Letter 1

nealjn@comcast.net
08/17/2010 01:33 PM

To        howell-chan@dot.ca.gov
cc
Subject   I-80/I-680/SR 12 interchange

Dear Sir,

I support alternative B, with the following changes in the Western Segment (see below):

Direct SR 12 West traffic to Red Top Road Eliminate existing partial interchange of SR 12 West with I-80 Eliminate weave to Green Valley Road ramps Alter connections with Business Center Drive and SR 12 Widen SR 12/Red Top Road to 4 lanes to new interchange with I-680 Give Red Top Road state highway status between I-80 and I-680 (possibly SR 612) Provide loop ramp for EB SR 12 for direct access to I-80 east Provide slant ramp for WB SR 12 for direct access from I-80 west

(Embedded image moved to file: pic00267.bmp) I believe that these changes will reduce costs and provide for better traffic flow. Thank you for your consideration of these changes.

Sincerely,

Neal Johnson
Comment Letter 1, Neal Johnson, 08/17/10

Response to Comment 1-1
Commenter suggests reconfiguring the western end of Alternative B by realigning SR 12W to the south and connecting it to I-80 at a combined I-80/SR12W/Red Top Road interchange, and then improving Red Top Road between I-80 and I-680, potentially giving it a state highway designation.

It is correct to indicate that an eastbound loop on-ramp at a combined I-80/SR 12W/Red Top Road interchange would eliminate the Alternative B proposed weave between the eastbound SR 12W connector to eastbound I-80 and the eastbound I-80 off ramp to Green Valley Road.

However there are disadvantages to this suggestion as follows:

- Connecting SR 12W to I-80 at Red Top Road would result in a flat skew over the railroad tracks and over Jameson Creek, in large part due to the large radius curve necessary to meet the minimum design criteria for high speed highways and freeways. This alignment would result in significant higher cost and result in significantly greater environmental impacts than with the Alternative B alignment in the Draft EIR/EIS. The proposed SR 12W/Red Top Road/Business Center Drive interchange would be relocated from the present planned location (north of the railroad tracks and Jameson Creek) to meet this new alignment, placing the realigned interchange on top of the railroad tracks and Jameson Creek, further increasing costs and environmental impacts.

- The Department and FHWA have repeatedly opposed combining local and freeway-to-freeway movements within the same interchange unless there were no other feasible alternative. The current Alternative B is a feasible alternative with less impact and lower cost.

- With the commenter’s suggested alternative revision the eastbound movement on ramp to I-80 would be a combination of the eastbound SR 12W to eastbound I-80 traffic, the eastbound SR 12W to eastbound I-80/Green Valley Road off ramp traffic and the eastbound I-80/Red Top Road on ramp traffic. The total projected 2035 PM peak hour volume of these three movements is 3,630 vehicles per hour. Due to the regional nature of SR 12W, a high percentage of those trips 5–6% is truck traffic. A loop ramp connection, even a two-lane loop ramp connection could not accommodate that volume, particularly when the ramp is metered.
Letter 2

Edgar Salire <philipizzy@yahoo.com>
08/29/2010 07:55 PM

To       howell_chan@dot.ca.gov
cc
Subject  Comments Draft EIR/EIS I-80/I-680/SR12

I live on Red Top Road across Rodriguez High School. I believe the proposed Red Top Road on- and off-ramps on I-80 and I-680 will result in congestion along Red Top Road and local roads, not counting the environmental pollution it may cause in the immediate area. Caltrans should exhaust other alternatives to avoid this potential problem to the residents of Red Top Road.

Edgar V. Salire, P.E.
Comment Letter 2, Edgar V. Salire, P.E., 08/29/10

Response to Comment 2-1
The volumes along Red Top Road increase in all future cases: No Build, Full Build (Alternatives B and C) and the respective fundable first phase projects (Alternative B, Phase 1 and Alternative C, Phase 1). Traffic would be worse on Red Top under No Build conditions in 2035 than with the project because more traffic would divert to local roadways to avoid congestion on I-80. Please refer to response to comment 12-2 for a more detailed discussion of projected traffic on Red Top Road.

Response to Comment 2-2
Traffic along Red Top Road would not increase over the No Build alternative, and therefore air quality and noise impacts would also not be increased over No Build conditions. The Draft and Final EIR/EIS present CO modeling at affected ramps and intersections, and receptors would not be exposed to pollution concentrations exceeding regulatory thresholds (see Section 3.2.6 and Table 3.2.6-3). See response to comment 2-1 above.

Response to Comment 2-3
As discussed in Section 2.5 of the Draft EIR/EIS, a total of 12 alternatives and variations were examined in initial screening stages of project development. Four alternatives were carried forward to a second level screening and two alternatives were evaluated in detail in the Draft EIR/EIS, Alternative B and Alternative C.
Letter 3

"Zhang, Lynn J." <ljzhang@solanoCounty.com>
09/07/2010 11:28 AM

To <Howell_chan@dot.ca.gov>
cc
Subject I-80 project

Hello Howell,

Thanks for the plan to improve I-80/680 and SR 12. I do appreciate a railway plan directly link San Francisco and Solano (i.e. Caltrain, a BART station in Fairfield). It will make Solano county more accessible to the San Francisco economic center, attract more quality residents, more business, and improve the county financial well being significantly.

Thanks and have a nice day...
Lynn J. Zhang

GIS Analyst
Solano County, GIS Service
Ph: 707-784-3060
Fax: 707-784-3467
E-mail: ljzhang@solanoCounty.com

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Comment Letter 3, Lynn J. Zhang, 09/07/10

Response to Comment 3-1
Comment noted.

Response to Comment 3-2
The I-80/I-680/SR 12 Interchange Improvement project does not include rail improvements. However, AMTRAK capitol corridor provides direct rail service.
Letter 4

Steven Kays <stevenkays@earthlink.net>
09/21/2010 01:09 PM

To Howell-chan@dot.ca.gov

cc

Subject What will be the Real 80 Interchange Result?

Dear Howell Chan,

Could you kindly answer these questions about the new I-80 interchange proposals? I look forward to working with you. Tell me how I can help get the needed changes implemented.

1. Must central Fairfield become less accessible via the new highway ramp locations?  [4-1]

2. Increasing driving time to downtown Fairfield from the highway ramps, means fewer diners and shoppers coming downtown. What effect will the new ramps have on reducing downtown spending?  [4-2]

3. Revitalizing central Fairfield creates more jobs. The improved economic vitality of central Fairfield will increases the tax revenue. Without this expected tax revenue, will we have to further raise taxes?  [4-3]

4. When will the great designs for revitalizing West Texas Street be openly shown in public meetings?  [4-4]

5. Where did the monies set aside for revitalizing West Texas Street disappear to before the recession?  [4-5]

6. The city promised to start revitalizing West Texas Street by 2000. Will the city set a new deadline? Will the businesses asked to invest in central Fairfield as part of the stalled program be compensated for the city not keeping its promise to fix the area?  [4-6]

7. Will downtown businesses continue paying the extra downtown business tax, after the highways take away part of their customer base?  [4-7]

Can we be candid? Hope i got your attention.

Might this be resolved with team spirit? The majority agrees the I-80 interchange needs help. So let's compromise; and stop backstabbing. We look forward to working together.

I posted these questions on FixFairfield.Blogspot.Org and the DailyRepublic's article on this topic today.

Cheers

Steven Kays
FixFairfield.Org
(Div of CBC Services, LLC)
434-8000
Comment Letter 4, Steven Kays, 09/21/10

Response to Comment 4-1
No on- or off-ramps will be relocated or removed in the central Fairfield area. Access to and from SR 12E at Beck and Pennsylvania Avenues will be improved. The project will result in no changes to the I-80/West Texas interchange. As such, the interchange project will not affect the accessibility of central Fairfield.

Response to Comment 4-2
The project will not increase driving time to downtown Fairfield from any highway. Downtown Fairfield is most easily accessible from I-80 via the West Texas interchange and from SR 12 via Pennsylvania Avenue. No improvements or changes are proposed to the West Texas interchange. A new SR 12/Pennsylvania interchange is proposed under both alternatives. Under no build conditions, the SR 12/Pennsylvania off-ramp is projected to operate at LOS D in the AM peak hours in 2015 and LOS F in the PM peak hours in 2015 and in both AM and PM peak hours in 2035. Under the first phase of Alternative B, the LOS would decrease in the AM peak hours. In all other scenarios the LOS would improve or remain the same. This indicates that access to downtown Fairfield would actually be improved by the project, particularly in the long run, as the off-ramp would operate at LOS A or B for either alternative. Additionally, as indicated in Tables 3.1.6-6 through 3.1.6-9 of the Draft EIR/EIS and updated Tables 3.1.6-6 and 3.1.6-11 of the Final EIR/EIS, both alternatives, and their fundable first phases reduce congestion, travel time, and delays and increase speeds on SR 12E.

Response to Comment 4-3
While the project purpose and need is not directly related to revitalizing central Fairfield, the project would result in benefits to the city by relieving congestion on I-80, I-680 and State Route 12. The project would improve access to and from central Fairfield by widening State Route 12 East and constructing interchanges at both Beck and Pennsylvania Avenues. This could indirectly improve the economic viability of central Fairfield. The project does not involve increases in local taxes.

Response to Comment 4-4
The project purpose and need does not involve revitalizing West Texas Street but may indirectly benefit downtown Fairfield as discussed above in response to comment 4-3.

Response to Comment 4-5
See response to comment 4-4 above.

Response to Comment 4-6
See response to comment 4-4 above.

Response to Comment 4-7
See response to comments 4-1, 4-2, and 4-3.
October 1, 2010

Howell Chan
Caltrans District 4
Environmental Analysis Office Chief
P.O. Box 23660, MS-9B
Oakland, CA 94623-0660

VIA EMAIL: Howell.chan@dot.ca.gov

SUBJECT: I-80/I-680/SR 12 Interchange Project; BCDC Inquiry
File Nos. MCMC.1001.01 and SLPH.7214.1

Dear Mr. Chan:


Although the Commission has not reviewed the Draft EIR/EIS, the staff comments discussed below are based on the Commission’s law, the McAteer-Petris Act, the Commission’s San Francisco Bay Plan (Bay Plan), the Suisun Marsh Preservation Act (Marsh Act), the Suisun Marsh Protection Plan (Marsh Plan), the Commission’s federally-approved management plan for the San Francisco Bay, and the federal Coastal Zone Management Act (CZMA).

Jurisdiction. The following provides information about BCDC’s jurisdiction and authority to discuss in the draft EIR. The Commission has “Bay” jurisdiction over all areas of the Bay subject to tidal action, which defines the location of the shoreline. The shoreline is located at the mean high tide line, except in marsh areas, where the shoreline is located at five feet above mean sea level. The Commission also has jurisdiction over managed wetlands, salt ponds, and the tidal portion of certain waterways, as identified in the McAteer-Petris Act. Additionally, the Commission has “shoreline band” jurisdiction over an area 100 feet wide, landward of and parallel to the shoreline.

In accordance with provisions of the McAteer-Petris Act, the Commission has designated certain areas within the 100-foot shoreline band for specific priority uses for ports, water-related industry, water-oriented recreation, airports and wildlife refuges. The Commission is authorized to grant or deny permits for development within these priority use areas based on appropriate Bay Plan development policies pertaining to the priority use.

The Marsh Act grants the Commission permitting authority in the primary management area of the Suisun Marsh, including marshes, managed wetlands, levees, waterways, and certain lowland grasslands below the ten-foot contour line. The Marsh Act also established a secondary management area of primarily upland grasslands and cultivated lands to serve as a buffer between the primary management area and developed lands outside the Marsh. Within

State of California • SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION • Arnold Schwarzenegger, Governor
50 California Street, Suite 2800 • San Francisco, California 94111 • (415) 352-3800 • Fax: (415) 352-3806 • Info@bcdc.ca.gov • www.bcdc.ca.gov
Howell Chan  
October 1, 2010  
Page 2

the secondary management area, local governments issue development permits pursuant to a Suisun Marsh local protection program component certified by the Commission. These permits can be appealed to the Commission.

Parts of the proposed project, specifically the elements located in the area east of I-680 from the Gold Hill Road overpass and north to Jameson Canyon Creek, fall within the secondary management area of the Suisun Marsh, which is protected by strict limitations on development, as noted in the Draft EIR/EIS. In addition, this portion of the project appears to overlap with the Gold Hills Unit of the Grizzly Island Wildlife Area, a wildlife refuge priority use area designated on Bay Plan Map 2.

Wildlife Refuge Priority Use Area. One of the Bay Plan’s Major Plan Proposals is to maintain wildlife refuges in diked historic baylands. The Bay Plan states, “Prime wildlife refuges in diked-off areas around the Bay should be maintained and several major additions should be made to the existing refuge system.” The final EIR/EIS, should discuss whether any elements of the proposed project would be located within the wildlife priority land use area, how the proposed project is consistent with this designation, and whether approval of such improvements within the wildlife area have been approved by the California Department of Fish and Game.

Suisun Marsh Preservation Act. On page 2-22, the Draft EIR/EIS states that two project alternatives were rejected because they “would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974).” The Commission supports the decision to reject these alternatives.

Suisun Marsh Local Protection Program. As noted on page 3.1.1-13 of the Draft EIR/EIS, the Marsh Act requires Solano County to prepare and adopt a component of the Suisun Marsh local protection program (LPP) to implement the Marsh Act within the secondary management area. Please note that the Marsh Act was enacted in 1977, not 1997 as stated in the report. The Commission originally certified Solano County’s LPP component in 1982 and certified an amended LPP component in 1999.

On page 3.1.1-12, the Draft EIR/EIS cites the 2008 Solano County General Plan’s Suisun Marsh Policy Addendum. The Suisun Marsh Policy Addendum contains specific General Plan policies governing the Suisun Marsh that have been incorporated into the Solano County LPP certified by the Commission. It would be more appropriate to cite Solano County’s certified LPP component.

Transportation and Agriculture. The Draft EIR/EIS cites Policy 1(e) and Policy 1(f) of the utilities, facilities and transportation policies of the 2008 Solano County General Plan’s Suisun Marsh Policy Addendum. As noted above, the report should cite the certified LPP.

Utilities, Facilities and Transportation Policy 1(e) of the LPP states, in part, “New roadways (highways, primary and secondary roads) and rail lines that form barriers to movement of terrestrial wildlife should not be constructed in the Suisun Marsh or in adjacent uplands necessary to protect the Marsh except where such roadways and rail lines are necessary in the secondary management area for the operation of water-related industry…”

It is our understanding that the proposed project involves expansion of existing roadways in the secondary management area, rather than construction of new roadways. In that case, the following policy related to existing uses in the secondary management area would apply.
Howell Chan  
October 1, 2010  
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Agricultural Policy 3 of the Solano County LPP states, “Existing non-agricultural uses...on sites within the secondary management area should be allowed to continue if they are conducted so that they will not cause adverse impacts on the Suisun Marsh. Any future change in uses of these sites should be compatible with the preservation of the Suisun Marsh and its wildlife resources.”
Howell Chan  
October 1, 2010  
Page 4

In the final EIR/EIS, please discuss which policies apply and whether the proposed project would be consistent with these policies.

**Wildlife Habitat Management and Preservation and Water Quality.** In the Solano County component of the LPP, Wildlife Habitat Management and Preservation Policy 1 states, “The diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced wherever possible to maintain the unique wildlife resource.” Wildlife Habitat Management and Preservation Policy 2 states, “The Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of Suisun Marsh. Therefore, these habitats deserve special protection.”

Water Quality Policy 3 states, “Disruption or impediments to runoff and stream flow in the Suisun Marsh watershed should not be permitted if it would result in adverse effects on the quality of water entering the Marsh.” Water Quality Policy 6 states, “Riparian vegetation in the immediate Suisun Marsh watershed should be preserved due to its importance in the maintenance of water quality and its value as Marsh-related wildlife habitat. Stream modification should only be permitted if it is proved necessary to ensure the protection of life and existing structures from floods and only the minimum amount of modification necessary should be allowed.”

In the final EIR/EIS, please discuss whether the proposed project would be consistent with these policies.

**Sea Level Rise.** On page 4-41 of the Draft EIR/EIS, the Department notes that “all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or have funds programmed for construction in the next five years (through 2013), or are routine maintenance projects as of the date of Executive Order 5-13-08 may, but are not required to, consider these planning guidelines.”

Although none of the project area is within the Commission’s permit jurisdiction, the Suisun Marsh map in the BCDC report (attached) shows that part the area of the proposed project along SR 12 is vulnerable to a 10-inch rise in sea level and a larger part of the area is vulnerable to a 55-inch rise. Please note that the BCDC maps of vulnerable areas do not account for existing shoreline protection or creek levees, and do not include the existing or future 100-year flood zones.

The final EIR should reference existing Bay Plan safety of fills findings and policies that anticipate the need for planning associated with sea level rise. The Safety of Fills findings recognize that “Bay water levels are likely to increase in the future because of a relative rise in sea level. Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting and subsidence) around the Bay.” Additionally, Policy 6 states, “local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards.” It is likely that the proposed structures would be expected to last until at least mid-century.
Howell Chan  
October 1, 2010  
Page 5

The final EIR should consider impacts of future sea level rise on several aspects of the proposed project, such as transportation and biological and cultural resources.

Thank you for your consideration of our comments. If you have any questions regarding this letter please contact me by phone at (415) 352-3660 or email jessicad@bcd.ca.gov.

Sincerely,

JESSICA DAVENPORT  
Coastal Planner

Enc.

JD/gg

cc: Solano County Planning Department
Appendix L. Responses to Comments

Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project

Shoreline Areas Vulnerable to Sea Level Rise: Suisun Marsh


DISCLAIMER: Foundation data does not account for existing shoreline protection or wave activity. These maps are for informational purposes only. Users, by their use, agree to hold harmless and indemnify the State of California and its representatives and its agents for any liability associated with its use in any form. The map and data shall not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).

0 1.5 3 MILES
Comment Letter 5, Jessica Davenport, Coastal Planner, State of California, San Francisco Bay Response to Conservation and Development Commission, 10/01/10

Response to Comment 5-1
Comment noted. The EIR/EIS acknowledges that portions of the project would be constructed within the secondary management area (see Response 5-6 below). No part of the project would be within the Gold Hills unit of the Grizzly Island Wildlife area (see Response 5-2 below).

Response to Comment 5-2
No elements of the proposed project are located within a wildlife priority land use area. The closest wildlife area to the project is the Gold Hills Unit of the Grizzly Island Wildlife Area, which is on the east side of Ramsey Road, south of Red Top Road. The wildlife area is approximately 100 feet east of the proposed construction impact area along I-680. Ramsey Road is a physical barrier between the impact area and the wildlife area, and improvements to I-680 near the wildlife area would not cross Ramsey Road. Improvements to I-680, therefore, would not affect the wildlife area; and the project would be consistent with the primary land use area designation of the wildlife area. Because the wildlife area would not contain any improvements due to the project, approval by the California Department of Fish and Game would not be necessary.

Response to Comment 5-3
Comment noted.

Response to Comment 5-4
Changed 1997 to 1977 in footnote in Section 3.1.1 of the Final EIR/EIS.

Response to Comment 5-5
The Addendum to the LPP contains the most recent and applicable policies pertaining to the project alternatives. The Addendum incorporates the original LPP (1982) and prior amendments made in 1999. Because the Addendum to the LPP is more inclusive, that document is referenced in the Draft EIR/EIS.

Response to Comment 5-6
See response to comment 5-5. The Department disagrees with the claim that Agricultural Policy 3 of the Solano County LPP would apply. This policy deals with “existing non-agricultural uses within the secondary management area.” Currently I-680 is not located within the secondary management area. Therefore portions of the project that would be constructed within the secondary management area would constitute a “new” non-agricultural use within the secondary management area. Therefore, the more applicable policy is the General Plan’s Suisun Marsh Policy Addendum’s “Utilities, Facilities, and Transportation” Policy 1(e).

Both full build alternatives would involve constructing a new interchange at I-680/Red Top Road and realigning Ramsey Road. However, these improvements would not directly or indirectly affect the primary marsh. Because the new roadway facilities would be in close proximity and
adjacent to existing I-680, the project would not form a new barrier to terrestrial wildlife movement, as it is adjacent to an existing road and does not isolate any new area.

Response to Comment 5-7
The following text has been added to Section 3.1.1 of the Final EIR/EIS.

“The County component of the Marsh Protection Plan contains several Wildlife Habitat Management and Preservation, and Water Quality policies that would pertain to the project. These include:

Wildlife Policy 1

The diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced wherever possible to maintain the unique wildlife resource.

Wildlife Policy 2

The Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection.

The project alternatives would have minimal impacts on lands within the Suisun Marsh secondary management area. Impacts of the project on waterways, wetlands, and marshes would be mitigated as described in Section 3.2.2 of the Draft EIR/EIS. These mitigation measures would require compensation for affected waterways, wetlands, and marsh areas at a 1:1 ratio to ensure no net loss of these habitats as a result of the project.”

The full-build project alternatives would primarily affect annual grassland (non-wetland) habitat within the Secondary Management Area. Two seasonal drainages that cross under I-680 enter the Secondary Management Area within the permanent impact area (see OW-150 and OW-151 on Figures 3.3-2a and 3.3-2c, Sheet 13). Although all or most of these drainages would be filled as part of the proposed project, neither of these drainages extends more than about 200 feet into the Secondary Management Area from the edge of Ramsey Road. The drainages do not connect to the Suisun Marsh and end approximately 2,000 feet west of the primary marsh boundary. Direct and indirect impacts of the project on waterways, wetlands, and marshes would be avoided, minimized, and/or mitigated as described in Section 3.3.2 of this Draft EIR/EIS. Avoidance and minimization of impacts would be accomplished through implementation of measures (in Section 3.3.1.1) to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring, and measures to protect water quality and prevent erosion. In cooperation with the RWQCB and USACE, compensation for loss of drainage habitat (in Section 3.3.2.1) would be accomplished by purchasing habitat credits at an approved mitigation bank. Compensation for impacts on waterways, wetlands, and marsh areas would be at a 1:1 ratio to ensure no net loss of these habitats as a result of the project. Therefore, the loss of seasonal drainages OW-150 and OW-151 would be compensated to ensure no net loss of seasonal drainage habitat. In addition, mitigation for the loss of annual grassland would be required as Swainson’s hawk foraging habitat as described in Section 3.3.5.8 of the Draft EIR/EIS.
Response to Comment 5-8
The following text has been added to Section 3.1.1 of the Final EIR/EIS:

“Water Quality Policy 3

Disruption or impediments to runoff and stream flow in the Suisun Marsh watershed should not be permitted if it would result in adverse effects on the quality of water entering the Marsh. Riparian vegetation in the immediate Suisun Marsh watershed should be preserved, and stream modification permitted only if it is necessary to ensure the protection of life and existing structures from floods. Only the minimum amount of modification necessary should be allowed in such cases.

Section 3.2.1 of the Draft and Final EIR/EIS describes the potential water quality impacts of the project alternatives and describes both permanent and temporary (during construction) best management practices that would be implemented to protect water quality, preserve existing vegetation, and treat stormwater runoff before entering the Suisun Marsh.”

Response to Comment 5-9
The following text has been added to Section 3.1.1 of the Final EIR/EIS:

“Water Quality Policy 6

Riparian vegetation in the immediate Suisun Marsh watershed should be preserved due to its importance in the maintenance of water quality and its value as Marsh—related wildlife habitat. Stream modification should only be permitted if it is proved necessary to ensure the protection of life and existing structures from floods and only the minimum amount of modification necessary should be allowed.

The project would not affect any riparian habitat located within the Suisun Marsh area. As all project activities occurring within the Suisun Marsh Secondary Management Area would be subject to the issuance of a Marsh Development Permit by the San Francisco Bay Conservation and Development Commission (BCDC) and all conditions attached to the permit will be implemented as part of the project, the project would be consistent with the Suisun Marsh Protection Act policies and Solano County General Plan.”

Response to Comment 5-10
One of the expected results of global climate change is a rise in existing sea levels. Although predicting future sea levels is not a precise science, the latest estimate for the San Francisco Bay Area is that the level of the San Francisco Bay could increase by as much as 139 centimeters (55.6 inches) by the year 2100 (Knowles 2009). This estimate is based on the CCSM3 global climate model’s projection of a global average surface air temperature increase of approximately 8.1 degrees Fahrenheit. As stated in the draft Potential Inundation due to Rising Sea Levels in the San Francisco Bay Region report prepared for the California Climate Change Center (Knowles 2009), this estimate is “relatively high,” so the resultant estimate of Bay level rise can be considered a potential high-end estimate. This is the most current estimate available at the time of this writing.

The draft Potential Inundation due to Rising Sea Levels in the San Francisco Bay Region report includes a large-scale map of those areas projected to be vulnerable to inundation by average
yearly high water levels under the modeled 2100 conditions. In general terms, mapping was based on the hydrodynamic modeling of the height of the lands adjoining the San Francisco Bay in conjunction with predicted bay level rise. The report does not take into account the protection provided by or the adequacy of existing levees. The mapped vulnerable areas include lands that are currently behind levees. This report and maps are available at the following web address:


It is impossible to state with certainty to what extent the project site may be directly affected by a rise in the average level of the San Francisco Bay. The following exhibits depict Alternatives C and Alternative C, Phase 1 in relation to anticipated sea-level rise (data on sea level rise is taken from USGS, BCDC 2009). Alternative C, Phase 1 would occur in areas not anticipated to be affected by sea level rise. Improvements proposed as part of Alternative C along State Route 12 east could be affected by sea level rise. As indicated in the map of sea level rise in relation to Alternative B, much of Suisun City as well as substantial portions of the City of Fairfield would also be affected by sea level rise in this area.

Addressing issues of sea level rise at the regional level is a broad-based planning activity that will be implemented by Caltrans as well as other local, regional and state agencies. For transportation infrastructure this involves long-term planning and risk management in the transportation system. As such, the 2009 California Climate Change Adaptation Strategy Report suggests that Caltrans employ the following Adaptation Strategies for projects subject to sea level rise:

- **Develop a transportation use “hot-spot” map.** Research and identify transportation “hot spots” using updated NAS and other appropriate study efforts to identify across the State where the mixture of climate change impacts, population increases, and transportation demand increases will make communities most vulnerable to climate change. Caltrans will include in the analysis how the lowest-income communities in hot spot areas will be impacted.

- **Transportation Infrastructure Assessment.** Assess existing transportation design standards as to their adequacy to withstand climate forces from sea level rise and extreme weather events beyond those considered.

- **Buffer Zone Guidelines.** Develop guidelines to establish buffer areas and setbacks to avoid risks to structures within projected “high” future sea level rise or flooding inundation zones.

- **Stormwater Quality.** Assess how climate changes could alter size and design requirements for stormwater quality best management practices (BMPs). (CNRA, 2009)

These strategies are general in nature and intended to be carried out by Caltrans during the planning and programming of transportation projects across the entire transportation network. Incorporating these strategies early into the planning and programming of transportation improvements will allow transportation planners over time to design new facilities and incorporate measures into near-term transportation projects that will avoid, reduce, and address sea level rise across the transportation network.
The Bay Plan safety of fills findings and policies while acknowledging sea level rise primarily address the safety of fills placed in the Bay. While the project would not directly place fill in the bay, all structures and roadways would be designed, engineered and constructed to address site specific geologic, soils and seismic conditions. Section 3.2.3 Geology of the EIS/EIR contains a complete assessment of current geologic, soils and seismic conditions within the project area and provides specific recommendations for the design and construction of the proposed project to address site specific conditions.
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Letter 6

U.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

September 29, 2010

Howell Chan, District Branch Chief
State of California
Department of Transportation
111 Grand Avenue (P. O. Box 23660)
Oakland, California 94623-0660

Dear Mr. Chan:

This is in response to your request for comments on prepared Draft Environmental Impact Report (EIR) for proposed Interstate 80/Interstate 680/State Route 12 Interchange Project.

Please review the current effective countywide Flood Insurance Rate Maps (FIRMs) for the County of Solano (Community Number 060631) and City of Fairfield (Community Number 060370), Maps revised May 4, 2009. Please note that the City of Fairfield, Solano County, California is a participant in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map.

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any development must not increase base flood elevation levels. The term development means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. A hydrologic and hydraulic analysis must be performed prior to the start of development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways.

www.fema.gov
Appendix L. Responses to Comments

Howell Chan, District Branch Chief
Page 2
September 29, 2010

- All buildings constructed within a coastal high hazard area, (any of the “V” Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA’s Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtml.

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community’s floodplain manager for more information on local floodplain management building requirements. The Fairfield floodplain manager can be reached by calling Peter Wright, Jr., Engineer, at (707) 428-7784. The Solano County floodplain manager can be reached by calling Birgitta Carsello, Director, Department of Public Works, at (707) 784-6765.

If you have any questions or concerns, please do not hesitate to call Jane Hopkins of the Mitigation staff at (510) 627-7183.

Sincerely,

Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

cc:
Peter Wright, Jr., Engineer, City of Fairfield
Birgitta Carsello, Director, Department of Public Works, Solano County
Ray Lee, State of California, Department of Water Resources, North Central Region Office
Jane Hopkins, Floodplanner, DHS/FEMA Region IX
Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX

www.fema.gov

Response to Comment 6-1
Flood Insurance Rate Maps (FIRMs) were reviewed and are provided in Figures 3.2.1-1 through 3.2.1-7 at the end of Section 3.2.1 in the Draft and Final EIR/EIS. A discussion of the Flood Zones within the project area is provided in Section 3.2.1 of the Draft EIR/EIS. All structures proposed for this project will meet NFIP building requirements. The proposed truck scales, which are to be constructed in the floodplain of Raines Drain, will be elevated and will include underground structures for stormwater storage, as discussed in Section 3.2.1 of the Draft and Final EIR/EIS.

Response to Comment 6-2
The adjacent communities of the city of Fairfield and the County of Solano have been contacted and they both adhere to the standards described in 44 CFR.
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October 5th, 2010

Howell Chan
Environmental Analysis Office Chief, Caltrans District 4
P.O. Box 23660, MS-88
Oakland, CA 94623-0660

Subject: Comments Environmental Impact Report/Environmental impact Statement (EIR/EIS) for the I-80/I-680/SR 12 Interchange Project

Dear Mr. Chan:

Solano Land Trust (SLT) holds an agricultural conservation easement in perpetuity on property along the route of the project, known as the Valeine easement APNs: 27-251-33; 27-271-06; 27-251-34; 27-251-4; 27-251-42; 27-251-44. SLT is submitting comments in response to the Environmental Impact Statement/Report. These comments are submitted with approval from SLT’s Executive Committee.

Chapter 3 of the EIR/EIS, describes in detail Solano County’s commitment to preserving prime farmland as demonstrated by various provisions in the 2008 Solano County General Plan and the Draft Suisun Valley Strategic Plan. In the year 2000, the Department of Conservation’s California Farmland and Ranchland Protection Program (CFCP) specifically recognized the value of protecting the agricultural value of the Valeine Ranch when it funded the conservation easement transaction with State dollars.

Discussion of Impacts to Agricultural Land is Inadequate

The EIS/EIR appears to only discuss the direct conversion of farmland (pages 3.1.3-9 and 3.1.3-10). There is no discussion of indirect or secondary impacts of the conversion of farmland. What will be the impact on adjacent farmland due to the operation of new highway facilities or an overall reduced amount of farmland in the area. For example, Table 3.1.3-3 states that a total of 72.46 acres are under a conservation easement held by SLT. On page 3.1.3-10 it states that 22.5 acres of this area will be converted to another use. Will the remaining parcel under the conservation easement (approximately 50 acres) remain a viable piece of farmland and remain in agricultural use?

Letter 7
Appendix L. Responses to Comments

Mitigation Measures Are Inadequate

Page 3.1.3-11 under the section title "Compensation for Conversion of Important Farmland," the report states "Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area." Given the special importance of lands protected under a conservation easement the proposed 1.25:1 mitigation ratio for the loss of the Valine Ranch lands is insufficient. The proposed mitigation does not reflect the demonstrated public and conservation value that will be lost with the conversion of protected farm land. SLT recommends a minimum 2:1 ratio be used to mitigate for the agricultural conservation easement lands lost by this project.

Furthermore, the mitigation does not describe sufficiently how it will be accomplished, the location for the mitigation, and the timing. The mitigation states that "long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County...". First, it is not clear what "long-term land use restrictions" are being suggested. The farmland must be protected in perpetuity and through the use of a conservation easement. Second, the protected farmland must be in the close vicinity to the converted farmland, at a minimum we suggest within the Suisun Valley. Third the farmland must be secured and protected prior to the operation of the first phase of the project.

Please feel free to contact me with questions.

Best regards,

Nicole Byrd
Executive Director, Solano Land Trust
Comment Letter 7, Nicole Byrd, Executive Director, Solano Land Trust, 10/05/10

Response to Comment 7-1
Comment noted.

Response to Comment 7-2
Indirect or secondary impacts to farmlands would be minimal to none as a result of the project. Farmlands that are affected by the project are already located in close proximity (directly adjacent) to major transportation facilities (Interstate 80, interstate 680 and State Route 12). The farmlands within the project area do not appear to be significantly affected or less productive due to their close proximity to these major transportation facilities. Given the existing conditions, the project would not introduce any indirect or secondary impacts to these agricultural parcels located immediately adjacent to the transportation facilities. Thus, the remaining portions of parcels affected would not be subject to less productivity as farmland.

Response to Comment 7-3
Under NEPA, based on the results of the Farmland Conversion Impact Rating, the project alternatives will not result in a substantive adverse effect on farmlands. Under CEQA, the Department will, however, mitigate for agricultural impacts, on a case by case basis, in a quantity or ratio according to professional judgment based on local plans, the type of farmland, and economic impacts. In this project, important farmland (“prime farmlands”) will be mitigated at a 1:1 ratio (one acre protected for every one acre affected). Farmlands under an agricultural conservation easement will be mitigated at a slightly higher ratio, 1:25:1.

Agricultural land is a finite resource. However, the project mitigation will require the conservation of an equal amount of agricultural land and acquisition of a larger conservation easement; this mitigation would replace the land that is lost. For CEQA purposes, therefore, the proposed project’s impact on farmland is less than significant after mitigation.

Response to Comment 7-4
As discussed in Section 3.1.3 of the Draft and Final EIR/EIS, mitigation would consist of obtaining long-term land use restrictions such as agricultural conservation easements over Prime Farmland within Solano County. Conservation easements are generally in perpetuity as suggested by the commenter. Mitigation of important farmlands will occur prior to beginning construction activities that affect such farmlands.
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Letter 8

"Richard Wirth" <wirthR@SIDWater.org>
10/06/2010 12:46 PM

To <howell_chan@dot.ca.gov>
cc "Justin Hopkins" <jhopkins@SIDwater.org>
Subject I-80/I-680/SR12 Interchange Project

Hello Mr. Chan:
Solano Irrigation District and the Suisun Solano Water Authority have multiple water and drainage facilities that are adjacent to, or cross I-80 and State Route 12. I have attached several facility location maps showing a graphic representation of our facilities in the general area of your project. Please contact me on getting more specific information on the facilities that you determine will impacted by your project. We will be providing additional comments on the Draft EIR as soon as possible.

Thanks,
Richard

Richard Wirth
Assistant Civil Engineer
Solano Irrigation District
508 Elmira Road
Vacaville, California 95687
707-455-4018 Office
707-452-8557 Fax
707-249-6073 Cell
rwirth@sidwater.org

(See attached file: SSWA Facility Map.PDF)(See attached file: SID Facilities.PDF)(See attached file: SID N_Cordelia-Corp_Cmns Facilities.PDF)
Comment Letter 8, Richard Wirth, Assistant Civil Engineer, Solano Irrigation District, 10/06/10

Response to Comment 8-1
Comment noted.
Appendix L. Responses to Comments

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Letter 9

"Justin Hopkins" <jhopkins@SIDwater.org>
10/07/2010 11:39 AM

To "Richard Wirth" <WirthR@SIDwater.org>,
<howell_chan@dot.ca.gov>

cc

Subject RE: I-80/I-680/SR12 Interchange Project

Good morning Mr. Chan:
I have reviewed the Draft EIR for the I-80/I-680/SR12 Interchange Project and
have the following comments on section 3.1.5 Utilities and Emergency Services:

Water Service
1. The Solano County Water Agency has the master contract with the U.S.
Bureau of Reclamation for the Solano Project, which is a source of water for
the county, but is not effected by this project.
2. The Solano Irrigation District owns and operates facilities within the
proposed project area that deliver agricultural water to customers on the
north and south side of the project.
3. The Suisun Solano Water Authority (SSWA), composed of the SID and Suisun
City, operate a treatment plant outside of the project area that delivers
potable water to the city of Suisun.

Environmental Consequences
Potential Effect to Utilities
1. This section reads correctly as any SID or SSWA facilities affected by the
project would need to be relocated, realigned, or extended.

The exact description of "Water Service" purveyors within the project area is
not important, but should be corrected to reflect the information provided
above. Thank you for the opportunity to review and comment on the Draft EIR.
Please feel free to contact Richard Wirth or I with any questions or if you
require additional information.

Respectfully,

Justin Hopkins, E.I.T.
Assistant Civil Engineer
Solano Irrigation District 707.455.4007
Fax: 707.452.8557
jhopkins@sidwater.org

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is received in error, please immediately, contact Justin Hopkins at the above
referenced telephone number or electronic mail address.
Comment Letter 9, Justin Hopkins, E.I.T., Assistant Civil Engineer, Solano Irrigation District, 10/07/10

Response to Comment 9-1
Comment noted.

Response to Comment 9-2
Comment noted.

Response to Comment 9-3
A discussion of the water suppliers in the project area has been added to Water Services Section 3.1.5 of the Final EIR/EIS.
Letter 10

"jfutini@juno.com <jfutini@juno.com>
09/11/2010 06:07 PM

To        Howell_chan@dot.ca.gov
cc
Subject   I-80, I-680, Hwy 12 Project

Mr. Chan,
I'll tell you the same thing that I emailed to Jane Adams of Solano Transportation Agency when that project was started. It would waste millions of dollars and succeed in doing nothing but add additional lanes and further congest I-80. My suggestion was to separate I-680 from connecting with I-80 and divert it to run along the railroad tracks all the way to Sacramento where it would merge into Hwy 50. This would give traffic an individual alternate route to the capitol and beyond to Nevada. The funds spent on your I-80, I-680, in doing what your doing, could build that separate highway and dramatically change things. Caltrans is fifty years behind the times in highway construction. Hwy 12 should be a full freeway from I 5 to Hwy101. What do we have? A patchwork of two-lane, antiquated roadways with some passing lanes. Congestion is so impacting our highways where the amount of vehicles far surpasses the ability and the integrity of the roadway that it doesn't take an Einstein to realize that unless Caltrans gets with it we will have more than a gridlock catastrophe! Something needs to be done immediately and not by 2035. If Caltrans goes like they are going, when they reach 2035 with their highway plans, they will be seventy-five years behind the times. Today's traffic can't wait.
I hope somebody wakes up. John Futini
Appendix L. Responses to Comments

Comment Letter 10, John Futini, 09/11/10

Response to Comment 10-1
The fundable phase of the project is expected to cost approximately $600 million ($557 million for Alternative B, Phase 1 and $686 million for Alternative C, Phase 1) as noted in Table 2-4 of the Draft EIR/EIS. Table 2-4 in Section 2.8.1 of the Final EIR/EIS has been updated to reflect costs based on more current estimates. The project would result in adding lanes to both I-680 and I-80, as well as to SR 12. The addition of these lanes would reduce congestion by accommodating projected growth.

Response to Comment 10-2
Two alternatives similar to that proposed by the commenter were considered early in the planning process for the interchange project. A four-lane freeway (referred to as the South Parkway) would diverge from I-680 at Gold Hill, run parallel to and south of the railroad tracks and merge with SR 12 at Pennsylvania Avenue. The other similar alternative consisted of an alignment parallel, and adjacent, to the UPRR Capitol Corridor line beginning either at the I-680/Parish Road interchange or the I-680 Marshview Road interchange and extending northeasterly merging with SR 12 at Pennsylvania Avenue. These two alternatives were rejected because each would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974). See Section 2.6 of the Draft EIR/EIS for a discussion of this alternative and other alternatives considered but eliminated from further consideration. Other corridor planning efforts for SR 12 are underway.

Response to Comment 10-3
The Department and other transportation planning agencies agree that congestion through the I-80/I-680/SR12 Interchange is a major problem. The Department will be implementing improvements as expeditiously as possible.
October 8, 2010

Caltrans District 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS-8B
Oakland, CA 94623-0660

Re: I-80/I-680/SR12 Interchange Project Draft EIR/EIS

Dear Mr. Chan:

Thank you for preparing the I-80/I-680/SR12 Interchange Project Draft EIR/EIS. Improvement of this intersection is the top regional transportation priority for the Solano County area, and is one of the key transportation projects for the Bay Area as a whole. The existing substandard intersection configuration is not well suited to handle the growth in regional traffic expected to occur in the future, and must be improved.

Both Alternative B (maintaining the existing interchange location) and Alternative C (relocating the interchange to the west to align with SR12 West) would provide significant benefits to the traveling public by substantially reducing congestion compared with the No Build alternative. In some ways, Alternative B provides a greater reduction in delays than Alternative C. However, Alternative C also provides a number of advantages relative to Alternative B. Among them are:

1. It would create one I-80/I-680/SR12 interchange, instead of having two separate interchanges (I-80/I-680 and I-80/SR12) in close proximity. Such a configuration is generally favored by FHWA and Caltrans, and may provide improved safety and congestion relief.

2. The relocated interchange would be located west of the existing interchange location. This will increase the separation between the interchange and the I-80 truck scales in both directions, again providing improved safety and congestion relief.
3. Unlike Alternative C, Alternative B would have northbound I-680 traffic merging into I-80 traffic on the left side. This non-standard configuration could be confusing to motorists, and could impact traffic safety and congestion.

For these reasons, Solano County prefers Alternative C, and supports Phase 1 of Alternative C as an interim fundable project.

Thank you for the opportunity to comment on the environmental documents. Please call me at (707) 784-6072 if you have any questions.

Sincerely,

[Signature]

Paul Wiese
Engineering Manager

c. Mike Yankovich, Planning
Comment Letter 11, Paul Wiese, Engineering Manager, Solano County, Department of Resource Management, Public Works Engineering, 10/08/10

Response to Comment 11-1
Comment noted.

Response to Comment 11-2
Comment noted.
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Letter 12

Jackie Kepley <jrkepley@yahoo.com>
10/11/2010 08:27 AM

To howell-chan@dot.ca.gov
cc
Subject I-80/I-680/SR12 Interchange Project

Dear Howell Chan,

My name is Jackie Kepley and I am a homeowner in the Cordelia Village Neighborhood. In fact my backyard is right against Red Top Road. Having commuted from Cordelia to Napa and back for a year and now to Benicia and back, I completely agree that something needs to be done in regards to I-80/I-680/SR12. However looking at the plans that were received I have to disagree with the plan.

My first complaint on both plans is that it appears an on on off ramp will be added from 680 connecting to Red Top Road. Not only is this road busy most hours of the day but it also goes in front of a high school. I find this VERY dangerous for the children as well as the parents trying to drop off and pick up their children. Living so close to the High School I know for a fact that children are present from 7am or earlier until 8pm or later with sports practice etc. That hardly qualifies as “Reduce the amount of cut-through traffic on local roads”.

As for Alternative C, where I-680 would be realigned to connect directly with the I-80/SR 12 interchange, I can’t help but feel that this would bring the traffic and accompanying noise even closer to the surrounding neighborhoods. Has a study been conducted to measure the amount of noise this will add???

And again..........it appears to come rather close to the high school. Has anybody considered adding a junction between I-680 and Highway 12 in Suisun??

Thank you for your time,

Jackie Kepley

549 Silverado Circle
Fairfield, CA 94534
707-258-1452
Comment Letter 12, Jackie Kepley, 10/11/10

Response to Comment 12-1
Comment noted.

Response to Comment 12-2
The commenter expresses concern that construction of Alternative C, Phase 1 would result in increased traffic along Red Top Road in front of Rodriguez HS that could affect intersection operations and student safety.

Based on the 2035 traffic forecasts, without the project (No-Build Alternative), Red Top Road east of I-80 would have approximately 2,095 vehicles in the AM peak hour and 2,445 vehicles in the PM peak hour. With Alternative C, Phase 1, traffic projections forecast 1,605 vehicles for the same location in the AM peak hour and 2,460 vehicles in the PM peak hour. This represents a 23 percent reduction in the number of AM peak hour trips and less than a 1 percent increase in the number of PM peak hour trips as a result of constructing Alternative C, Phase 1. Thus, traffic operations adjacent to the school are expected to remain the same or improve with the project.

Generally with increased traffic there is a corresponding increase in congestion related (rear-end type) accidents. A decrease in congestion generally results in fewer congestion-related accidents. Thus, Red Top Road is expected to be a safer facility for students, residents, and others with the construction of Alternative C, Phase 1 than with the No-Build Alternative (without the project).

Response to Comment 12-3
Federal regulation 23CFR772 requires that traffic noise levels associated with federally-funded projects such as this be evaluated under the federal regulation. A Noise Study Report was prepared in accordance the requirements of the regulation and applying Caltrans’ Traffic Noise Analysis Protocol. Under Alternative C, I-680 would be realigned to the west away from residences located along Bridgeport Avenue and Ritchie Road. The existing alignment of I-680 north of Red Top Road would be converted to a local access road. Under Alternative C, traffic noise levels are predicted to increase by up to 4 dB at residential and park uses along I-680 under both Phase 1 and full build conditions, as a result of increased traffic volumes on I-680. These results are summarized in Table 3.2.7-4, and the locations that were modeled are shown in Figure 3.2.7-12 of the Draft and Final EIR/EIS. Absolute noise levels are predicted to approach or exceed the noise abatement criterion of 67 dBA L_{eq} at Rolling Hills Park and a residence on Ramsey Road. Noise abatement in the form of noise barriers were evaluated but were determined to exceed criteria for reasonableness of cost. This increase, however, does not constitute a significant traffic noise impact (an increase of 12 dB over existing levels) as defined in the Caltrans Noise Protocol. The technical studies supporting these findings are available at the Department District 04 and STA offices.

Response to Comment 12-4
An alternative similar to that proposed by the commenter was considered early in the planning process for the interchange project. A four-lane freeway (referred to as the South Parkway) would diverge from I-680 at Gold Hill, run parallel to and south of the railroad tracks and merge with SR 12 at Pennsylvania Avenue. This alternative was rejected because it would place a
transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974). See Section 2.6 of the Draft EIR/EIS or Section 2.5.2 of the Final EIR/EIS for a discussion of this alternative and other alternatives considered but eliminated from further consideration.
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Letter 13

Jeff Dittmer <jfdittmer@sbcglobal.net>
10/11/2010 03:51 PM

To Howell_chan@dot.ca.gov

cc

Subject Comments I-80 I-680 SR-12

In regards to the EIR/EIS for the I-80 I-680 SR-12 Interchange Project:

1. Bicycle paths.
   (a) The plan shows a bicycle path extending south from the end of Business Center Drive along the edge of our family's property to the proposed ramp from WB 80 to SR12. Note that there is a 5.99 acre parcel, APN 0148270060, that is landlocked from any public street. That parcel has access via a recorded right of way over the adjacent parcel to the end of Business Center Drive. Although both parcels are owned by our family, the ownership is by different individuals and the parcels could be developed separately. The proposed bicycle path is on the right of way that provides the only public access for that parcel. If a bicycle path is constructed in that location it can not be allowed to eliminate access for the 5.99 acre parcel.
   (b) The plan also shows a bicycle path extending from the end of Mangels Blvd to the end of Business Center Dr. The driveway into our ranch extends from the end of Mangels Blvd. The SW corner of the adjacent Jayo property comes very close to that driveway, but it will remain workable upon development of Jayo's property, which is supposed to begin next year. If a bicycle path were built around the corner of the Jayo property, it would require major realignment and reconstruction of our driveway, which needs to be accessible to large trucks as well as cars. We request that you reconsider this component of the plan. Perhaps part of the path could be incorporated into Jayo's landscaping to avoid the corner.
   (c) We also request that if these paths are built that a security fence matching that at the entrance to our driveway and along Mangels Blvd be constructed to separate them from our property.

2. New roadway connecting Red Top Road/SR-12 interchange and Business Center Drive.
   (a) This proposed roadway will cut our property in two. Back and forth access must be maintained for ranching activities. We also have a domestic water line that the proposed roadway crosses. Access for that water line must be maintained in such a way as to allow for repairs and maintenance. We have received verbal assurances that an adequately sized tunnel for vehicle and livestock access and a utility passageway that would accommodate a water line are to be included. Please confirm.
   (b) This proposed roadway as well as the freeway improvements will leave our property with very limited access. In the event the property is developed, the project will have eliminated previously anticipated means of access. We request that adequate future access from the proposed roadway be provided as well as adequate access for its current use as a ranch headquarters.

Jeff Dittmer
(707) 372-5760
jfdittmer@sbcglobal.net
Comment Letter 13, Jeff Dittmer, 10/11/10

Response to Comment 13-1
Access will be maintained to commenter’s property. Final location and details of the access will be developed during final design. Figure L-1, which shows the preliminary alignment of the bicycle path, security fence, driveway access to property and access underneath the proposed extension of Business Center Drive, has been added in this response to this comment.

Response to Comment 13-2
Comment noted. STA and the Department have removed the segment of bicycle path that would connect Mangels Boulevard to Business Center Drive from consideration as part of this project. This was done because the City of Fairfield determined there is no need for a separate bicycle connection between Mangels Boulevard and Business Center Drive at the westerly city limit.

Response to Comment 13-3
The proposed bicycle path that would run from Business Center Drive to the south and then along I-80 and State Route 12 west would be separated from the commenter’s property by a fence. This fence will be included as part of the bicycle path construction. Please see Figure L-1 on the following page.

Response to Comment 13-4
A 14-foot-high arch undercrossing of the Business Center Drive Extension, sufficient for use by livestock, has been incorporated into the project approximately 750 feet west of the current westerly terminus of Business Center Drive. The final location will be determined during the final design phase. Please see Figure 3.3-8 in the Final EIR/EIS.

Response to Comment 13-5
The proposed Business Center Drive extension will provide access to the Commenter’s property at preliminary driveway locations approximately 500 feet west of the current westerly terminus of Business Center Drive as shown in Figure L-1. The final access locations and details will be determined during final design.
Appendix L. Responses to Comments

Letter 14

11 October 2010

Howell Chan, Environmental Analysis Branch Chief
California Department of Transportation, District 04
P.O. Box 23660, MS-8B
Oakland, CA 94623-0660
howell-chan@dot.ca.gov

RE: Draft EIR Interstate 80/Interstate 680/State Route 12 Interchange Project

Dear Mr. Chan,

I am writing to provide comments on the Draft EIR for the Interstate 80/Interstate 680/State Route 12 Interchange Project on behalf of the Bay Area Ridge Trail Council. We appreciate this opportunity to provide input regarding the proposed project in connection with the Bay Area Ridge Trail (Ridge Trail) in Solano County.

The Ridge Trail Council is a 501(c)(3) non-profit organization dedicated to completing the Ridge Trail, a continuous public trail on the ridgelines surrounding the San Francisco Bay. As planned, the Ridge Trail will connect open spaces and parklands in the nine Bay Area counties on a 550-mile trail for hikers, equestrians, mountain bicyclists, trail runners, and outdoor enthusiasts of all ages, abilities and incomes. Today over 350 miles are dedicated and we are working to connect up the rest. For over 20 years we have been working with the Solano County Board of Supervisors, Solano Transportation Authority, Solano Land Trust and the cities of Fairfield, Vallejo and Benicia to plan and implement the Ridge Trail through Solano County.

Provided below is background information on Ridge Trail Council’s history in Solano County and its regional significance followed by our comments on the Draft EIR.

Background

In Solano County, about 30 miles of Ridge Trail are complete and another 24 miles are being planned. A map showing the existing Ridge Trail segments within Solano County is attached (see attached SolanoRimMap). The City of Fairfield recently (on 9/30/10) dedicated McGary Road, from Red Top Road to Lynch Canyon Open Space as an official segment of the Ridge Trail (see attached McGary Rd fin page map). In addition to McGary Road, dedicated Ridge Trail segments near the project site include those in Rockville Hills Regional Park, Lynch Canyon Open Space and Hiddenbrooke Open Space.

The Ridge Trail’s entire regional trail alignment has been adopted as a Priority Conservation Area (PCA) within the San Francisco Bay Area FOCUS strategy. FOCUS is a regional development and conservation strategy led by the Association of Bay Area Governments and the Metropolitan Transportation Commission, with support from the Bay Area Air Quality Management District and the Bay...
Appendix L. Responses to Comments

Conservation and Development Commission that promotes a more compact land use pattern for the Bay Area. Priority Conservation Areas are areas of regional significance that have broad community support and an urgent need for protection. These areas provide important agricultural, natural resource, historical, scenic, cultural, recreational, and/or ecological values and ecosystem functions. FOCUS’s purpose of designating FCAs is to accelerate protection of key natural lands in the San Francisco Bay Area through purchase or conservation easements within the next few years.

Ridge Trail Council Comments on the DEIR Interstate 80/Interstate 680/State Route 12 Interchange Project

The Ridge Trail Council supports:

1. The following 2 quotes from the DEIR:
   a. In section 2.5.2 on page 225, “Under a smart-growth alternative, new approaches to transportation planning, such as better coordinating land use and transportation; increasing the availability of high-quality transit service; creating redundancy, resiliency and connectivity within the local road networks; and ensuring connectivity between pedestrian, bike, transit, and road facilities, would be implemented.”
   
   14-1 cont

2. In Chapter 3 on page 3.1.6-3, “The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652).”

2. The implementation of all Ridge Trail related bicycle and pedestrian facilities be included in Phase I of implementation for the project.

The Ridge Trail Council requests the following changes in the DEIR:

1. Connections to proposed project being considered in the Jamison Canyon Corridor Study. The Solano Transportation Authority, Bay Area Ridge Trail Council and other Solano County agency partners are conducting a Jamison Canyon Corridor study for a Class I bike/pedestrian path along the SR12 corridor. The Draft EIR should analyze how this proposed trail would connect to the planned bike/pedestrian trail along the Business Center Drive extension. With the proposed Business Center Drive overcrossing of SR 12 and the railroad at the intersection with Red Top Road, it is unclear how the Jamison Canyon trail would connect to this new overcrossing and Red Top/Business Center Drive.

2. Appendix B, B.1.1. City of Fairfield, Trails and Bikeways, page 8:
   a. Paragraph 2. The Draft EIR states that the Bay Area Ridge Trail is not within the City of Fairfield General Plan. This is incorrect. The Bay Ridge Trail is referenced in the City of Fairfield General Plan and has been supported by resolution of the City of Fairfield City Council. The Bay Area Ridge Trail is also included in the Solano County General Plan and has been supported by resolution by the Solano County Board of Supervisors.

   14-4

   b. Paragraph 3. At the end of this paragraph, the document states that the closest completed and open segment of the Bay Area Ridge Trail is located approximately 1.5 miles south of the project area. On September 30, 2010, the Ridge Trail segment along McGary Road from Red Top Road to Hiddenbrook Drive was dedicated by the City of Fairfield and the Ridge Trail Council. With this dedication, a completed and open segment of the Ridge Trail is now located immediately adjacent to the project area.

   14-5

   c. Paragraph 4. The Ridge Trail corridor as currently planned would have utilized the existing I-680 bike path from Red Top Road/SR12 along I-680 to Green Valley Road. This project will relocate the path to the Business Center Drive Extension. With this change there are now several alternatives for completing the gap between the existing segments of the Ridge Trail that end at McGary Road and Green Valley Road. The EIR should note that the Ridge Trail alignment would extend from McGary Road north along Red Top Road and the new Business Center Drive Extension to the New Bike
Path Alignment at the intersection with the existing Business Center Drive roadway. At this point the Ridge Trail could continue along Business Center Drive to Green Valley Road then north along Green Valley Road to the existing trail segment on Green Valley Road. Alternatively, the Ridge Trail could follow the new Bike Path Alignment to Mangels Blvd and then east along Mangels Blvd to Green Valley Road then north on Green Valley Road to the existing Ridge Trail segment. These two potential alignments for the Bay Area Ridge Trail should be included as part of the EIR analysis.

3. The Final EIR should include a figure and detailed description of the Bike/Pedestrian improvements what would be a part of this project. The Draft EIR States that the Bike/Pedestrian improvements will follow Fairfield General Plan Bike Network and North Connector Corridor Transportation for Livable Communities studies and that after construction the Bike/Pedestrian improvements will utilize the new extension of Business Center Drive to cross over SR 12W and rail line to connect with Red Top Road. The figure and description should show and describe the actual project Bike/Pedestrian improvements and how connections from these improvements will be made to the existing and planned trials at McGary Road/Red Top Road, Jamison Canyon/SR12 and the existing Bike/Pedestrian paths in North Cordelia.

On behalf of the Ridge Trail Council and our numerous supporters, we appreciate the opportunity to provide input. We would be happy to discuss or provide any additional information related to the Ridge Trail. Please do not hesitate to contact me to discuss any aspect of our remarks as they relate to this proposed project.

Sincerely,

 Dee Swanzyer, North Bay Trail Director

Attachments:  SolanoFinMap
                Jameson_Canyon 6-8 Sheet 6-8.3 copy
                McGary Rd fin peace map

CC:  Daryl Hall, STA Executive Director
     Janet Adams, STA Director or Projects
     Sara Woo, STA Strategic Planning
Appendix L. Responses to Comments

Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project
October 2012
L-55
Comment Letter 14, Dee Swanhuyser, North Bay Trail Director, Bay Area Ridge Trail Council, 10/11/10

Response to Comment 14-1
Comment noted.

Response to Comment 14-2
The first quote that the commenter supports (Section 2.5.2) refers to the Smart Growth Alternative which was removed from consideration as a stand-alone alternative because it did not meet the project purpose and need. Though this alternative was rejected, elements of it are being implemented by STA outside of this project.

Alternative C, Phase 1 would include the construction of a bicycle path along the western boundary of the business park at the west end of the existing Business Center Drive parking lot, and along the north side of the new connector from westbound I-80 to westbound SR 12W to maintain access between the existing bicycle path along Jameson Canyon Road (SR 12W) and Business Center Drive. This path would be removed when Business Center Drive is extended to the SR 12W/Red Top Road interchange because bicyclists would be able to utilize the extension of Business Center Drive to reach Red Top Road and points west.

The bicycle facilities included in Alternative C, Phase 1 would allow Ridge Trail users to traverse the project area to reach existing Ridge Trail facilities both north and south of the immediate project area. However, Ridge Trail-related facilities are not part of the project.

Response to Comment 14-3
The Jameson Canyon Corridor Study being conducted by STA is currently underway and will study how connections with the interchange improvements could be achieved. The interchange project has included analysis of pedestrian and bicycle facilities within the immediate interchange study area and includes improvements to facilitate bicycle and pedestrian movements through the project area.

Response to Comment 14-4
Page B-8 of Appendix B has been revised in this Final EIR/EIS to acknowledge a new segment of the Bay Area Ridge Trail that was dedicated by the City of Fairfield and the Ridge Trail Council in September 2010. This segment, which lies to the south of I-80 along McGary Road from Red Top Road to Hiddenbrooke Parkway, is located immediately adjacent to the western segment of the project alignment. The revised section also evaluates potential indirect project impacts to the segment, especially during construction.

Response to Comment 14-5
Comment noted. The bike path on McGary Road was dedicated and opened during the public review period of the Draft EIR/EIS. This segment, which lies to the south of I-80 along McGary Road from Red Top Road to Hiddenbrooke Parkway, is located immediately adjacent to the western segment of the project alignment. Appendix B, Page B-8 of the Final EIR/EIS has been revised to evaluate potential indirect project impacts to the segment, especially during construction. Further, the revised section discusses the project’s beneficial impact of completing
the gap between the existing segments of the Ridge Trail between Green Valley Road and McGary Road.

**Response to Comment 14-6**
As discussed in response to comments 14-4 and 14-5 above, page B-8 of Appendix B has been revised in this Final EIR/EIS to acknowledge a new segment of the Bay Area Ridge Trail that was dedicated by the City of Fairfield and the Ridge Trail Council in September 2010. The revised section discusses the project’s beneficial impact of completing the gap between the existing segments of the Ridge Trail between Green Valley Road and McGary Road.

As indicated in the comment, the project would remove the existing I-80 bike path from Red Top Road/SR12 West along I-80 to Green Valley Road and replace it with a bike path along the extension of Business Center Drive to SR12 West and Red Top Road/I-80 interchange. Segments of the Ridge Trail north and south of the project area could be connected through the project area following Business Center Drive to Green Valley Road as described in the comment letter.

**Response to Comment 14-7**
The pedestrian and bike improvements that would be constructed as part of the project are adequately described and shown in the Draft and Final EIR/EIS in Chapter 2 under the heading “Bicycle and Pedestrian Facilities” and on project maps (see Figures 2-2 and 2-3).
Letter 16

"Meier, Andrea J SPN" <Andrea.J.Meier@usace.army.mil>
10/14/2010 02:52 PM

To   "Howell Chan" <howell_chan@dot.ca.gov>
cc  "Ahmad Hashemi" <ahmad_hashemi@dot.ca.gov>,
     "Zachary Gifford" <zachary_gifford@dot.ca.gov>,
     "Durio, Hal E SPN contractor" <Hal.E.Durio@usace.army.mil>

Subject Comments on the I-80/I-680/SR-12 Interchange Project DEIR/DEIS

Dear Howell-


The purpose of the project is to reduce congestion; reduce cut-through traffic; encourage use of the HOV lanes and ridesharing; improve traffic safety; accommodate current and future truck traffic; and facilitate adequate enforcement by the CHP at the truck scales. The conclusion I made after reviewing the traffic modeling results is that both Alternative B and Alternative C would have minor to moderate improvements in vehicle hours of delay and vehicle speeds when projected out to 2035. Basically, Alternative B and Alternative C would maintain the level of service in the face of growth in the region. This indicates that even after implementing Alternative B or Alternative C congestion issues will remain a problem. Both Alternative B and Alternative C would have a beneficial impact to circulation for trucks entering and exiting the scales and improve the CHP's enforcement capabilities.

This following comment refers to the elevated structure in the Red Top Road interchange area proposed for Alternative C, Phase 1. I am not sure how you determined that the elevated structure over Green Valley fault should be designed to handle a minor displacement up to 1.9 feet. Is this an acceptable level of displacement given the maximum magnitude earthquake from the fault is 6.75? Also, what type of structure displacement (lateral, vertical, etc) does this refer to or does it refer to ground displacement? What does this requirement affect in the bridge design? Have any preliminary designs for the elevated structure been considered that take in to account slope, orientation in regards to the fault movement, and other factors? I think most of the answers can be found in the draft geotechnical reports referenced in the Geology/Soils/Seismic/Topography section. If possible, can I get a copy of these electronically?

Large groups of impacts to sensitive aquatic resources occur in two locations in the project corridor: the Green Valley Creek vicinity and Pennsylvania Avenue area south of State Route 12. Alternative C would impact less wetlands within or near the Green Valley Creek Corporate mitigation site. Alternative C would also have a slightly reduced footprint in the area south of State Route 12 at Pennsylvania Avenue, resulting less impacts to waters of the U.S. Although the overall impacts for both alternatives do not differ significantly for a project of this scale, Alternative C appears to provide a plan that is less damaging to the larger groupings of aquatic resources than Alternative B. Alternative C would also have fewer temporary impacts to waters of the U.S. than Alternative B (4.52 acres versus 8.06 acres).
Lastly, I would like to point out that there is a remnant from a cut-and-paste action on page 3.16-14. There is a sentence that refers to Sacramento Regional Transit, which is outside of the geographical scope of this DEIR/DEIS.

Please let me know if you have a timeframe of when you would like to schedule a LEPDA concurrence checkpoint meeting or would expect a LEDPA determination based on the review of the DEIR/DEIS.

Thank you for the opportunity to participate early on in the development of this document as a cooperating agency.

Sincerely,

Andrea Meier, Sr. Regulatory Project Manager San Francisco District, U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, California 94103-1398
P (415) 503-6798
F (415) 503-6090
andrea.j.meier@usace.army.mil
Comment Letter 15, Andrea Meier, Sr. Regulatory Project Manager, San Francisco District, U.S. Army Corps of Engineers, 10/14/10

Response to Comment 15-1
Comment noted. The analysis provided in the Draft EIR/EIS indicates that under both alternatives congestion would remain, but would be improved over the no build alternative. In addition to improving truck circulation and CHP enforcement capabilities, the project would also increase distances between interchanges, thereby reducing weaving and potential accidents.

Response to Comment 15-2
A fault rupture characterization study was prepared for the Green Valley and Cordelia fault zones. The report’s methodology and findings were reviewed and approved by the Department’s Geologists and a peer review was performed by the USGS and the California Geological Survey staff. The study identified fault trace locations and likely maximum vertical and horizontal displacements which the Department’s Division of Structures (DOS) concurred could be accommodated with the design of the respective elevated structures. A copy of the Fault Rupture Analysis has been provided to the USACE.

Response to Comment 15-3
Comment noted. While the differences in impact to aquatic resources between the two alternatives are minimal, Alternative C is slightly less damaging.

Response to Comment 15-4
The text in Section 3.1.6 of the Final EIR/EIS has been corrected to read Solano Regional Transit.
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Mr. Howell Chan
California Department of Transportation
111 Grand Avenue
P.O. Box 23660
Oakland, California 94623-0660

Subject: Draft Environmental Impact Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project in Solano County, California (EA 0A5300)

Dear Mr. Chan:

This is in response to the draft Environmental Impact Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project in Solano County, California. At issue are the potential adverse effects of the proposed project on the endangered Contra Costa goldfields (*Lasithesia conjugens*), designated critical habitat for the Contra Costa goldfields, threatened vernal pool fairy shrimp (*Branchinecta lynchii*), endangered vernal pool tadpole shrimp (*Lepidurus packardi*), endangered callippe silverspot butterfly (*Speyeria callippe callippe*), endangered showy Indian clover (*Trifolium amoenum*), threatened valley elderberry longhorn beetle (*Desmecerus californicus dimorphus*), threatened California red-legged frog (*Rana draytonii*), designated critical habitat for the California red-legged frog, threatened California tiger salamander (*Ambystoma californiense*), and wildlife. The U.S. Fish and Wildlife Service (Service) is issuing this letter under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and the Service’s Mitigation Policy of 1996. Our comments and recommendations are provided to assist you with your environmental review of the project and are not intended to preclude future comments from Service.

The comments and recommendations in this letter are based on: (1) Interstate 80/Interstate 680/State Route 12 Interchange Project Solano County, California District 4-SOL-80 (PM 10.8/17.0); SOL-680 (PM 10.0/13.1); SOL-SR 12 (PM 1.7/2.8); and SOL-SR-12 (PM LI.8/4.8) EA# 0A5300, Project # 04-0000-0150 Draft Environmental Impact Report/Environmental Impact Statement Volume One (DEIR) dated August 2010 that was prepared by the California Department of Transportation.
Appendix L. Responses to Comments

Mr. Howell Chan

Department of Transportation (Caltrans); (2) various telephone conversations and meetings between the Caltrans and the Service; (3) meetings between the Caltrans, Service, and Solano Transportation Authority (STA), and (4) other information available to the Service. Our comments and recommendations are limited to our review of the Preferred Alternative C in the DEIR, and hereafter in this letter will be referred to as the proposed project.

It is our understanding, the project encompasses the Interstate 680 and State Route 12 interchanges along Interstate 80 in the vicinity of the cities of Fairfield and Suisun City. The purpose of the project is to realign the interchanges and relieve traffic congestion throughout the area. The project covers approximately 13 miles of roadway including the three highways and relocation of the westbound Interstate 80 Cordelia Truck Scales, and modification and extension of existing surface streets. The project area is characterized by natural areas, such as streams, riparian corridors, vernal pools, wetlands, woodland, and open grassland communities, and also urban and agricultural land. The proposed project will include construction and the addition of infrastructure adjacent to existing urban areas, as well as in natural areas with listed species and significant value to wildlife.

Section 9 of the Act prohibits the take of the vernal pool fairy shrimp, vernal pool tadpole shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, California red-legged frog, California tiger salamander, and other federally listed species by any person subject to the jurisdiction of the United States. As defined in the Act, take is defined as “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harass means an intentional or negligent act or omission which creates the likelihood of injury to a listed animal by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to breeding, feeding, or sheltering.” “Harm has been further defined to include habitat destruction when it injures or kills a listed species by interfering with essential behavioral patterns, such as breeding, foraging, or resting. Thus, listed species are protected from such activities as collecting and hunting, but also from actions that result in their death or injury due to the damage or destruction of their habitat. The Act prohibits activities that “...remove and reduce to possession any listed plant from areas under Federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.” The term “person” is defined as “...an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal government, of any State, municipality, or political subdivision of a State, or any other entity subject to the jurisdiction of the United States.”

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of the project and a listed species is going to be adversely affected, then initiation of formal consultation between that agency and the Service pursuant to section 7 of the Act is required. Such consultation would result in a biological opinion addressing the anticipated effects of the project to the listed species and may authorize a limited level of incidental take. If a Federal agency is not involved in the project, and federally listed species may be taken as part of the project, then an incidental take
Mr. Howell Chan

permit pursuant to section 10(a)(1)(B) of the Act should be obtained. The Service may issue such a permit upon completion of a satisfactory conservation plan for the listed species that would be taken by the project. Since Caltrans has been delegated authority from the Federal Highways Administration, section 7 is the most appropriate process for this project.

Our specific comments and recommendations on the DEIR are as follows:

1. Avoidance, Minimization, and/or Mitigation Measures. We concur with the DEIR that the Interstate 80/Interstate 680/State Route 12 Interchange Project, as proposed, may affect the vernal pool fairy shrimp, vernal pool tadpole shrimp, callippe silverspot butterfly, valley elderberry longhorn beetle, and California red-legged frog. The proposed project likely will affect the critical habitat for the California red-legged frog and the Contra Costa goldfields. Throughout the Biology Section in the DEIR, it is stated that the implementation of avoidance, minimization, and/or mitigation measures will “ensure” that the proposed project will not result in adverse effects to the listed species. For the majority of the biological resources, the proposed measures may result in minimization of adverse effects, however, they are unlikely to ensure they will not occur, or eliminate the potential for them. Therefore, we recommend Caltrans obtain authorization for incidental take of the appropriate listed species via section 7 of the Act prior to certification of the final environmental document. If the Service authorizes incidental take for these listed animals, we recommend the Caltrans incorporate the Conservation Measures and Reasonable and Prudent Measures from the biological opinion into the appropriate permits and contracts.

2. Definition of Temporary Effects. We were unable to locate the definition of “temporary effects” in the DEIR. In regards to listed species, “temporary effect” is defined as habitat disturbed by the project that will be restored to baseline or higher habitat values within one year of the initial disturbance.

3. Definition of Action Area: Action area is defined at 50 CFR 402.02, as all areas to affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

4. Accessibility to Study Area during Assessment. Portions of the proposed project area are apparently located outside the existing transportation right-of-way. We were unable to find a discussion of the limitations of the studies and analyses in the DEIR. We request clarification as to whether there were areas that were inaccessible that necessitate investigation following eventual access, including protocol surveys. It is our understanding that some areas, such as the Mangels’ property, were accessible for a limited time, however, protocol surveys for the callippe silverspot, showy Indian clover, and other listed species in these areas currently are incomplete.

5. California Tiger Salamander. Based on the available information, we do not concur that the study is outside of the range of the California tiger salamander (Page 3.3-117 of the DEIR). We recommend that a site assessment and, if appropriate, a survey for this
Mr. Howell Chan

animal, be completed following the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* dated October 2003 that was prepared by the Service and the California Department of Fish and Game. Special attention should be given to the State Route 12 area east of Interstate Highway 80.

6. Showy Indian Clover. We recommend that a survey for the showy Indian clover be completed in the action area following *Protocols for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* dated September 23, 1996, that was prepared by the Sacramento Fish and Wildlife Office, and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* dated November 24, 2009, that was prepared by the California Department of Fish and Game. Survey results generally are valid for two (2) calendar years after the date of their completion. The written results of the protocol survey should be provided to the Service and the California Department of Fish and Game for review and approval.

7. Contra Costa Goldfields. The DEIR notes Contra Costa goldfields is an annual plant species whose germination can vary from year to year. Therefore, the amount of potential habitat that may harbor the seed bed for this endangered species within the action area is a more accurate method of analyzing the effects to Contra goldfields, rather than on the acres of critical habitat within the propose project or the number of individual plants found in a given year. In addition, we have concerns regarding the proposed mitigation of salvaging and transplanting individual Contra Costa goldfields. We recommend that the issue regarding the Contra Costa goldfields and its designated critical habitat be resolved prior to certification of the final environmental documents.

8. Callippe Silverspot Butterfly. Based on the discussion provided in the DEIR the effects analysis for the callippe silverspot butterfly this endangered animal is incomplete. Two populations of its food plant, Johnny jump-up (*Viola pedunculata*) were identified in 2004, but it is unclear if and when larval and adult butterfly surveys were completed. The survey report on this endangered animal described in the DEIR should be provided to the Service and the California Department of Fish and Game for review. The discussion in the DEIR is limited to the location of the larval food plant. During the early summer flight season, the adult females lay their eggs on the undersides of leaves and stems of Johnny jump-up or in the vicinity of these plants. Adult callippe silverspot butterflies frequently engage in hilltopping, which is a behavior where adults congregate on hilltops or ridgelines for the purpose of locating mates. Hilltops and ridges play an important role in callippe breeding behavior, and these geographic features are often located away from the larval foodplants. Losing hilltops and ridgelines from habitat areas likely decreases the ability of the animals to locate mates and likely reduces genetic diversity over the long-term. The proposed extension of Redtop Road bisects the two identified host plant populations. The potential effects associated with fragmenting these two host plant populations should be included in the analysis in the environmental documents. The 2004 surveys for the host plant described in the DEIR are outdated and an adequate
Mr. Howell Chan

survey should be completed prior to initiation of section 7 consultation. Survey results for
the larval foodplant generally are valid for two (2) calendar years after the date of their
completion. We also recommend that the final environmental document include an
adequate discussion of the effects of the loss or reduction in hilltop and ridgeline breeding
habitat.

9. Valley Elderberry Longhorn Beetle. The DEIR states that no exit holes were observed in
any elderberry stems measuring 1.0 inch or more in diameter at ground level within the
project area. However, Table 3.3.5-3 states that at least two elderberry shrubs (Sambucus
species) did have exit holes.

10. California Red-Legged Frog. The California red-legged frog should have been listed on
page 3.3-38 in the DEIR as one of the special-status animal species that have been
observed in the study area. On page 3.3-41 it states that preconstruction surveys for
western pond turtle (Actinemys marmorata) will be conducted immediately preceding
construction activities in the creeks and near ponds. Creeks and ponds near the
construction areas may also be habitat for California red-legged frogs. Information
should be provided on the location of aquatic features that could support turtles and red-
legged frogs.

On page 3.3-86 of the DEIR states that there were wetlands within the project area that
were too shallow to provide aquatic habitat for the California red-legged frog. We
assume that this is a reference to using aquatic habitat for breeding. Aquatic habitat that
is too shallow for breeding can still be utilized by frogs for foraging, resting, and other
essential behaviors. Annual rainfall in California is highly variable such that aquatic
habitat can be suitable for successful breeding in one year but not the next.

11. The DEIR stated that the extension of Redtop Road is likely to have substantial
effects on the California red-legged frog and critical habitat unit SOL-2. Although we
have not seen a design profile for the road, based on the large construction footprint we
assume that Caltrans/STA plan to create an even road profile by constructing a major road
cut through the Mangels’ property. This design will likely result in significant
fragmentation of the landscape and ecosystem functions. It appears that the majority of
the approximately 1.3-mile road segment from Business Center Drive to State Route 12
and then south to Interstate 80 will be bordered by road cuts that limit the potential for
movement of this listed amphibian or incorporation of culverts or passages across the
road. The large undercrossing that will be designed for cattle that was described in the
DEIR likely will provide an adequate safe crossing for a portion of the number of
California red-legged frogs that likely are moving to and from the breeding pond on the
Mengels’ property. However, limiting the crossing to one site likely will have adverse
effects on the continued ability of the primary constituent elements to function in this
portion of California red-legged frog critical habitat unit SOL-2. The Mengels’ pond
likely is one of the primary breeding sites for this critical habitat unit and we are
concerned that the project, as currently proposed, likely will isolate or reduce access to it.
In addition, State Route 12 represents an existing challenge for California red-legged
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frogs to access summer aestivation and forage habitat within Jameson Canyon Creek. A key conservation need for the Jameson Canyon Lower Napa River Core Recovery Area is to protect these dispersal corridors (Service 2002). Planned infrastructure changes to State Route 12 likely will exacerbate the barrier effects as the roadway is widened and median barriers are installed. State Route 12 through Jameson Canyon imperils the connectivity between critical habitat units SOL-1, SOL-2, and SOL-3.

12. The DEIR does not include specific information regarding how, where, and when habitat compensation for the California red-legged frog, vernal pool fairy shrimp, vernal pool tadpole shrimp will be achieved. We recommend that compensation be located as close to the action area as possible. All lands conserved should be permanently protected under a conservation easement, management plan, and an endowment based on the results of a property analysis record (PAR), all three of which have been approved by the Service and the California Department of Fish and Game prior to groundbreaking at the project.

13. The on-going loss and reduction in natural habitat for listed species and wildlife in this portion of Solano County and southern Napa County is of concern to the Service. The proposed project will reduce habitat in the Cordelia Hills for the California red-legged frog, and wildlife, including black-tailed deer (Odocoileus hemionus), bobcat (Lynx rufus), gray fox (Urocyon cinereoargenteus), and possibly American badger (Taxidea taxus) and also reduce or possibly eliminate their ability to move between the Coast Range. Much of the Cordelia Hills and associated Coast Range are undeveloped, however, the proposed Interstate 80/Interstate 680/State Route 12 Interchange Project, coupled with other planned and recently completed transportation and urban projects and conversion of grassland to vineyards will continue the reduction and loss of wildlife corridors, as well as fragmentation of natural habitat. The elimination of the availability of natural habitat likely will eliminate or decrease the ability of the California red-legged frog, Callippe silverspot butterfly, and wildlife, especially medium to large sized animals, to survive in the Cordelia Hills over the long term because they likely will be adversely affected by increased fragmentation caused by urban development and roadway construction and improvements, increased mortality from vehicles, predators, lack of cover, resting areas, forage, genetic problems, mortality resulting from predation by domestic cats (Felis domesticus) and dogs (Canis lupus familiaris), and other human-caused factors. To deal with these indirect and cumulative adverse effects from various projects and actions, and based on the Wildlife Crossing meeting that was held by Caltrans, California Department of Fish and Game, and the Service on October 13, 2010, this area of Solano and Napa counties may be the appropriate location to identify wildlife crossings for enhancement and protection.

14. Wildlife Fencing. The final environmental document should include a discussion of fencing that can be constructed at the project to prevent access to the highway by listed species and wildlife, as well as direct them to locations and structures where they may safely cross the roadway.
Appendix L. Responses to Comments

Mr. Howell Chan

Though the intent of wildlife culverts and crossings are to ensure safe passage of listed species and wildlife, they are also a benefit to human safety. Deer-automobile collisions, estimated by the Insurance Information Institute to occur at a rate of 500,000 per year, result in over $1 billion worth of vehicular damages, 29,000 human injuries, and 200 human fatalities each year (Cornell University 2007). Culverts large enough to accommodate species such as deer (Odocoileus species) and mountain lion, while maintaining substrates for the California red-legged frog and smaller wildlife, could reduce roadway collisions for a variety of species. For example, wildlife crossings of the Trans-Canada Highway in Canada’s Banff National Park have reduced wildlife road mortality by 80%, and as much as 96% for ungulates (Robbins 2003).

15. The construction of the roadway from Business Center Drive to Redtop Road likely will isolate a breeding pond for the California red-legged frog, and an important source of drinking water in this area for medium- and large-sized native mammals. We recommend that there be at least two large undercrossings in addition to the one currently planned for cattle, as well as appropriately designed culverts on this portion of the project that will allow access to this critical resource by these species.

We are interested in working with Caltrans and STA in the resolution of the issues regarding endangered species and wildlife. Please contact John Cleckler or Chris Nagano at the letterhead address, via electronic mail (John.Cleckler@fws.gov; Chris.Nagano@fws.gov), or at telephone 916/414-6600 if you have any questions regarding this response on the DEIR for the Interstate 80/Interstate 680/State Route 12 Interchange Project.

Sincerely,

[Signature]

Cay C. Nagano
Assistant Field Supervisor
Endangered Species Program

cc:
Scott Wilson, Greg Martinelli, Melissa Escaron, California Department of Fish and Game, Yountville, California
Jolanta Uchman, State Water Resources Control Board, Oakland, California
Janet Adams, Solano Transportation Authority, Suisun City, California
Zachary Gifford and Ahmad Hashemi, California Department of Transportation, Oakland, California
Lisa Webber, Stephanie Myers, and Shahira Ashkar, ICF Jones & Stokes, Sacramento, California
Mr. Howell Chan

Literature Cited


Comment Letter 16, Cay C. Goude, Assistant Field Supervisor, Endangered Species Program, United States Department of the Interior, Fish and Wildlife Service, 10/18/10

Response to Comment 16-1
Comment noted.

Response to Comment 16-2
Comment noted.

Response to Comment 16-3
The Department has obtained incidental take authorization for the following species: callippe silverspot butterfly, vernal pool fairy shrimp, vernal pool tapdole shrimp, valley elderberry longhorn beetle, and California red-legged frog. The Biological Opinion was issued on April 16, 2012.

Furthermore, the text has been revised in Section 3.3.4 of the Final EIR/EIS to remove the word “ensure” in this context. Instead the document now reads:

“Implementation of…will reduce the project’s effect on…”

Response to Comment 16-4
A definition of temporary impacts has been provided on the first page of Section 3.3 of the Final EIR/EIS.

Response to Comment 16-5
“Action area” is a term used in the Biological Assessment and Biological Opinion. It is concurrent with the Biological Study Area, which is defined in Section 3.3 of the Final EIR/EIS.

Response to Comment 16-6
A discussion of methods, explaining the study limitations for each study has been added to the Affected Environment sections of Section 3.3 in the Final EIR/EIS. This discussion also addresses whether preconstruction surveys are to be conducted or presence is to be inferred, as appropriate.

Response to Comment 16-7
The Department coordinated with USFWS and DFG to determine project effects on California tiger salamander. A discussion of California tiger salamander was added to the Final EIR/EIS as Section 3.3.5.7. The USFWS concurred with a "not likely to adversely affect" determination for CTS in the BO dated April 16, 2012.

Response to Comment 16-8
An avoidance, minimization and/or mitigation measures discussion has been added to the Final EIR/EIS as Section 3.3.5.2 that requires preconstruction surveys for showy Indian clover in locations of the project area where access is currently prohibited and submittal of survey results to the USFWS and DFG.
Response to Comment 16-9
The discussion of mitigation for Contra Costa Goldfields in Section 3.3 of the Final EIR/EIS has been revised to reflect impacts and mitigation based on potential habitat in the project area (seasonal wetland and alkali seasonal marsh) that could support a seed bed for the goldfields. In addition, mitigation for impacts under two alternatives (C and C, Phase 1) now includes modification of the project design to include a retaining wall that will avoid direct impacts on potential Contra Costa goldfield habitat south of SR 12E. The Biological Opinion (BO) was issued on April 16, 2012, and measures in the BO have been incorporated into the Final EIR/EIS, including the retaining wall south of SR 12E, fencing and monitoring requirements, seasonal construction timing, and compensation under Alternatives B and C.

Response to Comment 16-10
No surveys were conducted for callippe silverspot butterfly during the project because the habitat area was not accessible. The previous study (Monk & Associates 2004) that is cited also did not include larval and adult surveys. The Final EIR/EIS has been revised to clarify that biological staff did not have access to the property (Section 3.3.5.3). USFWS issued a BO on April 16, 2012 including a final determination of project effects on callippe silverspot butterfly and its habitat and appropriate conservation and mitigation measures. The effects include the temporary and permanent loss of hilltop and larval host plant habitat and ridgeline breeding habitat, as well as harm and harassment and habitat fragmentation. Measures to avoid and minimize and compensate for these effects in the BO have been incorporated into the Final EIR/EIS and include surveys to identify larval host plants; fencing, construction timing and method requirements; and restoration, revegetation, and compensation.

Response to Comment 16-11
The table is correct. The sentence stating that there are no exit holes has been deleted from the Final EIR/EIS.

Response to Comment 16-12
California red-legged frog has been added to the discussion in the Final EIR/EIS. The sentence in Section 3.3.4 of the Final EIR/EIS reads:

“Four of the 18 special-status wildlife species that could occur in the study area (California red-legged frog, burrowing owl, northern harrier, and western pond turtle) have been observed in the study area.”

Response to Comment 16-13
Though western pond turtle and CRLF do share some of the same habitats, these species are not discussed in the same section because CRLF is a threatened and endangered species and western pond turtle is not. In keeping with the outline of the document, CRLF habitat is addressed in Section 3.3.5, Threatened and Endangered Species. The same habitats, ponds and creeks, as well as upland habitat, were identified as suitable for both species. Text in Sections 3.3.4.1 and 3.3.5.6 of the FEIR/EIS has been changed to indicate shared habitat.
Response to Comment 16-14
The following sentence was added to the Affected Environment discussion in Section 3.3.5.6.

“Aquatic habitat includes creeks, ponds, marshes, and seasonal drainages that may not all be suitable for breeding but may be used for other essential activities including foraging, dispersing, and cover.”

Response to Comment 16-15
Comment noted.

The Department and STA will provide several design features that will facilitate habitat connectivity and passage for CRLF's dispersing west from the Mangels pond over the Business Center Drive Extension (BCDE) and out into designated critical habitat. These design features are listed below and have been added to the FEIR/EIS under the Avoidance, Minimization and/or Mitigation heading in Section 3.3.5.6.

- A large 12- by 8-foot concrete box culvert at Jameson Canyon Creek crossing of OW-8 located at I-80.
- A free span bridge over Jameson Canyon Creek at OW-8a, OW-8b, and the SPRR west of the Red Top Road intersection.
- An oversized culvert (60 inches in diameter) for OW-161, with a natural substrate (dirt or gravel) over which wildlife can travel. At least two large span style undercrossings along the BCDE in the vicinity of the seasonal drainage (OW-145) north of Mangels pond, and near W-187, suitable for cattle and farm vehicles to cross under the BCDE that connects the I-80/Red Top Road interchange to Business Center Drive.
- Approximately 2.5 miles of directional fencing (Figure 4-5) to guide CRLF to the undercrossing locations along the BCDE. The fencing will consist of hard plastic or a combination of permanent hardware cloth and flashing with a lip on it, or similar material and design. Directional fencing will be attached to the newly installed ROW fence on both sides of the new highway constructed between Business Center Drive and I-80 (Figure 4-5). The fence will be constructed along Business Center Drive, which is a local road off the state highway system, and its long-term maintenance will be the responsibility of STA.

Response to Comment 16-16
The Department and STA are consulting with the Solano Land Trust, property owners, and USFWS to identify mitigation/compensation areas as close as possible to the action area and devise a mitigation/compensation plan. The Department and STA agree that mitigation should be addressed prior to groundbreaking for the project. In some cases (for instance, vernal pool fairy shrimp), mitigation banking may be an option due to lack of suitable areas.

Response to Comment 16-17
See response to comment 16-15. The Department and STA are providing several undercrossings suitable for larger wildlife species as well as for CRLF.
Response to Comment 16-18
A measure to “Incorporate Design Features to Minimize Indirect Effects from New Road Construction that was developed in coordination with USFWS” has been added to the Final EIR/EIS in Section 3.3.5.6. This measure is intended to reduce road related mortality for wildlife species.

Response to Comment 16-19
Two large under-crossings and one culvert along the new road connecting Red Top Road and Business Center Drive are possible from an engineering perspective and will be incorporated into the project. The under-crossings will be approximately 14-feet high and will be able to accommodate cattle as well as wildlife. The culvert will lead to a drainage with CRLF. The fact that the road in this location is in a cut section precludes the use of additional culverts or tunnels for frogs. This information has been added to the Final EIR/EIS beginning in Section 3.3.5.6.
October 11, 2010

CALTRANS DISTRICT 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS 8-B
Oakland, CA 94623-0660


Dear Mr. Chan:

The City of Fairfield has reviewed the I-80/I-680/SR 12 Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR). Thank you for the opportunity to review and comment on this document.

The City strongly supports the proposed interchange project addressed in this combined environmental document. The City’s preferred alternative is Alternative C, which we believe will minimize negative impacts on the City of Fairfield and will help address the serious traffic congestion issues now facing the community.

Overall, the DEIS/EIR appears to adequately analyze and address the environmental issues associated with a project of this scope. The City does however have concerns about relocation of businesses in the City of Fairfield and of mitigation of noise impacts, as well as a few other corrections and comments which the City believes should be addressed in the final EIS/EIR. Please feel free to call Brian Miller at 707-428-7446 or myself at 707-428-7485 if you have any questions.

Sincerely,

[Signature]

GEORGE R. HICKS
Public Works Director

ELB:GRH:BKM:ccs

c: Fred Beiner, Erin Beavers, Wayne Lewis, Garland Wong, Brian Miller
City of Fairfield Comments: DEIS/EIR

2.7 Project Alternatives-Water Line Relocation

The DEIR/EIS states that the project will result in the relocation of water lines, including lines owned by the City of Fairfield. Due to the scope and complexity of the project, we realize that the extent of the relocations is not fully known at this time. The City is concerned about potential impacts to our customers related to these future relocations and asks that CALTRANS coordinate closely with the City and require that shutdowns and other service interruptions be disallowed where practical or minimized to the greatest extent practicable to avoid significant impacts to the City’s water customers.

3.1.4 Relocation and Property Impacts

CALTRANS assumes that any take less than 50% of a parcel’s area constitutes a “partial take” which may not in all cases require relocation. However, even partial takes can eliminate necessary parking, vehicle storage, outdoor storage, and access to the site. We would like confirmation that this issue will be addressed during right-of-way negotiations and that property and business owners will be fully compensated for impacts to their property resulting from the project.

The City is also concerned about the assumption that the availability of vacant commercial and industrial land in the vicinity of the project or Fairfield/Suisun more generally will reduce or eliminate impacts. Displaced businesses may not find relocation possible or easy in a manner which avoids serious disruption to the business or the local economy. The City of Fairfield requests that Fairfield businesses displaced by the project be relocated within the City of Fairfield to the extent feasible to reduce impacts to the local economy.

3.1.6-13 Transportation-Construction Impacts

We request that CALTRANS work closely with the City to minimize impacts on local streets during construction of the project in 2015. We are particularly concerned about traffic congestion from staging of the project and timing/location of street closures.

3.1.6-38 Transportation-Intersection Improvements

It is indicated that the project will include coordination with the City to design and construct intersection improvements. The City requests that CALTRANS work closely with the City during design and project design to ensure that impacts to local streets are minimized and that proposed local roadway and intersection improvements are feasible and meet City standards.
3.1.6 Transportation/Bicycle/Pedestrian Facilities

- **Lopes Road Bicycle Lanes.** The Class II Bicycle Lanes on Lopes Road between Cordelia Road and Gold Hill Road are intermittent. The segment nearest Cordelia Road lacks bicycle lanes entirely and it is unlikely the current right of way would permit bicycle lanes along the full length of Lopes Road.

- **Lopes Road Bicycle Path.** There is no completed bicycle path connecting Lopes Road and Watt Drive. There exists one short dead end segment of paved bicycle path connected to Lopes Road.

- **Transit Service Typo.** Page 204: Under “Transit Service” a typographical error references “Sacramento Regional Transit Service”.

- **LOS E Definition.** On Page 3.1.6-2 – Paragraph 3, Line 3, the text indicates that “LOS E...” means roadways are “at capacity” while Table 3.1.6-2 indicates that LOS E is defined as “approaching capacity”. Please clarify.

- **Pittman Road.** Page 3.1.6-4 – Existing (2004) Traffic Operations bullet point five should mention Pittman Road as well.

3.1.7 Visual and Aesthetic Resources

The DEIR/EIS should reference the Communities Gateways design concepts outlined in the adopted Fairfield Gateways Implementation Plan. The design concepts include tree planting plan, native plant palate, monument signage, and other elements designed to announce entry into the City of Fairfield. In addition, STA has undertaken a planning effort for the I80 corridor which addresses community design and gateway issues. CALTRANS should confirm that it will work with the City to incorporate design features identified in these planning documents as feasible.

3.1.7-15 Visual Mitigation Measures

The project will have impacts on landscaping and other visual features, with the specifics determined as project design is finalized. It is indicated that landscaping removed shall be replaced to ensure a less than significant visual character impact. CALTRANS should confirm that they will work with the City to minimize loss of visually significant landscaping with a focus on developing a visually attractive freeway corridor.

3.1.8 Air Quality

Page 421. The DEIS/EIR refers to “modify(ing) local zoning and develop(ing) guidelines to separate emissions from sensitive receptors” as one mechanism for minimizing impacts from MSAT and other pollutants. The City of Fairfield has entered into a development agreement with one major local property owner that restricts the City's ability to rezone property without the active consent of the property owner. In addition, much of the corridor is already developed with homes and businesses. The opportunity to implement zoning changes is therefore limited in portions of the project area.
3.2.7 Noise Impacts

The DEIS/EIR analysis uses federal Noise Abatement Criteria (NAC) standards to determine if there is a significant impact that must be mitigated. These standards differ from City of Fairfield noise standards. For residential uses, the Fairfield Noise Ordinance limits outdoor noise to 60 dB CNEL. This can be compared to the quite higher NAC standard of 67 dB. Given that existing noise levels exceed City of Fairfield standards and approach NAC standards in many cases, we are concerned that CALTRANS is not incorporating significant efforts to reduce noise impacts on City of Fairfield residential neighborhoods, even when said efforts would be more expensive that the Caltrans standard.

Many of the sites selected for noise studies by CALTRANS already exceed City of Fairfield standards for noise sensitive residential and motel/hotel (transient residential) land uses. Sites in Subarea H also exceed the CALTRANS NAC standard for residential land use.

While the height and cost of new noise barriers may be prohibitive, we are concerned that the project will not effectively address new noise impacts created by the facility. It is indicated that the feasibility of sound barriers is not clear at this time, yet no additional mitigation measures are provided to reduce any noise impact that exceeds significance criteria. The City requests that CALTRANS propose mechanisms to meet the City's noise ordinance standards.

Bay Ridge Trail

The DEIS/EIR should reference the planning underway for a Bay Area Ridge Trail alignments in the project area. While trails are not currently officially designated by the City of Fairfield, Solano County, or CALTRANS, Bay Area Ridge Trail connections across Highway 12 are currently under study by the Solano Transportation Authority.
Comment Letter 17, George R. Hicks, Public Works Director, City of Fairfield, Public Works Department, 10/11/10

Response to Comment 17-1
Comment noted.

Response to Comment 17-2
Comment noted. Please see responses to comments 17-4, 17-5, 17-16, 17-17, and 17-18.

Response to Comment 17-3
The Department is committed to working closely with the City to ensure that the disruption to water supply and other utilities is avoided or minimized. This commitment is noted in Sections 3.1.5 of the Draft EIR/EIS and 3.1.5 of the Final EIR/EIS. No changes were made to the Final EIR/EIS.

Response to Comment 17-4
The assumptions used in the Draft EIR/EIS regarding displacement of property were used to provide a consistent comparison between alternatives. During the final design and right-of-way negotiation process a more exhaustive assessment of specific impacts to each property including affects on parking, storage and access will be undertaken. Property owners will be compensated in full accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Response to Comment 17-5
The text in Section 3.1.4 of the Final EIR/EIS is amended as follows:

“To the extent feasible, Fairfield businesses displaced by the project will be relocated within the city of Fairfield. Because the proposed project would provide for the equitable relocation of occupants and businesses, and there are sufficient commercial opportunities and available land in the area for the relocation of businesses and industry, no avoidance, minimization, and/or mitigation measures would be required.”

Response to Comment 17-6
The Department is committed to working with the City to minimize impacts on local streets during construction. This commitment is reflected in the avoidance and minimization measure to prepare a Transportation Management Plan in Sections 3.1.5 and 3.1.6 of the Final EIR/EIS.

Response to Comment 17-7
The Department is committed to coordinating with the City of Fairfield, as well as other local agencies, in the design and construction of intersection improvements, as stated in Sections 3.1.6 of the Draft EIR/EIS and Section 3.1.6 of the Final EIR/EIS.

Response to Comment 17-8
The list of Class II Bicycle Lanes in Section 3.1.6 of the Final EIR/EIS has been updated to show that Lopes Road only has bicycle lanes between Gold Hill Road and Red Top Road.
**Response to Comment 17-9**
The connection between Lopes Road and Watt Drive is paved on the eastern half and unpaved on the western half; however, it is an off-street path that bicycles are permitted to use. Therefore, it is considered a Class I Multi-Use path, and the list of Class I Multi-Use Paths shown in Section 3.1.6 of the Draft and Final EIR/EIS will remain unchanged.

**Response to Comment 17-10**
The Final EIR/EIS has been corrected.

**Response to Comment 17-11**
LOS E, in the context of freeway analysis, represents at-capacity operations per Department standard practice. In the context of intersection analysis, LOS E represents operations as they approach capacity. The text in Section 3.1.6 of the Final EIR/EIS has been updated to note that the LOS E referred to is for the freeway analysis.

**Response to Comment 17-12**
Pittman Road has been added to the list of local roadways studied in Section 3.1.6 of the Final EIR/EIS.

**Response to Comment 17-13**
The avoidance, minimization and/or mitigation measures in Section 3.1.7 states that project features such as sound walls, overpass structures, landscaping, and other freeway-related structures will be consistent with the corridor aesthetic recommendations for the I-80 corridor being prepared by the STA. The recommendations being prepared by STA are being coordinated with the Cities along the corridor to address community design and gateway issues and therefore should address the commenter’s concern.

**Response to Comment 17-14**
The text in Section 3.1.7 of the Final EIR/EIS under “Replace landscaping as appropriate” is revised as follows:

“The Department will replace highway planting within the project limits per policy. The Department will work with the City of Fairfield during development of highway planting plans.”

**Response to Comment 17-15**
Comment noted. Comment refers to text in Section 3.2.6 of the Draft EIR/EIS and Final EIR/EIS.

This is one of several measures to reduce MSAT emissions that will be reviewed for their practicality and efficacy. The Department does not rely on land use changes alone to minimize air quality impacts.

**Response to Comment 17-16**
For federally funded projects such as the I-80/I-680/SR 12 Interchange Improvement project, noise studies are required to conform to traffic noise standards specified in 23CFR772 and the Department's protocol. Noise abatement criteria outlined in 23CFR772 and the Protocol were
used to identify traffic noise impacts and to determine whether noise abatement must be considered for noise sensitive locations within the project study area. The study conducted for the project conformed to these standards. In addition, potential noise impacts under CEQA criteria were also considered and discussed in Chapter 4, Section 4.1.2.10.

**Response to Comment 17-17**
Comment noted. Because the I-80/I-680/SR 12 Interchange Improvement project is federally funded with Department oversight it is required to conform to the noise analysis requirements and standards specified in 23CFR772 and the Department’s Protocol. The commenter is correct that in many cases traffic noise levels at noise sensitive locations studied in the Draft EIR/EIS either already exceed or would likely exceed outdoor noise limits specified in the City of Fairfield ordinance. Noise analyses were performed according to the Department’s protocol and standards specified in 23CFR772, as required for federally funded projects. In addition, potential noise impacts under CEQA criteria were also considered and discussed in Chapter 4, Section 4.1.2.10. 23CFR772 and the Department’s Protocol require that noise abatement be considered in areas where traffic noise impacts are predicted (i.e. where traffic noise levels approach or exceed noise abatement criteria specified in the Protocol). There are locations where the noise abatement criteria are predicted to be exceeded and noise abatement has been considered as required.

**Response to Comment 17-18**
For reasons discussed in response to comment 17-17 City noise standards are not applied to this project. However the Department did evaluate potential noise impacts under CEQA criteria in Chapter 4, Section 4.1.2.10. Under 23CFR772 and the Department’s Protocol, residential areas that contain areas of outdoor frequent human use (backyards) are eligible for noise abatement evaluation where traffic noise levels approach or exceed the NAC for a given land use (Activity Category B for residential receivers). Noise barriers are generally indicated as the standard and most effective form of noise abatement, because of the noise reduction that can be achieved for outdoor areas at multiple first- and second-row receivers. Other forms of noise abatement may be considered where severe noise impacts are predicted, such as noise sensitive locations where traffic noise levels exceed 75 dBA Leq. In such cases, residences may be considered for other forms of noise abatement such as improved building sound insulation on a case-by-case basis if barriers are not reasonable and feasible. However, noise abatement techniques such as soundproofing residences do not address exterior noise levels and may not result in a minimum 5 dB of noise reduction in all cases. Therefore noise insulation has not been evaluated as a form of noise abatement for this project. Federal funds may be used to construct soundwalls that are reasonable and feasible. Non-federal funds may be used for noise abatement when federal funds are restricted.

**Response to Comment 17-19**
The Bay Area Ridge Trail is addressed in the Draft and Final EIR/EIS in Appendix B on pages B-8 and B-9. The discussion of the Bay Area Ridge Trail has been updated in Sections 3.1.1.3 and B.1.1.1 of the Final EIR/EIS. Also see responses to comments 14-4 and 14-5.
JAEGER McHUGH & COMPANY, LLC
500 Washington Street, Suite 450, San Francisco 94111
Office: (415) 433-3281 Fax: (415) 433-6529

Letter 18

October 15, 2010

Caltrans, District 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS-813
Oakland, CA 94623-0660

Dear Mr. Chan,

Thank you for taking the time to arrange for us to meet with Caltrans, STA and consultant staff on Thursday October 7, 2010 at the Caltrans District 4 office. The purpose of the meeting was to review the Draft Environmental Impact Report/Environmental Impact Statement for the Interstate 80/Interstate 680/State Route 12 Interchange Project and register our strong objection to the choice of Alternative C as the preferred alternative.

As indicated in the meeting, 495, 497 & 499 Edison Court ("Edison Court"), a property that we manage on behalf of local individual investors, all of whom are retirees, will be dramatically and adversely impacted by the choice of Alternative C, a full realignment of I-680 through the heart of the Cordelia Industrial Park.

These local investors acquired Edison Court (along with Jaeger McHugh & Co) in 2007, due to its unique location between I-80, I-680 and SR 12. Their goal is to renovate and reposition it as a premier multi-tenant facility in Solano County that would ultimately provide stable income, long term value appreciation and a hedge against inflation. Toward that goal, management has already invested significant additional capital to renovate over 90% of the interiors of the uniquely high clear height suites as leases have rolled, replaced all three roofs with new Title 24 compliant roof systems under warranty, completely stripped to the backing rod and repainted all three buildings with high quality elastomeric paint, and added site amenities such as lighting and docks.

While we fully support progress in all its forms for the County and State, we cannot allow the ownership of Edison Court to be forced to prematurely sell its long-term investment at a loss in today’s uniquely depressed economic climate for the benefit of the State. The investors of Edison Court have an average age over seventy years. Each has worked hard over their lives and deserves their retirement. Many rely on their Edison Court investment for long-term security and income during their retirement years. A loss could result in a major and, in some cases, life threatening impact.

In reviewing the EIR report, we found several inconsistencies in the details that should have favored Alternative B as the preferred alternative. We fear that the EIR report is not
an accurate reflection of the true environmental impacts of both alternatives, and especially an accurate reflection of the amount of destruction that would result in the choice of Alternative C, a complete realignment of an interstate through an existing community that, and as a result, would surely be forced to bear the brunt of its impact. For example, the new interchange alignment is to be located within ten feet of the Angelo Rodriguez High School.

In reviewing the traffic impact of both alternatives, in Table S-1, by 2035, the ultimate impact of reduced Vehicle Hour Delays (VHD) for Phase 1 will be down 100% for am peak hours and 47% for pm peak hours in Alternative B, but only down 18% for am peak hours and 16% for pm peak hours in Alternative C. Further the duration of congestion is greater under Alternative C. Since Phase 1 of both alternatives represents the main difference between them (either expansion of an existing right of way or realignment to construct an entirely new interchange), we are not sure how the overall conclusion, as rated in the final measure of effectiveness (MOE) that relates to travel times and reducing traffic, can be rated as the same for both alternatives.

In reviewing the construction cost estimates, in Table 2-4, the estimate of final costs of Alternative B (a widening of the existing right of way) are actually greater than that of Alternative C (an acquisition of an entirely new right of way and construction of an entirely new interchange for realignment). In the detail of construction costs in Phase 1, the entirely new interchange in Alternative C results in only a $56 million additional construction charge over Alternative B. This cost estimate does not seem accurate, especially since the new interchange will be constructed directly over the Green Valley fault line (last earthquake of 6.7 magnitude).

Further, the additional right of way costs for the new interchange alignment of Alternative C results in only a $34 million additional charge over Alternative B. This cost estimate does not seem accurate. The new right of way acquisition for Alternative C will result in the complete acquisition and demolition of at least eleven fully developed industrial buildings in the park, many brand new or fully renovated structures, totaling at least 500,000 square feet, not to mention ‘partial’ land takings of fully developed sites, and ‘full’ or ‘partial’ takings of undeveloped land within the park or nearby. The right of way detail found in Appendix 1 – Property Impacts lists all parcels except one property as a ‘partial’ taking.

Finally, the lower overall costs for Alternative C are only realized in the final phase of the project (by 2035), principally in lower costs for roadway items. It is unclear what these savings would be as there is no detail. We do not believe the construction costs for the new interchange (as well as its entirely new right of way) have been accurately estimated. As a result, those faced with condemnation by Alternative C will very likely be forced to make up of the difference, by selling to the State at fire sale values when the hard costs of this new interchange ultimately come in higher than estimated, which they surely will.
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In our meeting on October 7th, our understanding is that Caltrans, STA staff and
consultants all reconfirmed that under Alternative C, Edison Court would be a ‘full’
taking, rather than ‘partial’ taking as listed in Appendix 1. In addition, it was confirmed
that we would receive advance notice of and have the opportunity to fully escort any
property appraiser appointed to appraise Edison Court, and that any appraisal done would
fully conform to MAI standards. We would also like the opportunity to review the draft
report to ensure that there are no material inaccuracies before the final is completed.

Due to the magnitude of Alternative C, the much greater community and property
damage and destruction that will be caused needlessly, when Alternative B is almost
assuredly less costly, easier to construct and more effective, and the disastrous effect that
Alternative C would almost certainly have to the existing community and the local
retirees who have invested to improve Edison Court as part of their safe retirement, we
implore Caltrans to wisely choose Alternative B as the preferred alternative.

Sincerely yours,

Michael Jaeger

Bob McHugh

Cc: R.A. Macpherson, Deputy District Director Right of Way, Caltrans District 4
Linda Emadzadeh, Air Space, Excess Land & LPA Services, Right of Way, Caltrans District 4
Nicholas Endrawos, Solano County Project Management, Caltrans District 4
Comment Letter 18, Michael Jaeger and Bob McHugh, Jaeger McHugh & Company, LLC, 10/15/10

Response to Comment 18-1
Comment noted.

Response to Comment 18-2
Cost estimates for anticipated right of way acquisition were provided by a real estate appraisal and acquisition firm with long-term experience on Department highway projects. The right of way costs were based on estimated values for general types of land uses from late 2008. They are estimates only, not the final determined value. Right of Way acquisition offers will be based on fair market value (FMV) appraisals conforming to the “Uniform Relocation Assistance and Real Property Acquisition Policy Act” (URAA).

The formal appraisal process will begin once the environmental clearance process is completed, the funds become available for right of way and construction and sufficient design development is completed to confirm right of way requirements. This could be several years after the environmental process is completed.

Response to Comment 18-3
The environmental document reflects the results of years of technical studies and analyses, and consultation with agencies. It is the goal of the Department to disclose to the public all environmental effects that could result from the project in compliance with state and federal environmental regulations. Section 2.4 of the Draft and Final EIR/EIS provides a comparison of the two build alternatives and Section 2.5 of the Final EIR/EIS “Identification of the Preferred Alternative” outlines the reasoning for the selection of Alternative C as the preferred alternative. Alternative C provides superior traffic operations and offers a more favorable construction phasing and staging opportunities. While the overall environmental impacts are similar, Alternative C would move the highway further from the Village of Cordelia Historic District, reducing impacts.

Both build alternatives and their fundable first phases were fully evaluated and their effects on the environment disclosed in the EIS/EIR. The environmental review process under NEPA and CEQA also involves consultation with a number of local, state and federal agencies including the U.S. EPA and USACE to determine the least environmentally damaging practicable alternative. On March 15, 2012 and April 10, 2012, the U.S. EPA and USACE respectively agreed that the LEDPA was Alternative C, Phase 1. This process is documented in Section 5.2 of the Final EIR/EIS.

Response to Comment 18-4
The realignment of Lopes Road has been changed since the Draft EIS/EIR to fully avoid any affect to the grounds of Rodriguez High School including the softball field. The Final EIR/EIS has been revised to reflect this change (See Appendix B, Resources Evaluated Relative to the Requirements of Section 4(f), page B-7).
Appendix L. Responses to Comments

Response to Comment 18-5
The benefits to vehicle-hours of delay and travel times for Alternatives B-1 and C-1 are different, as described in Table S-1 and Section 3.1.6 of the Draft and Final EIR/EIS, and as noted in the comment. The Draft EIR/EIS does not state an overall conclusion that the two alternatives are the same in reference to these specific measures. However, the Draft EIR/EIS does state that both alternatives produce benefits relative to the No Build alternative in many of the MOEs. (See Tables 3.1.6-6 through -9 in Section 3.1.6 of the Draft EIR/EIS and Tables 3.1.6-6 through 3.1.6-11 in the Final EIR/EIS.)

Response to Comment 18-6
Cost estimates for all alternatives were developed through an established and recognized methodology, which looks at a combination of right of way costs, utility relocation costs, construction costs, related support costs, and escalation. Cost estimates for anticipated right of way acquisition were provided by a real estate appraisal and acquisition firm with long-term experience on Department highway projects. Cost estimates for utility relocation costs were developed and discussed with utility owner for reasonableness. Cost estimates for roadway and construction costs were based on unit prices from summaries of recent Department construction bid openings. Project support costs were assumed to be a fixed percentage of construction costs (the same percentage for all alternatives). Escalation costs were the same for each alternative.

A Cost Estimate Certification form was prepared for the project estimates and approved by the Department. Subsequently FHWA staff reviewed the cost estimate prepared for Alternative C-1 and analyzed it in a probabilistic cost simulation program.

A fault rupture and displacement hazard study was performed for both the Green Valley and Cordelia fault zones to determine location of fault traces and potential magnitude of displacement during a seismic event. The report, accepted by the Department, was a factor in the preliminary bridge structure design and resultant cost estimate.

An alternative’s cost estimate is not a factor used in the selection of a project’s preferred alternative.

Response to Comment 18-7
Cost estimates for anticipated right of way acquisition were provided by a real estate appraisal and acquisition firm with long-term experience on Department highway projects. The right of way costs were based on estimated values for general types of land uses from late 2008. They are estimates only, not the final determined value. Right of Way acquisition offers will be based on fair market value (FMV) appraisals conforming to the “Uniform Relocation Assistance and Real Property Acquisition Policy Act” (URAA).

The formal appraisal process will begin once the environmental clearance process is completed, the funds become available for right of way and construction and sufficient design development is completed to confirm right of way requirements. This could be several years after the environmental process is completed.
Response to Comment 18-8
As noted in responses to comments 18-6 and 18-7, the costs are estimated using an established and recognized methodology and then reviewed by the Department. Further, costs for Alternative C-1 were tested by FHWA using their cost simulation program and determined to be acceptable.

Right of way acquisition costs will be independently appraised and will not be based on the estimates included in the environmental document. The right of way acquisition costs are independent of other project costs, including construction costs. This means that FMV for property as determined by a certified real estate appraiser will be offered regardless of other project costs.

Response to Comment 18-9
The Draft EIR/EIS in Tables 3.1.4-3 and 3.1.4-4 indicate that the business located at 494, 495 and 499 Edison Court would be displaced under Alternative C and Alternative C, Phase 1. Table 3.1.4-4 inaccurately indicated 499 Edison Court as 399 Edison Court. This has been corrected in the Final EIR/EIS.

Response to Comment 18-10
As noted in response to comment 18-7, the right of way acquisition process, including appraised values and final compensation are based on procedures included in the Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended which includes an opportunity for the owner to accompany the property appraiser in their field review of the subject property.

Response to Comment 18-11
As noted in response to comment 18-7, the right of way acquisition process, including appraised values and final compensation are based on procedures included in Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The details of the final appraisals will be provided to property owners for review.

Response to Comment 18-12
As discussed in response to comment 18-3, both build alternatives and their fundable first phases were fully evaluated and their effects on the environment disclosed in the EIS/EIR. The environmental review process under NEPA and CEQA also involves consultation with a number of local, state and federal agencies including the U.S. EPA and USACE to determine the least environmentally damaging practicable alternative. On March 15, 2012 and April 10, 2012, the U.S. EPA and USACE respectively agreed that the LEDPA was Alternative C, Phase 1. This process is documented in Section 5.2 of the Final EIR/EIS.
October 18, 2010

Howell Chan  
California Department of Transportation  
District 4  
P.O. Box 23660  
Oakland, California 94623-0660

Subject: Draft Environmental Impact Statement for the Interstate 80/Interstate 680/State Route 12 Interchange Project, Solano County, California (CEQ #20100342)

Dear Mr. Chan:

The Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. EPA has previously provided feedback on this project through the National Environmental Policy Act and Clean Water Action Section 404 Integration Process for Surface Transportation Projects Memorandum of Understanding (NEPA/404 MOU). EPA appreciates the efforts made by the project development team to coordinate through the NEPA/404 MOU process. Our detailed comments are enclosed.

EPA has rated this document EC-2, Environmental Concerns, Insufficient Information. Please see the enclosed Summary of EPA Rating Definitions for a description of our rating system. Our rating is based on concerns about impacts to wetlands and waters of the United States, air quality, environmental justice communities, and the transportation benefits of the project. We also have recommendations regarding historic resource consultation and agricultural land preservation.

We appreciate the opportunity to review this Draft Environmental Impact Statement and look forward to future coordination on the project. The next steps in the NEPA/404 MOU process are agreement on the 1) Least Environmentally Damaging Practicable Alternative (LEDPA), the only alternative that is permissible pursuant to the Clean Water Act Section 404(b)(1) Guidelines, and 2) the conceptual mitigation plan. We look forward to receiving future information from Caltrans regarding the LEDPA and conceptual mitigation plan. When the Final Environmental Impact Statement is released...
for public review, please send two hard copies to the address above (mail code: CED-2) at the same time the document is filed with our EPA Headquarters office.

If you have any questions, please contact me (415-947-4161; dunning.connell@epa.gov) or Carolyn Mulvihill, the lead reviewer for this project, at 415-947-3554 or mulvihill.carolyn@epa.gov.

Sincerely,

Connell Dunning, Transportation Team Supervisor
Environmental Review Office

Enclosures:
Summary of EPA Rating Definitions
EPA’s Detailed Comments

cc: Janet Adams, Solano Transportation Authority
    John Cleckler, U.S. Fish and Wildlife Service
    Jacqueline Pearson-Meyer, National Marine Fisheries Service
    Andrea Meier, U.S. Army Corps of Engineers
    Brendan Thompson, Regional Water Quality Control Board
    Melissa Escaron, California Department of Fish and Game
EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE
INTERSTATE 80/INTERSTATE 680/SR-12 INTERCHANGE PROJECT, OCTOBER 18, 2010

Wetlands and Other Waters of the United States

EPA has participated in this project as outlined in the National Environmental Policy Act
and Clean Water Action Section 404 Integration Process for Surface Transportation Projects
Memorandum of Understanding (NEPA/404 MOU). The next steps in the NEPA/404 MOU
process are agreement on the Least Environmentally Damaging Practicable Alternative (LEDPA)
and the conceptual mitigation plan (Checkpoint 3).

The following additional information is needed to support the NEPA/404 MOU process
and justify selection of the LEDPA and conceptual mitigation plan. This information should be
provided in the Final Environmental Impact Statement (FEIS) and in the future request for
agreement on the LEDPA and the conceptual mitigation plan.

Recommendations:

• Engage EPA, the Army Corps of Engineers, and other resource agencies in the
  identification of the LEDPA before publication of the FEIS, as outlined in the
  NEPA/404 MOU.

• Identify in the FEIS and in the LEDPA agreement request the length of time
  temporary fill in waters of the U.S. will be left in place. Temporal losses should be
  minimized to the maximum extent practicable (e.g. by placing and removing fill as
  construction progresses). Discuss in the FEIS how this will be achieved. Caltrans may
  be required to provide compensatory mitigation for “temporary” impacts if fill is left
  in place for an extended period of time.

• In the FEIS, consider indirect impacts to wetlands, including impacts from alteration
  of hydrology. Section 3.3.2.3 and 3.3.2.5 state that the project may result in indirect
  impacts caused by sedimentation or modification of hydrology of adjacent wetlands.
  However, the DEIS does not address the extent of these impacts or whether
  mitigation is necessary to offset indirect impacts. The FEIS should discuss whether
  any wetlands outside the roadway footprint will be permanently affected by indirect
  impacts from the proposed project. Avoidance, minimization, and mitigation of these
  impacts should also be discussed.

• Confirm that all compensatory mitigation for waters of the U.S. will comply with the
  EPA/U.S. Army Corps of Engineers 2008 Compensatory Mitigation Rule (40 CFR
  Part 230, Subpart J).

• Include in-kind compensation as a mitigation option in the FEIS and conceptual
  mitigation plan. Sections 3.3.2.1 and 3.3.2.2 of the DEIS present two options for
  compensatory mitigation of federally jurisdictional drainages: (1) purchase credits
  from an approved mitigation bank, or (2) compensate out of kind. Caltrans must also
consider in-kind compensation for all waters of the U.S., including drainages. Only if in-kind compensation is found to be impracticable can out-of-kind compensation be considered. Therefore, the FEIS, and conceptual mitigation plan, should add in-kind restoration or enhancement to the compensatory mitigation options for drainages.

- Section 3.3.2.3 identifies impacts to a previous compensatory mitigation area adjacent to Green Valley Creek. Since this area was intended to compensate for impacts of the Green Valley Corporate Park Project, Caltrans will need to mitigate for impacts to the Green Valley Creek mitigation area at a minimum 2:1 ratio. The actual ratios for all compensatory mitigation will be determined in consultation with the appropriate regulatory agencies. However, the FEIS should specifically identify the impacts to previous mitigation areas and the need to compensate for these impacts at a higher ratio.

- Section 3.3.2.3 identifies onsite restoration as an option for compensation of permanent impacts to perennial, alkali, and seasonal wetlands. The plans and performance standards presented in this section for onsite restoration may be inadequate. Mitigation plans, including ratios, type, monitoring, and performance standards, will need to be coordinated with and approved by the resource and regulatory agencies.

_Suisun Marsh_

Given the special designation of Suisun Marsh by the Suisun Marsh Protection Act and the status of the Suisun Marsh wetlands as impaired under the Clean Water Act Section 303(d), EPA is concerned about impacts to jurisdictional seasonal drainages and other areas in the Suisun Marsh Secondary Management Area. We encourage Caltrans to avoid and minimize impacts to this area to the maximum extent practicable and document those avoidance and minimization measures in the FEIS.

_Recommendation:

- Avoid and minimize impacts to the Suisun Marsh Secondary Management Area to the maximum extent practicable and document those avoidance and minimization measures in the FEIS. Identify the specific measures that will be taken to ensure no further impairments to Suisun Marsh.

_Air Quality_

_Affected Environment_

The Affected Environment section of the DEIS includes some unclear information. The prevailing winds are described as “easterly,” though they come from the west. It is also unclear from this section whether the air pollutant movement described is occurring from the Central
Appendix L. Responses to Comments

Valley to the Bay Area, or vice versa, and what the significance of this information is. The description of elevated pollutant levels should also be expanded to explain whether it refers to the project area or a regional area, and what is the directional source (e.g. from the west) of the pollutants.

Recommendation:

- Clarify the Affected Environment information in the FEIS, including prevailing winds, and air pollutant sources and movement. Provide additional context for how this information affects pollutant levels and receptors.

Project Conformity

The DEIS states that only Alternative C, Phase 1 is included in the 2035 Regional Transportation Plan and Transportation Improvement Program. If Alternative B is chosen as the preferred alternative in the FEIS, the alternative must be included in the Regional Transportation Plan and Transportation Improvement Program to meet conformity requirements.

The DEIS also states that the build alternatives are not considered Projects of Air Quality Concern (POAQC), which determines whether a PM_{2.5} hot spot analysis is required. The DEIS states that confirmation of this determination will be made during interagency consultation with the appropriate local, state, and federal agencies and the final analysis will be identified in the final environmental document.

EPA participated in the October 4, 2010 Air Quality Conformity Task Force meeting where this project was discussed. It is our understanding that the group did not reach a decision as to whether the project is a POAQC and that Caltrans/Solano Transportation Authority will be providing additional information to the group. This consultation process should be completed prior to publication of the FEIS. If the group determines that the project is a POAQC, then a PM_{2.5} hot spot analysis must be performed and the results included in the FEIS.

Recommendations:

- As stated in the DEIS, if Alternative B is chosen as the preferred alternative in the FEIS, the alternative will need to be included in the Regional Transportation Plan and Transportation Improvement Program to meet conformity requirements.

- Complete consultation with the Air Quality Conformity Task Force to determine whether the project is a POAQC. If so, perform a PM_{2.5} hot spot analysis and report the results of that analysis in the FEIS. Include proposed mitigation measures for any impacts determined in that analysis.

Mobile Source Air Toxics

EPA commends Caltrans for identifying the general locations of sensitive receptors in the project area and performing a quantitative mobile source air toxics (MSAT) emissions analysis.
of the project alternatives. We note that the DEIS acknowledges that all project alternatives may result in increased exposure to MSAT emissions in certain locations, but since dispersion modeling was not performed, it is not possible to determine where and at what level that exposure would occur.

The DEIS states that “available technical tools do not enable us to predict the project-specific health impacts of the [MSAT] emission changes associated with the project alternatives.” EPA, FHWA, and Caltrans have an ongoing dialogue regarding the technical tools available for analysis of MSAT impacts. Tools for evaluating project-specific health impacts from MSATs do exist and EPA would like to work with Caltrans to identify appropriate and available methods for evaluating MSAT impacts to include in the FEIS.

Recommendations:

- Technical tools are available to analyze the MSAT impacts of the various alternatives at specific locations and EPA recommends their use to determine impacts on sensitive receptors near the proposed project.

- Commit to the mitigation measures listed in the DEIS to reduce MSAT impacts.

Transportation Impacts

The Traffic and Transportation chapter contains certain data that indicates that Alternative C, Phase 1 may not achieve the goal of accommodating current and future traffic volumes and other resulting benefits that are stated in the Purpose and Need of the project. Table 3.1.6-6 contains System Wide Measures of Effectiveness for Construction-Year 2015, A.M. Peak Hour Conditions, and indicates that Travel Times and Maximum Individual Delay would be higher for the Westbound I-80 to Southbound I-680 travel direction with Alternative C, Phase 1 than with the No-Build alternative. Table 3.1.6-9 contains System Wide Measures of Effectiveness for Design-Year 2035, P.M. Peak Hour Conditions, and indicates that Travel Times and Maximum Individual Delay would be higher for all listed travel directions with Alternative C, Phase 1 than with the No-Build alternative.

Considering the lack of identified funding for the complete Alternative C, EPA is concerned with Alternative C, Phase 1’s apparent degradation of travel times when compared to the No-Build alternative. If Alternative C, Phase 1 is chosen as the Preferred Alternative in the FEIS, Caltrans must provide evidence that this alternative would fulfill the project’s Purpose and Need if Phase 2 were not to be built.

Recommendations:

- If Alternative C, Phase 1 is chosen as the Preferred Alternative, the FEIS, as well as the request for agreement on the preliminary LEDPA, must justify that this alternative would fulfill the Purpose and Need, when compared to the No-Build Alternative. The justification should include a discussion of the modeling results and
the transportation costs and benefits of Alternative C, Phase 1 relative to the No-
Build and Alternative B, Phase 1. This is important since the DEIS states that
Alternative C, Phase 1 would increase travel times and delay relative to the No-Build
Alternative. The discussion should also address how the modeled increases in travel
times could be decreased through design measures or through Transportation
Demand Management or Transportation System Management.

- If Alternative C, Phase 1 cannot be proven to fulfill the Purpose and Need of the
  project, Alternative B, Phase 1, or other alternatives, must be considered.

Project Alternatives

Chapter 2 of the DEIS states “Under both alternatives, I-80 and I-680 would be widened.
I-80 would be widened to a minimum of ten lanes...and a maximum of 19 lanes east of the
interchange with I-680...I-680 would be widened to a minimum of six lanes...and a maximum
of eight lanes.” It is unclear from this project description whether the footprint of the project has
been determined (e.g. that I-80 will be 10 lanes in certain areas and up to 19 lanes in other areas
along the corridor) or whether the number of lanes is still being determined. The project
description in the FEIS should be clarified to specify the number of lanes that will be constructed
at locations within the project area, and to clarify that the subsequent impact analyses reflect the
impacts of that footprint.

Recommendation:

- Clarify in the FEIS the number of lanes that will be constructed at locations within
  the project area and base the impact analysis on that footprint. Update the Affected
  Environment section of the FEIS, if necessary, to ensure that the impact analysis is
  representative of the widest footprint that may be built.

Environmental Justice

The Environmental Justice Section of the DEIS (3.1.4.3) identifies Census Tract Block
Groups in the project area that would be considered environmental justice communities.
However, the DEIS only considers the displacement impacts on those communities. The
environmental justice analysis should consider all project impacts on affected communities. As
stated in the DOT Order on Environmental Justice:

"Adverse effects means the totality of significant individual or cumulative human health or
environmental effects, including interrelated social and economic effects, which may include, but
are not limited to: bodily impairment, infertility, illness or death; air, noise, and water pollution
and soil contamination; destruction or disruption of man-made or natural resources; destruction
or diminution of aesthetic values; destruction or disruption of community cohesion or a
community's economic vitality; destruction or disruption of the availability of public and private
facilities and services; vibration; adverse employment effects; displacement of persons,"
businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of DOT programs, policies, or activities. \(^1\)

The FEIS should include an environmental justice analysis that considers all impacts on environmental justice communities. EPA notes in particular that the majority of the residences affected by noise impacts are located in an environmental justice community. A noise barrier to mitigate impacts at this location was considered feasible, but not cost-reasonable, according to the DEIS analysis.

**Recommendations:**

- Perform an environmental justice analysis that considers all potential project impacts on environmental justice communities.

- Document impacts and proposed mitigation in the FEIS.

- If mitigation of noise impacts to environmental justice communities is deemed not “cost-reasonable,” justify this determination in terms of the relation of mitigation cost to project cost. Provide information on how Caltrans determined the base cost-per-residence allowance of $31,000. Also provide the context for this determination by providing examples of other Caltrans projects where sound barriers were incorporated. Discuss any variation that exists in the determination of the threshold for the cost-per-residence for multiple Caltrans projects (in District 4 and outside District 4) and what factors deem the mitigation for this project not cost-effective if mitigation at similar cost has been implemented in other projects.

**Historic Resources and Parkland**

The DEIS states that coordination efforts between Caltrans and the State Historic Preservation Officer (SHPO) are currently underway regarding the SHPO’s concurrence on the finding of no adverse effect on the identified historic resources. EPA recommends that consultation be completed and that a Programmatic Agreement (PA) be executed prior to publication of the FEIS and any mitigation commitments be documented in the Record of Decision (ROD). We also recommend that Caltrans receive concurrence from the City of Fairfield on the finding of de minimis impacts under Section 4(f) on the Fairfield Linear Park prior to publication of the FEIS.

**Recommendations:**

- Complete consultation with the SHPO and execute a PA prior to publication of the FEIS. Commit to any mitigation measures in the ROD.

\(^1\) Department of Transportation (DOT) Order to Address Environmental Justice in Minority Populations and Low-Income Populations, 1997.
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Agricultural Land

EPA commends Caltrans on its commitment to mitigate loss of land classified as “Prime Farmland” and land under agricultural conservation easements by obtaining conservation easements to preserve a corresponding acreage of Prime Farmland. As stated in the DEIS, the City of Fairfield General Plan Land Use Element includes the program, “Where land is identified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland…and is proposed for conversion to urban uses, the city shall arrange for preservation of an equal amount of the same class of farmland within the area.” Given this program, the goals of other local plans, and the importance of agriculture to the economy and character of the area, EPA recommends that Caltrans work with the local jurisdictions and other groups such as the Solano County Land Trust, to mitigate for losses of all farmland classified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

Recommendation:

* In addition to compensation for Prime Farmland and land under agricultural conservation easement, compensate for impacts to Farmland of Statewide Importance and Unique Farmland through similar preservation efforts. Include in the FEIS and ROD the specific measures that will be taken to compensate for these impacts.

Climate Change

While the federal government has not yet released final guidance on greenhouse gas analysis, a discussion of potential climate change impacts of the project, and on the project, should be included in NEPA documents. The Council on Environmental Quality released draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions \(^2\) in February 2010.

Recommendation:

* Include the climate change discussion in the main body of the FEIS.

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency’s (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)
The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identification of additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment
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Comment Letter 19, Connell Dunning, Transportation Team Supervisor, Environmental Review Office, United States Environmental Protection Agency, 10/18/10

Response to Comment 19-1
Per the NEPA/Section 404 MOU, coordination with federal and state agencies, and concurrence or agreement on the LEDPA is required before proceeding with the approval of the final environmental document and the Record of Decision. The Department has engaged the U.S. EPA, Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game and the Regional Water Quality Control Board, and NOAA’s National Marine Fisheries Service regarding the identification of the LEDPA. Section 5.2 of this Final EIR/EIS discusses the consultation and identification of Alternative C, Phase 1 as the LEDPA. LEDPA concurrence has been obtained from these agencies and included in Appendix H.

Response to Comment 19-2
Temporary fill in the form of coffer dams would be left in waters of the U.S. for less than one year in all cases. Impacts that persist for less than one year are considered temporary by the USACE. Construction at Green Valley Creek will take multiple seasons, but coffer dams will not be left in place during the wet season. The definition of temporary impact has been added to the impact discussions in Sections 3.3.2.1, 3.3.2.2, and 3.3.2.3 of the Final EIR/EIS.

Response to Comment 19-3
The text has been revised to include a discussion of indirect impacts on wetlands in Sections 3.3.2.3, 3.3.2.4, and 3.3.2.5. Mitigation is necessary to avoid these potential indirect impacts, therefore, the avoidance and minimization measure in Section 3.3.2.1 (Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands) was revised to include exclusion fencing and silt fencing during construction. Because the avoidance and minimization measures will prevent the indirect impacts, no additional compensatory mitigation for indirect impacts on wetlands is included in the Final EIR/EIS.

Response to Comment 19-4
All mitigation for waters of the US will be developed in coordination with the USACE and will comply with the Compensatory Mitigation Rule. This language has been added to the required components in the mitigation measures for riparian and wetland compensation in Sections 3.3.2 and 3.3.2 of the Final EIR/EIS.

Response to Comment 19-5
For impacts to perennial streams, the RWQCB will require riparian mitigation. In-kind compensation is included for all waters of the US except for seasonal and perennial drainages, which are mitigated out-of-kind with riparian habitat. Text has been revised in Sections 3.3.2 and 3.3.2 of the Final EIR/EIS to reflect this.

Response to Comment 19-6
The compensatory wetland mitigation site located near Green Valley Creek would be affected under Alternative B. The wetland mitigation measure in Section 3.3.2 of the Final EIR/EIS has been revised as indicated below, to specify minimum 2:1 for impacts on this particular feature.
“In compliance with the CWA Section 404 permit and WDRs, the permanent loss (fill) of wetlands, including perennial marsh, alkali seasonal marsh, and seasonal wetland, will be compensated for and measures will be taken to ensure no net loss of habitat functions. Loss of wetlands will be compensated for at a minimum ratio of 1:1 (one acre of mitigation for every one acre filled), except for any loss of wetlands in W-45e-1 that are a mitigation area and will require mitigation at a minimum ratio of 2:1.”

**Response to Comment 19-7**
Compensation for permanent loss of wetlands may be a combination of mitigation bank credits and restoration/creation of habitat. The portion of the measure addressing compensation through restoration or creation of habitat in Section 3.3.2.3 “Compensate for Permanent Loss of Wetlands” of the Final EIR/EIS has been revised to indicate that mitigation will occur near the project site, as opposed to on-site. There are currently no plans for on-site creation or enhancement of wetlands, because the areas available for mitigation are small and isolated. Text has been added to the measure to indicate that the wetland restoration plan would be developed in coordination with the RWQCB and USACE. Details of plans and performance standards will be developed in close coordination with the USACE and RWQCB as part of the NEPA/Section 404 MOU process.

**Response to Comment 19-8**
Efforts to avoid and minimize impact to the Suisun Marsh Secondary Management Area primarily included engineering the interchange to occupy the smallest footprint possible. During the initial and secondary screening process a number of alternative interchange configurations were reviewed and compared to determine which configurations provided safe and adequate traffic operations for projected traffic, while minimizing impacts to sensitive habitat. The most practical solution, and the one with the least impact to sensitive areas, is to improve existing facilities rather than constructing improvements on new alignments. During final design, more detailed foundation analysis and design refinement will be performed to identify opportunities (such as retaining walls, reduced roadway profiles, etc.) that would reduce impacts to sensitive areas. Additionally, specific language regarding the Suisun Marsh Secondary Management Area has been added to the avoidance and minimization pertaining to protecting water quality and preventing erosion and sedimentation in drainages and wetlands in Section 3.3.2 of the Final EIR/EIS.

**Response to Comment 19-9**
The text in Section 3.2.6 of the Final EIR/EIS has been revised to clarify the wind directions and their connection to pollutant levels and receptor as follows:

“Within the region, the prevailing winds are from the west. During the summer and fall months, high offshore pressure systems and low pressure in the Central Valley force marine air to flow eastward through the Carquinez Strait. However, atmospheric conditions occasionally cause the winds to shift direction and flow from the east. These easterly winds usually contain more pollutants from the Sacramento and San Joaquin Valleys in the east than the cleaner marine air from the west. During summer and fall months, this condition can result in elevated pollutant levels as pollutants move through the strait into the central Bay Area from surrounding areas.”
Response to Comment 19-10
Comment noted. The description for Alternative C is the project that is described in the RTP and the TIP. Since Alternative C, Phase 1 was identified as the preferred alternative, revisions of the RTP or TIP are not needed.

Response to Comment 19-11
Comment noted. Interagency consultation (IAC) has been initiated and a determination was made that the project is potentially a POAQC. A qualitative PM2.5 hot spot assessment was conducted, and resulted in the conclusion that the project would not result in violations of the federal PM2.5 or PM10 air quality standards. This determination was confirmed by appropriate agencies during IAC on December 8, 2010. The FHWA concurrence letter was signed on April 13, 2011. The Final EIR/EIS document has been updated to convey this information (Section 3.2.6).

Response to Comment 19-12
The language in question is taken directly from FHWA’s prototype language found in their 2006 MSAT guidance regarding incomplete or unavailable information for compliance with 40 CFR 1502.22. The language in question has been replaced in Section 3.2.6 of the Final EIR/EIS with updated language from the FHWA’s 2009 MSAT guidance. Based on FHWA’s 2009 MSAT guidance, the project was identified as being a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions was conducted. The quantitative analysis indicated that project implementation would lead to decreases in MSAT emissions relative to existing conditions and would result in increases in some MSAT emissions relative to future no project conditions. However, an analysis of the project’s MSAT impacts on sensitive receptors is not conducted because, as indicated in the Final EIR/EIS, there are no established criteria for determining when MSAT emissions should be considered a significant issue given the EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process and the emerging state of the science and of project-level analysis techniques. To the extent that it is applicable or feasible for the project and through coordination with the project development team, Mitigation Measure AQ-2 will help to reduce MSAT emissions and air quality impacts associated with the build alternatives.

Response to Comment 19-13
The Department is committed to implement the mitigation measures to reduce MSAT emissions identified in the Draft and Final EIR/EIS in Section 3.2.6.

Response to Comment 19-14
The comment refers to the performance of Alternative C Phase 1 relative to the No Build alternative, in both 2015 and 2035. The specific comment referring to Table 3.1.6-6 of the Draft EIR/EIS, which summarizes 2015 AM peak hour conditions, highlights the only two MOEs in that table that are worse under Alternative C, Phase 1 than the No Build case, and the differences are minor. The difference in travel times for WB I-80 to SB I-680 is 15 seconds, or 2.5 percent, and the difference in maximum individual delay is also 15 seconds for that route. All other AM peak hour MOEs improve relative to the No Build Alternative.

The differences presented in Table 3.1.6-9 of the Draft EIR/EIS, however, are more substantial. This table summarizes for the 2035 PM Peak Hour, No Build, Alternative B Phase 1, and
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Alternative C Phase 1 cases. While many of the system-wide MOEs presented in this table (and all of the MOEs presented in Table 3.1.6-8 for the AM peak hour) improve over the No Build case, the peak direction travel times are identified as longer than the No Build case for Alternative C Phase 1. This issue was more closely examined after the Draft EIR/EIS was published, and it was found that the longer travel times were the result of the extensive upstream queues in the No Build case not being included in the calculation. This happened because the study area limits were not set far enough upstream to capture the full extent of queuing for the 2035, PM peak hour, peak direction cases, for the No Build, Alternative B Phase 1, and Alternative C Phase 1 cases. When the full queue length is included, the revised travel times are as shown in Table 3.1.6-10 in the Final EIR/EIS. Note that only the information in the shaded area has been revised, as the upstream queuing effect was only an issue for these cases. The revised comparison shows that Alternative C, Phase 1 does in fact deliver improved travel times relative to the No Build case.

The information in Table 3.1.6-10, along with more explanatory text, has been included in a revision to the Traffic Operations Report (TOR) in Section 3.1.6 of the Final EIR/EIS.

The maximum individual delays were also revised based on the corrected analysis, and are now shown to improve over the No Build alternative, as shown in Table 3.1.6-9 in the Final EIR/EIS. This table is also being included in the revised TOR.

Based on the revised information, it is clear that Alternative C Phase 1 provides benefits in all MOE areas, relative to the No Build alternative and can meet project objectives if future phases are delayed or not built.

Response to Comment 19-15
See response to comment 19-14. EPA has concurred that Alternative C, Phase 1 is the preliminary LEDPA, see Appendix H.

Response to Comment 19-16
See response to comment 19-14.

Response to Comment 19-17
The project description is intended to provide an overview to make the project understandable to the public. The lane widening has been determined, but will vary slightly between alternatives. The width of the highway would increase as one approached the interchange and decrease after it had passed. A list of lane additions between points for each alternative would be confusing. The discussion in Section 2.3.1 of the Final EIR/EIS has been revised as indicated below to clarify where the most and least lane widening will occur. (Bold indicates added text.)

“Under both alternatives, I-80 and I-680 would be widened. I-80 would be widened to a minimum of ten lanes (four mixed-flow lanes and one HOV lane in each direction) near the eastern and western ends of the project and a maximum of 19 lanes extending east of the interchange with I-680 to approximately the westbound truck scales (Figures 2-2 and 2-3). I-680 would be widened to a minimum of six lanes (two mixed-flow lanes and one HOV lane in each direction) and a maximum of eight lanes (three mixed-flow lanes and one HOV lane in each direction) north of the Red Top Road interchange.”
The study area for all resources includes the most extensive footprint and all areas that may be affected by the project.

Response to Comment 19-18
The scope of the I-80/I-680/SR12 Interchange Improvement project is very large and includes transportation improvements across many communities, both environmental justice communities and non-environmental justice communities. As documented in the Draft EIR/EIS the impacts of the build alternatives are also spread across a large area, with some of the most substantial effects, such as business displacement occurring in areas that are not environmental justice communities. In addition, the benefits provided by the project such as reduced congestion, reduced cut-through traffic on local streets, encouraged use of HOV lanes and ridesharing, and improved safety would be equally realized by both environmental justice communities and non-environmental justice communities.

With specific regard to noise impacts on environmental justice communities, the Draft EIR/EIS identified that the build alternatives would result in noise impacts to residents along the north side of State Route 12 East. This area is already protected from noise generated on State Route 12 by existing sound walls (H-1 and H-2 in the EIR/EIS). Four monitored locations on Marquette Way (H01, H06, H09 and H11) would experience noise increases that would approach or exceed NAC under both full build alternatives. This represents 25 residences that would experience future noise levels ranging from 62 to 69 dBA Leq, with the existing sound walls in place. Therefore, abatement was considered. The Draft EIR/EIS evaluated raising the height and extending the sound walls to provide additional noise reduction. Noise barrier H-2 is ten feet high. Raising H-2 to a height of 16 feet was found not to benefit any receivers in that it did not reduce noise by 5dB, and therefore, raising the barrier was not feasible. Noise barrier H-1 is 8 feet high. Analysis was conducted to determine if raising the height of the existing wall up to 14 or 16 feet would result in an additional 5 dB of noise reduction. Since 5 dB of noise reduction could be achieved by raising the height of the barrier to 14 feet or 16 feet, the barrier was determined to be feasible. However, the cost was found to exceed the Caltrans cost reasonableness allowance for this area. The reasonableness allowance per residence was calculated using the procedure defined in the 2006 Caltrans Protocol.

The Department has determined that the barriers studied in this analysis are not considered reasonable from a cost perspective. The public input process has been completed and the final determination is that none of the barriers evaluated will be included in the project (see Section 3.2.7 of the Final EIR/EIS).

Response to Comment 19-19
The cost of the project is not a factor in determining reasonableness of noise abatement. As stated in the 2006 protocol, the determination of the reasonableness of noise abatement is more subjective than the determination of its feasibility. For a noise barrier to be 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 base allowance of $31,000 is based on the published Department Construction Price Index and is adjusted annually. The total allowance per residence is determined by adding several adjustments to the base allowance based on several factors identified in the Protocol. Other factors that affect reasonableness include the following: absolute noise levels, existing versus design-year noise levels, achievable noise reduction, date
of development along the highway, life cycle of noise abatement measures, and environmental impacts of abatement construction. Additional factors to consider include opinions of affected residents; input from the public and public agencies; and social, economic, legal, and technological factors.

Response to Comment 19-20
The Department proposed that identification and evaluation of archaeological properties within the APE, and any resolution of adverse effects on those properties, be provided for in a programmatic agreement specific to the undertaking. As an attachment to the PA, SHPO further states that a Historic Property Treatment Plan (HPTP) will be developed which will address detailed protocol for identification, evaluation, and treatment of historic properties. The need for monitoring and treatment of unknown properties will also be addressed in the HPTP. SHPO concurred with this course of action (in addition to eligibility of several built resources and two historic districts) on March 20, 2010. The PA was approved by SHPO and Department HQ on November 7, 2011 and by the Department District 04 Director on November 8, 2011.

Response to Comment 19-21
The City of Fairfield has provided a letter, dated November 22, 2010, indicating the proposed project will have a minimal impact upon the Fairfield Linear Park. Please see Appendix B of the Final EIR/EIS.

Response to Comment 19-22
According to the Solano County General Plan, Figure AG-1, all farmlands affected by the project are either classified as Prime Farmlands or grazing lands. Grazing lands within the project area are not classified as Farmlands of Statewide Importance or Unique Farmlands. Therefore no farmlands of Statewide Importance or Unique Farmlands would be adversely affected by the project.

Response to Comment 19-23
Climate change is briefly discussed and in Section 3.2.6 Air Quality. This section refers the reader to Chapter 4 (CEQA) for a more in depth analysis of climate change impact analysis. Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the California Environmental Quality Act (CEQA) chapter of this environmental document and may be used to inform the National Environmental Policy Act (NEPA) decision.
Letter 20

Fairfield-Suisun Unified School District

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October 26, 2010

Howell Chan
Environmental Analysis Branch Chief
California Department of Transportation, Dist. 04
P.O. Box 23660, MS-8B
Oakland, California 94623-0600

SUBJECT: Interstate 80/Interstate 680/State Route 12 Interchange Project
(#04-0000-0150)

Dear Mr. Chan:

We appreciate the opportunity to provide Fairfield-Suisun Unified School District's ("District") comments on the Draft Environmental Impact Report/Environmental Impact Statement ("EIR/EIS") for the Interstate 80/Interstate 680/State Route 12 Interchange Project ("Project"). Our review of the Draft Project EIR/EIS reveals the need for further analyses and mitigation in the impact areas of:

1) traffic,
2) student pedestrian safety,
3) emergency access,
4) air quality,
5) noise,
6) land use, and
7) Section 4(f) concerning the Angelo Rodriguez High School ("Rodriguez HS") that is within the Western Section of the Project on Red Top Road between I-80 and I-680.

Although the District comments the prospect of improved highway capacity and flow, the potential impacts upon Rodriguez HS from Alternative B; Alternative C; and Alternative C, Phase 1 have not been adequately analyzed or mitigated. As a result, the District requests further analysis and accompanying mitigation as set forth more fully below. Additionally, the proposed taking of Green Valley Middle School site under Alternative B and Alternative C, Phase 1 will impair the District's ability to sell, lease, or exchange the site as a means to obtain a new elementary/middle school site.

As you know, the District is entrusted with providing its students with a high quality education, which includes ensuring that its students are safe and are not significantly or cumulatively impacted by development whether private or public. The District EIR/EIS acknowledges that the District instructs children at two public schools within or near the Project area: (1) Rodriguez HS and (2) Nelda Mundy Elementary School. It also acknowledges the presence of the former Green Valley Middle School within the Project area. Alternative B's proximity to and Alternatives C and C, Phase 1's taking of a portion of Rodriguez HS raise the concern that construction and operation of the Project will adversely affect the students' safety, health, and learning environment more than as disclosed in the Draft EIR/EIS. The full range of potential impacts to Rodriguez HS should be adequately evaluated and mitigated to protect our students, parents, faculty, and staff.

"Our Mission is to Provide a Quality Educational System that Assures Opportunities for Every Student to Learn and Meet the Challenges of the Future"
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Interstate 80/Interstate 680/State Route 12 Interchange Project
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This letter is technical in nature due to the subject matter. The District wishes to emphasize that its comments are meant to ensure that the California Department of Transportation ("Caltrans") and the Federal Transit Administration ("FTA") fully evaluate and mitigate the potential impacts to Rodriguez HS and the former Green Valley Middle School site. The intent of these comments are to raise those particular issues concerning the District's schools to ensure the well being of our students and maintaining the best possible environment for educating our children.

1. TRAFFIC.

A. Operational Traffic.

The Draft EIR/EIS provides a thorough analysis of traffic impacts on the freeways and interchange ramps, but there is no traffic impact analysis for surface street segments or intersections. Rodriguez HS fronts Red Top Road near the I-680 and Lopes Road. Alternative B; Alternative C; and Alternative C, Phase 1 will all create a new interchange at I-680 and Red Top Road/Lopes Road and improve the interchange at I-80 and Red Top Road to the west of Rodriguez HS. These improvements will reduce traffic traveling north on I-680 to I-80 to potentially use Red Top Road as a shortcut means of bypassing the I-80/I-680 interchange. Currently, motorists are discouraged from using Red Top Road as a bypass because there is no interchange at I-680 and Red Top Road. Instead, such motorists have to travel along Lopes Road to the Gold Hill/I-680 interchange. This new Red Top Road bypass would also entice those traveling north on I-80 to south on I-680 when congestion occurs at the I-80/I-680 interchange.

The main entrance to Rodriguez HS is at the Red Top Road/Oakbrook Drive intersection. Increased traffic due to the Project could significantly or adversely impact this intersection and children, parents and staff commuting to or from the school. The typical commuting or drop-off and pick-up periods are from 7:30 a.m. to 9:00 a.m. and 3:00 p.m. to 4:00 p.m. The increase in vehicular traffic on Red Top Road will potentially create significant/ adverse impacts to student safety and travel time to and from the school. The potential traffic and safety impacts to the Red Top Road/Oakbrook Drive intersection and the intersections of Red Top Road/River Drive and Red Top Road/Lopes Road require analysis and mitigation should such analysis confirm potential significant/adverse traffic impacts. Further, the road segments of Red Top Road between I-80 and I-680 must be analyzed for significant/adverse impacts due to Project-induced traffic and mitigation included for such significant/adverse impacts.

Alternative C and Alternative C, Phase 1 both include a new connector between the proposed realignment of Lopes Road and Fermi Road. Fermi Road fronts the north side of Rodriguez HS. There are three school parking lots that are accessed along Fermi Road. The Draft EIR/EIS does not appear to analyze the existing conditions, construction phase, or operation phase traffic along Fermi Road for Alternative C or Alternative C, Phase 1. As this new connector will undoubtedly increase traffic along Fermi Road in front of Rodriguez HS, the impacts to the intersections between Fermi Road and the school's parking lots, the West Drive/Fermi Road intersection, and the road segments along Fermi Road, each require analysis for potential significant/adverse impacts. If such impacts are found, feasible mitigation is required.

B. Construction Traffic.

The Draft EIR/EIS discloses that construction of Alternative C, Phase 1 would take four years to complete, from 2012 to 2016. However, it does not disclose the duration of construction near Red Top Road along the I-680 and for the new connector to Fermi Road. The numerous construction trucks that would be needed will undoubtedly cause traffic congestion, which would adversely/significantly impact children, parents, and staff commuting to and from Rodriguez HS. Similar to the traffic analysis for operations, the construction traffic analysis is also confined to highway and ramp conditions. Surface streets such as Red Top Road and Fermi Road were not analyzed. Thus, potential traffic impacts to Rodriguez HS and along Red...
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Top Road and Fermi Road from the Project’s construction that includes accounting for construction trucks needs to be conducted and mitigation applied to significant/adverse impacts. The Draft EIR/EIS does not disclose the potential construction truck routes or truck queue locations. The use of Red Top Road or Fermi Road for construction truck use or queuing would potentially cause significant/adverse traffic impacts to Rodriguez HS. As such, construction truck use and queuing on these roads should be prohibited and directed elsewhere.

The District understands that a Traffic Management Plan (“TMP”) will be developed later and implemented to address construction traffic impacts. (pp. 3.1.6-38 and 3.1.6-39.) However, if the potential adverse/significant construction traffic impacts to Rodriguez HS are not now identified, the TMP will not likely be developed to address such undisclosed impacts. To avoid this situation, the District requests that the analysis of construction traffic be revised and the District be allowed to review and comment on the development of the TMP to ensure such impacts are appropriately mitigated. Also, it is unclear why development of the TMP is not done as part of the EIR/EIS, but deferred to long after the Project is approved.

2. STUDENT PEDESTRIAN SAFETY.

Many students walk to Rodriguez HS and must cross Red Top Road to get there. The increased traffic on Red Top Road as a result of the Project could significantly/adversely impact student pedestrian safety. The suitability of school sites has been characterized by the California Department of Education (“CDE”), which has developed standardized requirements to ensure that school districts utilize only suitable school sites. One of these suitability standards focuses on student pedestrian safety that is specifically based upon Caltrans’ own manual as referenced below:

“The school site shall not be on major arterial streets with a heavy traffic pattern as determined by site-related traffic studies including those that require student crossings unless there is mitigation of traffic hazards and a plan for the safe arrival and departure of students appropriate to the grade level has been provided by city, county or other public agency in accordance with the ‘School Area Pedestrian Safety’ manual published by the California Department of Transportation, 1987 edition, incorporated into this section by reference.” (5 Cal. Code of Regs., § 14010(1), emph. added.)

If the Project would turn Red Top Road or Fermi Road into a “major arterial street with a heavy traffic pattern,” the District’s ability to redevelop Rodriguez HS in the future would be significantly/adversely impaired. Further, section 14010(n) requires a school site to “encourage student walking and avoid excessive busing...” The Project should not be developed in such a way as to discourage student walking. Indeed, Project Objective number 4 of the Draft EIR/EIS is to “improve safety conditions” (p. 1-2.) As currently proposed and analyzed the Project does not meet this objective. Accordingly, the Project’s potential impacts to student pedestrians under these CDE standards need to be conducted by Caltrans and FTA and mitigated to less than significant.

3. EMERGENCY ACCESS.

The Draft EIR/EIS divulges there will be short-term impacts on police, fire, and emergency services during construction of the alternatives. (p. 3.1.5-4.) The specific impact would be increased emergency response times caused by congestion and lane closures during construction. (Ibid.) As mitigation for this significant/adverse impact, the Draft EIR/EIS notes that the TMP would be provided to all emergency service providers. The analysis stops here. The District is not convinced that providing the TMP document to emergency service providers is sufficient mitigation to reduce the potential impact to less than significant. Caltrans and FTA provide no basis to conclude that the mitigated impact would be less than significant. As noted above, the construction of Alternative C, Phase 1 alone will take four years to complete. That means that emergency services to Rodriguez HS will be impaired for four years, which when considering children is
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not a short-term impact. With the increased hazards from additional construction traffic, emergency services are even more critical for our children attending Rodriguez HS. Further analysis must be conducted and additional mitigation applied to ensure that emergency services to Rodriguez HS are not impaired. At a minimum, emergency service providers and the administrators of Rodriguez HS need to review and comment upon the TMP before it is approved. Further, coordination between Caltrans, the emergency providers, and Rodriguez HS must be on going throughout the construction process.

4. AIR QUALITY.

A. Operational Air Quality.

Figure 3.2.6-1 correctly identifies Rodriguez HS as a sensitive receptor for air quality. As with the traffic analysis in the Draft EIR/EIS, the air quality section analyzes the potential impacts from the highway segments and ramps, but does not analyze surface street impacts. In Table 3.2.6-3, the Draft EIR/EIS provides an analysis of Carbon Monoxide ("CO") impacts at the Project's interchanges and ramps. It does not provide a CO impact analysis of the intersections along Red Top Road, Fermi Road, or Lopes Road bordering Rodriguez HS. To determine whether the operational Project would significantly/adversely impact Rodriguez HS, the CO impact at the intersections of Red Top Road/Oakbrook Drive, Red Top Road/River Drive, and Red Top Road/Lopes Road needs to be analyzed and impacts mitigated to less than significant.

For the same reasoning, the analysis of CO impacts along road segments as presented in Table 3.2.6-4 need to be expanded to cover those segments on Red Top Road, Fermi Road, and Lopes Road that border Rodriguez HS.

In the Draft EIR/EIS, the Criteria Pollutants and Mobile Source Air Toxics ("MSAT") are only analyzed for the highway segments, interchanges, and ramps for the operational Project. (See Tables 3.2.6-7 and 3.2.6-8.) In all Project build alternatives, dust in the form of PM10 and PM2.5 will be significantly/adversely greater than existing conditions, and nearly all toxic air pollutants from the Project's build alternatives will be significantly/adversely greater than without the Project. The analysis stops here; it does not analyze the specific impacts from toxic air pollutants on surface streets surrounding Rodriguez HS. For the same reasons as above, the air quality analyses need to be expanded to analyze and mitigate potential operational Project toxic air quality impacts to Rodriguez HS from the Project's Criteria Pollutants and MSAT to less than significant.

Included in the State Legislature's and CDE's school site suitability standards is the site's air quality for use as a school. So as not to impair the District's ability to redevelop the Rodriguez HS, Caltrans and FTA must analyze the Project's potential significant/adverse impact as a hazardous air emitter along with other hazardous air emitters within ¼ of a mile of Rodriguez HS per California Education Code section 17213 and section 5186 of Title 5 of the California Code of Regulations. Specifically, a health risk assessment from the Project's short-term (i.e., construction) and cumulative (i.e., long-term) air quality impacts on the students' and staff's health needs to be conducted by Caltrans and FTA. Further, if the added traffic to Red Top Road or Fermi Road causes either to become a "busy traffic corridor," the air quality health risk assessment then also needs to account for such surface street traffic as an additional hazardous air emitter.

For toxic air pollutants, described as MSAT and Criteria Pollutant emissions, the Draft EIR/EIS states that Caltrans will consider five mitigation measures. (p. 3.2.6-23.) Consideration is not a commitment. Caltrans must commit to employing such mitigation measures to reduce the air quality impacts to less than significant.

20-10 cont.
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B. Construction Air Quality.

The Draft EIR/EIS analyzes the pollutant load from construction of the Project as a whole. (pp. 3.2.6-20 – 3.2.6.23.) Missing from the analysis is the specific potential air quality impacts to Rodriguez HS. Since only the construction as a whole was evaluated, the District does not know what the potential impacts are to the high school. A specific analysis of potential air quality impacts to Rodriguez HS needs to be done and mitigation applied to reduce impacts to less than significant. The Draft EIR/EIS reports 12 different general dust mitigation measures. One is a dust control plan that will purportedly be developed some time in the future to minimize construction impacts on existing communities. (p. 3.2.6-24.) The District requests that the dust control plan also be developed to mitigate dust impacts on Rodriguez HS and that the District be allowed to review and comment on a draft of the dust control plan before it is finalized. Further, the District requests that the sound wall between Rodriguez HS and Lopes Road, as requested below, be installed at the beginning of the construction process to provide a physical barrier to the dust emanating from the Project’s construction.

Also missing from the Draft EIR/EIS is any analysis of potential air quality impacts from construction traffic along Red Top Road and Fermi Road in the vicinity of Rodriguez HS. Since construction trucks mainly use diesel for fuel, their emissions create a hazardous air emitter that could significantly adversely impact the children in class or participating in outdoor activities should such trucks be allowed on Red Top Road or Fermi Road. To avoid significant adverse air quality impacts, truck routes and queue locations need to be directed away from these roads.

5. NOISE.

Among other thresholds, the Draft EIR/EIS provides exterior and interior noise thresholds for schools, playgrounds and active sport areas of 67 dBA for exterior and 52 dBA for interiors. (Table 3.2.7-1.) The Draft EIR/EIS identifies the locations of short-term noise monitoring locations. (Table 3.2.7-3.) However, no noise monitoring was conducted at or near Rodriguez HS. Rather, the closest noise monitoring location is ST-4, which is more than 1,600 feet away from the nearest edge of Rodriguez HS. ST-4 is also behind an existing noise barrier, which would attenuate the Project’s noise. (See Figure 3.2.7-4.)

Although a noise prediction location, C15, at Rodriguez HS is identified on Figure 3.2.7-4, the existing noise and predicted noise from the Project at C15 is not provided in the Draft EIR/EIS. See Table 3.2.7-4 in which C15 is not included. The noise levels for C04 (aka ST-4), which is behind an existing noise barrier, are predicted to be up to 63 dBA for all alternatives. (Ibid.) However, there is no existing or proposed sound wall or noise barrier between Rodriguez HS and the I-80 or other parts of the Project. The District cannot discern what the Project’s noise levels would be at C15 for exterior noise or in classrooms for interior noise.

It is likely that the Project’s noise impact to Rodriguez HS would be significant or adverse. The Draft EIR/EIS divulges, “[N]oise levels in the project area would approach or exceed the NAC thresholds, [and thus] noise abatement must be considered.” (p. 3.2.7-7.) Again, consideration is not a commitment. In addition, in Appendix B – and conspicuously not in the Noise section of the Draft EIR/EIS – it discloses that using a prediction site for existing conditions, the traffic noise modeling predicts existing noise at 53 dBA and 57 dBA with the Project. These results are incongruent with the results for C04/ST-4, which, as stated above, is behind a noise barrier, would experience 67 dBAs. The Draft EIR/EIS results should be double-checked and specific noise monitoring conducted to ensure that the predicted data is not underestimated.

Also missing from the Draft EIR/EIS is any noise analysis as a result of increased traffic on Red Top Road or Fermi Road. The Project’s addition of potential construction and operational traffic on these roads need to be analyzed and mitigated to less than significant.
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The Draft EIR/EIS identifies five potential noise mitigation measures, but claims that noise barriers are the only feasible noise abatement mitigation for this Project. (p. 3.2.7-13.) In fact, two of the listed five noise mitigation measures are feasible here: (1) using design alternatives to alter the horizontal alignment of a project and (2) acquiring property to serve as a buffer zone. Others may also exist. Rather than encroaching upon the high school property to realign Lopes Road, this road can be located further east or at least kept in its current location to avoid the Project becoming closer to Rodriguez HS. There is plenty of available land for the roadway to be aligned closer to I-680 and nothing in the Draft EIR/EIS suggests that such an alignment is unfeasible. Implementing these two noise mitigation measures would reduce the Project’s potential noise impacts on Rodriguez HS to less than significant.

CDE has also developed school site standards in terms of noise pollution. In section 14010(e) of Title 5 of the California Code of Regulations, sound levels cannot cause a safety problem or adversely affect the educational program. Certain portions of the education program at Rodriguez HS are conducted outdoors. As a result, the potential adverse noise impact to Rodriguez HS’ educational plan needs to be analyzed and mitigated to less than significant.

In addition, a construction noise impact analysis on Rodriguez HS should be conducted as it is missing from the Draft EIR/EIS. To reduce the potential noise impacts from construction and operational noise, a noise barrier or sound wall should be constructed along the frontage of Lopes Road that borders Rodriguez HS as noise mitigation. As mentioned above, this sound wall should be constructed in the beginning of construction to provide noise mitigation for the remainder of construction.

6. LAND USE.

The Draft EIR/EIS claims that the Project is in conformity with land use goals, policies, objectives and the impact is less than significant. (See Table 4.1.) Land Use Goal L.U.G-4 of the Solano County General Plan is to “[e]ncourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.” (p. 3.1.1-14.) As discussed above, the Project’s proposal to realign Lopes Road on Rodriguez HS property closer to the school’s students is not in conformity with this goal to minimize adverse air quality effects. To be in conformity, Lopes Road needs to be located closer to I-680 and away from Rodriguez HS.

Objective CI-1 of the City of Fairfield General Plan is to “[e]stablish a circulation system that is consistent with the land use patterns of the city.” (p. 3.1.1-17.) The Project’s taking of school property is not consistent with the school’s land use. These inconsistencies cause a significant impact upon Rodriguez HS. Thus, if Caltrans and FTA are going to advocate for the current proposed alignment of Lopes Road, the impact needs to be described as significant/adverse. However, feasible mitigation exists by relocating Lopes Road to the east away from Rodriguez HS. The Draft EIR/EIS should be revised accordingly.

7. SECTION 4(f).

Section 4(f) of the Department of Transportation Act of 1966 requires a special review for federally-funded transportation projects, such as this Project, that affect recreation areas, parks and historic sites. Although recognized as recreational facility for both students and the public during non-school hours, Rodriguez HS is not treated as a 4(f) resource in the Draft EIR/EIS because it claims to take a portion of the property outside the softball field fence line for Alternatives C and C, Phase 1. (p. 3.1.1-20 and Appendix B.) On this basis, it is claimed that this portion of land does not function as a recreational facility and is therefore not a Section 4(f) resource. (Ibid.) The District disagrees with this analysis and characterization for the following reasons, without limitation:
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(1) The precise amount of land to be taken from Rodriguez HS is not sufficiently delineated for the realignment of Lopes Road or the right-of-way to be included. Looking at Figure 3.2.7-12 in Volume 2 of the Draft EIR, the Project’s boundary appears to take part of the softball field rather just outside the fence line;

(2) The High School land between the fence and Lopes Road functions as a safety buffer to those students and public members using the softball field. Considering that the Rodriguez HS property abuts Lopes Road, the right-of-way to be taken is substantial and completely erodes the safety barrier, and

(3) The encroachment of the Project on Rodriguez HS would impair the District’s ability to redevelop the site in the future, as CDE’s siting requirements would limit placement of school buildings and facilities.

Thus, this portion of the Rodriguez HS site serves as part of the recreational resource at the site. The Draft EIR/EIS is incorrect when it states that it is not. Accordingly, Caltrans and FTA need to conduct a complete Section 4(f) analysis on the proposed taking from the Rodriguez HS field.

8. TAKING OF FORMER GREEN VALLEY MIDDLE SCHOOL.

The Draft EIR/EIS discloses that under Alternative B and Alternative B, Phase 1, the former Green Valley Middle School will be displaced. (See Map entry #1 on Tables 3.1.4-1 and 3.1.4-2.) The criteria for a full taking are defined as:

"Where the proposed right-of-way overlapped a parcel, that parcel was considered affected by the proposed project. For parcels that did not fall completely within the right-of-way lines, those where less than 50% of the total parcel area was overlapped by the proposed right-of-way were considered partial acquisitions unless the affected portion of the parcel contained the primary structure (business or residence) on the property. Where more than 50% of the parcel would be overlapped, the parcel was considered to be fully acquired by the project alternative." (p. 3.1.4-5.)

However, it is unclear in the Draft EIR/EIS whether Caltrans and FTA are proposing a full or partial take of the former Green Valley Middle School site. If a partial take is contemplated, the extent of the taking is not defined. This has the unfortunate effect of impacting the District’s current negotiations on a land swap for a new elementary/middle school site. With the scarcity of State funds and dwindling developer fees, the District finds it nearly impossible to purchase the necessary elementary/middle school site. The reality is that a land swap will provide the District with greater value than having to purchase a site from State funds or just compensation provided by Caltrans or FTA. In our experience, many times property owners are motivated by factors other than purchase price to swap properties. Further, the potential protracted delay in Caltrans or FTA taking the former Green Valley Middle School site will make it likely impossible for the District to make any progress on a new elementary/middle school site and will further impair the District’s ability to provide adequate school facilities for its students. The Project should be designed to avoid taking the former Green Valley Middle School site. Again, if the District cannot swap this land for an appropriate school site in the near future as currently contemplated, the District’s future plans will be in jeopardy.

9. CONCLUSION.

As discussed above, the CDE has promulgated specific regulations in Title 5 of the California Code of Regulations that impose rigid requirements on sites to be suitable for schools in terms of students’ safety, health and well-being. The Project could cause the Rodriguez HS site to become ill-suited for continued use.
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as a school site and as a recreational resource. The softball fields are also extensively used by public
individuals and nonprofit organizations during non-school hours. Their recreational activities would also be
significantly/adversely impacted by this Project’s encroachment upon Rodriguez HS, and the Project’s
addition of fast-moving traffic along Lopes Road next to these fields. For these reasons and those described
above, the District requests that analyses and mitigation identified above be conducted and presented in a
revised Draft EIR/EIS for public review.

We further request that this letter be included in the Project’s record of proceedings. Again, thank you for
allowing the District to submit its comments on this Project. I am sure that all of us desire to protect our
students from undue impacts from future development and your interest in our comments is evidence of that
desire. If you have any questions or wish to consult with the District further on the matters discussed herein
or on any other aspect of the Project, please do not hesitate to contact me at your earliest convenience by
correspondence or by telephone at (707) 399-5148.

Sincerely,

Kim VanOoy

cc: Jacki Cottingim-Dias, Ph.D., District Superintendent
Kelly Morgan, Assistant Superintendent, Business Services
Kris Corey, Assistant Superintendent, Educational Services
Amy Gilstrap-Oes, Rodriguez High School Principal
Philip J. Henderson, Esq., Orbach, Huff & Sunzer LLP
Stan M. Barnkiewicz II, Esq., Orbach, Huff & Sunzer LLP
Janet Adams, Deputy Executive Director, Solano Transportation Authority
Comment Letter 20, Kim VanGundy, Fairfield-Suisun Unified School District, 10/26/10

Response to Comment 20-1
The Department acknowledges FSUSD’s concerns and has reexamined these impacts areas. The Final EIR/EIS and the responses to comments below address FSUSD’s areas of concern.

Response to Comment 20-2
Alternative C has been chosen as the preferred alternative. As part of Alternative C, a PG&E valve lot (a gas transmission facility) would be relocated to a vacant parcel owned by the FSUSD at the former Green Valley Middle School location at 3630 Ritchie Road in Fairfield. The relocated valve lot would occupy a 1.3-acres portion of the larger 7.69-acre FSUSD parcel. This relocation would require the acquisition of 1.3 acres from FSUSD. The 7.69-acre parcel would be divided into two separate parcels: 1) one 1.3-acre parcel for the relocated PG&E valve lot which would be acquired by STA, and 2) the remainder of the parcel (6.39 acres) for future development of which is not part of this project. The project description (in Section 2.3.5 of the Final EIR/EIS) and associated impact areas have been revised to describe this change.

Response to Comment 20-3
Alternative C would realign Lopes Road approximately 100 feet west of its current location between Fermi Drive and Red Top Road. Although realigning Lopes Road would move the road closer to Rodriguez High School, it would not impact any portion of the school including its recreational fields. Since the publication of the draft EIR/EIS, the Lopes Road realignment has been modified to fully avoid any impact on the school including landscaped areas beyond the outfield fence of the school’s softball field. This change in the project design would avoid any direct or indirect effect on the school. Figures 2-3 and 2-5 of the project description depict these changes; associated impact areas have been revised to describe this change as well. Responses below address the District’s detailed comments regarding potential impacts to student’s safety, health and learning environment.

Response to Comment 20-4
Please refer to the response to comment 12-2 for a detailed description of the traffic effects of the proposed project on Red Top Road in the vicinity of Rodriguez High School. Though Alternative C has been selected, both build alternatives and their fundable first phases would actually not result in any significant increase in traffic levels. In many cases, the project would improve (or reduce) traffic levels on Red Top Road in the vicinity of the High School because traffic congestion on I-680 and I-80 and through the I-680/I-80 interchange would be reduced and there would be less incentive for motorists to exit from the freeway system to avoid congestion and delay. Additionally, signage will be provided to direct traffic exiting NB I-680 to access WB I-80 to use Lopes Road north to the I-80/Green Valley Road interchange.

The commenter expresses concern that construction of Alternative C-1 would result in increased traffic along Red Top Road in front of Rodriguez HS that could significantly or adversely affect intersection operations and affect student safety and travel times.
Based on the 2035 traffic forecasts, without the project (No-Build Alternative), Red Top Road east of I-80 would have approximately 2,095 vehicles in the AM peak hour and 2,445 vehicles in the PM peak hour. With Alternative C, Phase 1, traffic projections forecast 1,605 vehicles for the same location in the AM peak hour and 2,460 vehicles in the PM peak hour. This represents a 23 percent reduction in the number of AM peak hour trips and less than a 1 percent increase in the number of PM peak hour trips as a result of constructing Alternative C, Phase 1. Thus, traffic operations adjacent to the school are expected to remain the same or improve with the project.

Generally with increased traffic there is a corresponding increase in congestion related (rear-end type) accidents. A decrease in congestion generally results in fewer congestion-related accidents. Thus, Red Top Road is expected to be a safer facility with the construction of Alternative C, Phase 1 than with the No-Build Alternative (without the project).

**Response to Comment 20-5**
The local roadway shown in Figures 2-2 through 2-5 is a realignment of Fermi Road; Fermi Road must be realigned due to the realignment of Lopes Road and the new interchange. Fermi Road will be relocated solely to connect to the realigned Lopes Road. Alternative C, Phase 1 is not anticipated to result in additional traffic on Fermi Road compared to the No-Build Alternative. Drivers using Fermi Road after the implementation of Alternative C, Phase 1 would be the same drivers who currently use the road. Thus, the new configuration of Fermi Road is not expected to affect regional travel routes, and the traffic volumes are thus expected to be similar for all build alternatives. Construction impacts are addressed in response 20-6 below.

**Response to Comment 20-6**
Construction truck traffic on local roads will be analyzed as part of the development of Transportation Management Plans (TMPs) for each construction phase. Detailed TMPs cannot be prepared prior to the definition of each project phase, as local conditions and the presence of prior phases affect items such as truck routes, locations of staging areas, employee parking areas, detour routes, etc. For the project phases affecting the Red Top Road/Fermi Drive area, the school’s special needs will be considered, including:

- Limiting or prohibiting truck traffic on Red Top Road along the school frontage during school operating hours;
- Minimizing instances where traffic detours include Red Top Road along the school frontage;
- Avoiding construction activities that affect access to school parking lots off Fermi Drive.

Please also refer to response to comment 20-7.

**Response to Comment 20-7**
Transportation Management Plans (TMPs) are specific to individual project construction packages, and are very detailed in describing the detour routes, their signage and hours of operation, construction staging areas, employee parking areas, noise and air quality management, and other practices to be followed. Such details have not been developed at this time, but will be developed during the final design phase when specific project construction packages are identified, the work schedules are defined, and prevailing traffic, pedestrian, bicycle and transit conditions near the time of construction are studied and incorporated.
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The Department and STA will ensure that FSUSD and Rodriguez High School staff are included in the development and review of the TMPs for any construction packages for this I-80/I-680/SR 12 Interchange Improvement project that include work on Red Top Road and in the vicinity of District facilities.

Response to Comment 20-8
The environmental consequences of construction-period truck traffic was included in the EIS/EIR and not deferred until after project approval. The EIS/EIR concludes that either project alternative would entail additional truck and construction worker traffic, temporary lane closures and detours, and various construction-related activities that would increase congestion to varying degrees throughout the construction period. In addition, minimization measures were included in the EIS/EIR and not deferred until after project approval. The EIS/EIR includes the requirement to prepare and implement a TMP. As noted in response to comment 20-7 development of a detailed TMP is specific to individual project construction packages with input from the construction contractor. However, the minimization measure includes specific requirements and measures to be included in the TMP (see Section 3.1.6) to ensure the TMP is effective in reducing construction-period effects.

Response to Comment 20-9
No increase in traffic on Red Top Road due to the project is projected when compared to the No Build; consequently, there is no need to reclassify the roadway as a major arterial. While Red Top Road is a two-lane roadway just south of the I-80 eastbound ramps intersection, it widens out to a four-lane landscaped roadway with turn pockets and a traffic signals at Watt Drive, the Rodriguez High School entrance, and Lopes Road. This lane configuration and traffic control is appropriate for the traffic levels associated with a 2,200-student high school and adjacent residential and industrial uses. Further, the Lopes Road realignment between Red Top Road and Fermi Drive will also include sidewalks. The project will not result in changes that would decrease or discourage walking as a mode of transportation to and from the high school.

Response to Comment 20-10
The Transportation Management Plan will not just be provided to emergency service providers. The TMP will be developed with direct input from emergency service providers including the police, fire department, and ambulance services affected by the project. Emergency service providers will be given adequate advance notice of any street closure or detour. Advance notice allows the emergency service provider to adjust response routes to minimize potential delays. As noted in response to comment 20-7 development of a detailed TMP is specific to individual project construction packages with input from the construction contractor. However, the minimization measure includes specific requirements and measures to be included in the TMP (see Section 3.1.6) to ensure the TMP is effective in reducing construction-period effects. As requested by the District, the District will be provided the TMP in advance to allow input and coordination of construction activities with High School operations to minimize construction-period effects.

Response to Comment 20-11
Project-level air quality analyses are performed on intersections with the worst-case traffic conditions. If the analysis concludes that no ambient air quality standards will be exceeded, then intersections with less severe traffic conditions would also not exceed ambient air quality...
standards. As indicated in Section 3.2.6 of the Draft EIR/EIS, the roadway intersections and segments with the highest traffic volumes and worst levels of congestion/delay) were analyzed in the CO analyses. The analysis concluded that no violation of the NAAQS or CAAQS would occur at these intersections or segments as a result of project implementation. Thus, no violations are anticipated at other roadway intersections and segments with less traffic volumes and congestion/delay in the study area.

Response to Comment 20-12
The MSAT evaluation was prepared in accordance with FHWA MSAT guidance. As indicated in the analysis, accepted methods to evaluate localized MSAT effects are currently not available. Mitigation measures to reduce MSAT emissions are identified in the Draft (and Final) EIR/EIS in Section 3.2.6.

Response to Comment 20-13
MSAT language has been updated to reflect the FHWA’s 2009 MSAT guidance, which supersedes the FHWA’s 2006 MSAT guidance used in the Draft EIR/EIS. The FHWA’s MSAT guidance regarding incomplete or unavailable information for compliance with 40 CFR 1502.22 indicates that “In FHWA’s view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives.” Consequently, the HRA analysis conducted for the Draft EIR/EIS is sufficient to characterize potential health risks associated with implementation of the project.

Response to Comment 20-14
The Department will evaluate all mitigation measures identified in the Draft EIR/EIS and implement those to be found feasible.

Response to Comment 20-15
Please refer to response to Comment 20-13.

The Draft EIR/EIS evaluated emissions associated with construction and operation of the project, as well as an evaluation of CO and MSAT effects. It was found that construction-related air quality impacts would be less than significant.

Response to Comment 20-16
Per the Department’s Standard Specification Section 14-9.01, a dust control plan will be prepared prior to construction (Section 3.2.6 of the Draft and Final EIR/EIS). The dust control plan will be provided to FSUSD for review and input. Standard Specification Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Measures specified in the Draft EIR/EIS will ensure that construction dust impacts are minimized and therefore a temporary soundwall to reduce dust is not warranted. The mitigation measures require daily sweeps of construction sites and paved roads, hydroseeding or watering of all active construction areas, and limiting traffic speeds to minimize airborne dust all of which will greatly reduce dust emissions during construction and potential dust impacts on all surrounding land uses.
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Response to Comment 20-17
Please refer to response to comment 20-16. Measures already included in the Draft EIR/EIS are sufficient to reduce potential dust impacts thereby not requiring the need to construct a temporary noise wall for dust reduction purposes.

Response to Comment 20-18
The Department and STA are committed to rerouting truck traffic away from the vicinity of the high school when school is in session.

Response to Comment 20-19
Noise monitoring was focused primarily on the capacity-increasing segments of I-680, I-80, and SR 12, because that is where traffic noise impacts would be expected to occur as a result of the project. Monitoring sites were selected at locations within 500 feet of these facilities, consistent with the Department’s protocol. The edge of the nearest outfield at Rodriguez High School is 900 feet from I-680, so it was not selected for noise monitoring. However, the realignment of Lopes Road would pass within 500 feet of the ball field, so a noise prediction site C15 was modeled at the high school’s outfield to disclose predicted noise levels at the high school property.

The Noise Study Technical Report concluded that the predicted traffic noise level at the Rodriguez High School site (predicted noise location C15 in the Noise Study Technical Report) would be 57 dBA under all build alternatives. This predicted noise level is well below the impact threshold of 66 dBA for an Activity Category B land use, such as Rodriguez High School and thus not considered adverse or significant and not warranting evaluation of noise abatement for this land use. A copy of the Noise Study Technical Report will be provided to the FSUSD.

Response to Comment 20-20
Table 3.2.7-4 in the Draft and Final EIR/EIS summarizes predicted traffic noise levels at representative locations along the I-80/I-680 corridor. The table is a condensed version of the noise modeling analysis table that appears in Appendix C of the Noise Study Technical Report. The intent of summarizing the table is to highlight locations that would experience traffic noise impacts due to the project, and also include representative locations adjacent (i.e., within 500 feet) to the primary capacity-increasing segments of I-80, I-680 and SR 12. The summary format of Table 3.2.7-4 was used to simplify the data presentation and focus on areas where traffic noise impacts are predicted to occur as a result of the project. A full report of the noise analysis locations is included in Appendix C of the Noise Study Technical Report. A copy of the Noise Study Technical Report will be provided to the FSUSD.

The Noise Study Technical Report concluded that the predicted noise level at the Rodriguez High School site (predicted noise location C15 in the Noise Study Technical Report) would be exposed to a traffic noise level of 57 dBA under all build alternatives. This predicted noise level is below the impact threshold of 66 dBA for an Activity Category B land use, such as Rodriguez High School. A noise barrier was not evaluated for the high school because noise impacts requiring abatement are not predicted to occur there as a result of the project.
Response to Comment 20-21
Noise levels in Area C, the area where Rodriguez High School is located, do not approach or exceed 67 dBA. The results of the Noise Study Technical Report concluded that the predicted noise level at Rodriguez High School (predicted noise location C15 in the Noise Study Technical Report) would be exposed to a traffic noise level of 57 dBA with the project under all build alternatives.

Please note that the noise modeling results presented in Table 3.2.7-4 is a summary of the full list of receivers shown in Appendix C of the Noise Study Technical Report, as described in the response to the comment above. The primary intent of the table is to disclose all noise impacts due to the project, where they occur. The supporting data for the noise analysis is fully documented in the technical report. See response to comment 20-19 regarding noise monitoring.

Response to Comment 20-22
The project does not increase capacity on Red Top Road or Fermi Road. Therefore traffic noise on Red Top Road and Fermi Road was not studied in this report. Further, construction activities are not likely to result in noise impacts at the high school. Due to the distance of the school to construction areas, construction-generated noise levels at the school are not expected to be significant. Construction noise would be short-term, intermittent, and masked by local traffic noise. Please refer to response to comment 20-25 for a discussion regarding construction-noise impacts and minimization measures.

Response to Comment 20-23
As described above in response comment 20-2, under Alternative C, since the publication of the Draft EIR/EIS, the Lopes Road realignment has been modified to avoid displacing landscaping areas beyond the outfield fence of the school’s softball field as originally analyzed. With this modification to the project description, the landscaped area of concern would not be affected.

However, the location of the existing Red Top Road/Lopes Road intersection is fixed. The proposed alignment for the relocated Lopes Road is based upon a combination of needing to connect to existing Lopes Road at the northerly and southerly ends, the proposed I-680 alignment and the design speeds of the two facilities. As such, Lopes Road cannot be realigned to be closer to I-680.

Further, acquiring property to serve as noise abatement to buffer noise impact to the high school is not warranted based on the noise analysis contained in the EIR/EIS which determined that future noise levels under all build alternatives would be well below the impact threshold of 66 dBA.

Response to Comment 20-24
The commenter refers to this section of the CCR:

“All districts shall select a school site that provides safety and that supports learning. The following standards shall apply: ….. The site shall not be adjacent to a road or freeway that any site-related traffic and sound level studies have determined will have safety problems or sound levels which adversely affect the educational program.”
As described in the Noise Study Technical Report, the noise prediction site at C15 (at Rodriguez High School’s softball field adjacent to Lopes Road) is approximately 100 feet from the proposed realignment of Lopes Road. Site C15 can be considered as a screening-level analysis to determine if traffic noise impacts due to the project would be of concern on the school property. Future traffic noise levels due to the project are not predicted to result in a traffic noise impact at site C15.

The Noise Technical Report concluded that the proposed project will not cause noise levels that would interfere with use of outdoor areas at the high school for educational purposes. Thus, traffic noise due to the project is not expected to result in noise impacts in interior or exterior classroom spaces, nor would it result in reduced ability to discern speech.

**Response to Comment 20-25**

Noise generated by construction equipment at a distance of 50 feet range from 80 dBA to 89 dBA. The distance from the proposed realigned Lopes Road to the outfield fence of the school’s softball field is approximately 150 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. Due to this distance, construction-generated noise levels would be reduced by approximately 12 dB at the outfield fence. Construction noise is also short-term, intermittent, and would be masked in-part by local traffic noise. Minimization measures in Section 3.2.7 of the Draft and Final EIR/EIS would require the use of sound-control devices on construction equipment, rescheduling construction activities to non-sensitive hour of the day, and advance noticing to sensitive receptors to further reduce construction-noise impacts. Based on the analysis conducted and minimization measures included in the EIS/EIR construction-period noise effects at the High School would not be significant.

**Response to Comment 20-26**

Please refer to response to comment 20-25 above.

**Response to Comment 20-27**

The project and the realignment of Lopes Road have benefits that support the position of consistency with the land use goal of the Solano County General Plan. As described above in response comment 20-2, under Alternative C, since the publication of the Draft EIR/EIS, the Lopes Road realignment has been modified to avoid displacing landscaped areas beyond the outfield fence of the school’s softball field as originally analyzed. Further, the realigned portion of Lopes Road between Red Top Road and Fermi Drive will include sidewalks, improving pedestrian safety. As discussed in responses to comments 20-11, 20-12, 20-13, 20-16, and 20-17, air quality analyses conducted for the project determined that no ambient air quality standard would be exceeded and that measures have been included to reduce MSAT and construction period air quality impacts.

**Response to Comment 20-28**

The project is consistent with Objective CI-1 of the City of Fairfield General Plan, to establish a circulation system that is consistent with the land use patterns of the city. As described above in response comment 20-2, under Alternative C, since the publication of the Draft EIR/EIS, the Lopes Road realignment has been modified to avoid displacing landscaped areas beyond the
outfield fence of the school’s softball field as originally analyzed. The landscaped area of concern would not be affected.

Response to Comment 20-29
As described above in response comment 20-2, under Alternative C, since the publication of the Draft EIR/EIS, the Lopes Road realignment has been modified to avoid displacing landscaped areas beyond the outfield fence of the school’s softball field as originally analyzed. The landscaped area of concern would not be affected. The Department and STA share the concerns of FSUSD regarding student safety and will work with FSUSD to implement measures to increase safety.

Response to Comment 20-30
As described above in response to comment 20-2, as part of Alternative C, a PG&E valve lot (a gas transmission utility) would be relocated to a vacant parcel owned by the FSUSD at the former Green Valley Middle School location at 3630 Ritchie Road in Fairfield. The relocated valve lot would occupy a 1.3-acres portion of the larger 7.69-acre FSUSD parcel. This relocation would require the acquisition of 1.3 acres from FSUSD. The 7.69-acre parcel would be divided into two separate parcels: 1) one 1.3-acre parcel for the relocated PG&E valve lot which would be acquired by STA, and 2) the remainder of the parcel (6.39 acres) for future development of which is not part of this project. The project description (in Section 2.3.5 of the Final EIR/EIS) and associated impact areas have been revised to describe this change.

With this change in the project description, the Department and STA have been in discussions with the FSUSD about purchasing all or a portion of the former Green Valley Middle School site. In these discussions, FSUSD has indicated their interest in such a purchase and that it could facilitate their goals of establishing a new elementary school site elsewhere in the city of Fairfield.

Response to Comment 20-31
The Department and STA acknowledge FSUSD’s concerns regarding the potential impacts of the proposed project on the high school and on the former Green Valley Middle School site and have responded to these concerns as described above.
October 27, 2010  
CIWQS Place No.: 728678

Sent via electronic mail: No hard copy to follow

California Department of Transportation  
Attn: Howell Chan  
Howell_Chang@dot.ca.gov  
P.O. Box 23660  
Oakland, CA 94623-0660

SUBJECT: Draft Environmental Impact Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project (SCH No. 2003052021)

Caltrans Project No.: EA 0A5300

Dear Mr. Chan:

Thank you for giving San Francisco Bay Regional Water Quality Control Board (Water Board) staff the opportunity to review the Draft Environmental Impact Report (DEIR) for the Interstate 80/Interstate 680/State Route 12 Interchange Project (Project). The Project proposed by the California Department of Transportation (Department) involves improvements to the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) interchanges and relocation of the westbound truck scales facility in the vicinity of the city of Fairfield, Solano County. The Department is proposing improvements on an approximate 4.5-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximate 3.5-mile-long segment of I-680 between Gold Hill Road and I-80, 2.0-mile-long segment of SR 12 West (SR 12W) between 0.5 mile west of Red Top Road and I-80, and an approximate 2.5-mile-long segment of SR 12 East (SR 12E) between I-80 and Main Street in Suisun City.

Two different Project alternatives are presented in the DEIR, with two accompanying “fundable first phases” that the Department has provided separate impact totals for. This comment letter does not consider the impacts of these first phases separate from the overall Project proposal, as it is assumed that the Department intends to implement the entire Project and rely on the DEIR as its CEQA environmental review document; as such, impacts for the entire Project must be evaluated simultaneously, and not be considered piecemeal under a presumption that potential impacts may be less because a later stage of the Project is not yet funded.
The formal DEIR comment period ended October 18, 2010, however, the Water Board has reviewed the DEIR and has the following important concerns that the Department must consider to prevent future permitting delays.

**Mitigation and Impacts to Jurisdictional Wetlands, Waters, and Riparian Resources**

Depending upon the chosen design alternative, the proposed Project would permanently impact approximately 17 or 19 acres\(^1\) of jurisdictional wetlands and waters, and temporarily impact approximately 8.3 or 4.7 acres of jurisdictional wetlands and waters.

**Avoidance and Minimization of Permanent Impacts**

The Department must fully evaluate all avoidance options to reduce the significant level of proposed permanent impacts to jurisdictional resources. Page 3.2.2-7 of the DEIR notes that, “Except at bridges, no retaining walls are anticipated.” The Department has a history of utilizing retaining walls to avoid and minimize direct fill to wetlands, yet, the limited use of retaining walls suggests that the Department may have not fully investigated, or reported, all opportunities and efforts to avoid and minimize impacts to jurisdictional resources through use of retaining walls. The Department must provide a discussion of its impact avoidance and minimization efforts with respect to incorporation of retaining walls into the Project design.

The Water Board supports the Department’s proposal to remove existing piers and supports from the creek beds of Dan Wilson and Suisun Creeks, and to replace the associated bridges with clear-span bridges. However, bridges with supports and/or piers below ordinary high water are being proposed over Ledgewood Creek to accommodate the SR 12 on- and off-ramps. Ledgewood Creek provides habitat for the federally-listed Central California Coast Steelhead, and Chinook salmon, a federal species of special concern. Installation of piers below the ordinary high water mark of Ledgewood Creek may negatively affect habitat for these species. To demonstrate the Department has fully avoided and minimized impacts to Ledgewood Creek and special-status salmon, the feasibility of clear-span bridges over Ledgewood Creek must be evaluated.

**Temporary Impacts to Wetlands from Construction Access**

The Department proposes approximately 7.2 or 3.6 acres of temporary impact to jurisdictional perennial marshes, alkali seasonal marshes, and seasonal wetlands, depending upon the chosen Project alternative. The DEIR doesn’t describe, in detail, the activities that will result in temporary impacts, and the nature of the temporary impacts to the wetlands. If temporary impacts are proposed as a result of construction access, then the Department must discuss the

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\(^1\) All impact totals cited in this letter that follow the format, “The Department proposes to impact X or Y acres, depending upon the chosen project alternative,” refer to X or Y acres of impact proposed in Project alternatives B and C, respectively.
activities that will be done atop the identified wetlands, as well as the avoidance and
minimization measures that will be employed.

Although the DEIR doesn’t specify that geotextile and aggregate are proposed to minimize
impacts to wetlands, the Department has previously proposed temporary fill of wetlands with
these materials to allow for a construction platform or staging area, while maintaining that the
underlying wetlands would be protected. Use of geotextile and aggregate as a heavy equipment
construction platform would most likely result in compaction of wetland soils, degradation of
wetland hydrology, and the high likelihood of aggregate material being discharged to wetlands.
The Department must avoid compaction of the wetland soils to avoid permanent impacts to
wetlands. A timber mat system is a significantly less environmentally damaging alternative than
use of geotextile and aggregate. A timber mat would redirect a significantly greater amount of
tension upward, away from the wetland when compressive forces are applied. The Final EIR
should identify the nature of the proposed temporary impacts and propose the least
environmental damaging practicable alternative for protecting wetlands during construction
access, such as a timber mat system. The Department must also design the Project to minimize
the time duration that any access roads or staging areas are employed within any wetlands.

Impacts to and Mitigation for Linear Features
Please note that impacts to waters classified in the DEIR as “perennial drainages” and
“jurisdictional seasonal drainages,” will be evaluated by the Water Board not only in terms of acreage, but also the linear feet of impact. The DEIR did not provide the linear feet of impact to
these jurisdictional features. After the Department has demonstrated full avoidance and
minimization of impacts to jurisdictional waters, the Water Board will require riparian mitigation
for impacts to perennial creeks at a location in the same watershed as the Project. The Water
Board will not accept areal, wetland-type mitigation as mitigation for impacts to perennial
creeks; the mitigation must be riparian in nature and proposed in terms of the linear feet of
benefit to be provided. Depending upon the beneficial uses being provided by the permanently
impacted jurisdictional seasonal drainages, areal, wetland-type mitigation may, or may not be
permitted for permanent impacts to those jurisdictional features.

As noted in our “Comments Relating to the I-80/I-680/SR 12 Interchange Project NEPA/404
Integration MOU Checkpoint Meeting” letter, addressed to the Department and dated June 5,
2007, the Water Board expects the Department to identify riparian restoration opportunities in
the vicinity of the Project site. The DEIR mentions the possibility of providing mitigation at the
Lynch Canyon Open Space Preserve in collaboration with the Solano Resource Conservation
District and Solano Land Trust. The Water Board supports this mitigation option. However, as
noted in our June 2007 letter, the Water Board will not accept riparian mitigation bank credits
(as proposed on DEIR pg. 3.3-17) for any impact associated with Project implementation.

Page 3.3-59 of the DEIR discusses Chinook salmon and Central California Coast steelhead fish
passage conditions in Ledgewood Creek, beneath eastbound SR 12, and notes that “[R]esults
from modeling conducted for the fish passage assessment indicate that the proposed extension of the culvert under SR 12E would exacerbate existing shallow water conditions during the migration season and would worsen fish passage conditions relative to current conditions.” The DEIR then proposes installation of low-flow walls or offset baffles as mitigation for this impact. The Department must evaluate the feasibility of replacing the existing box culvert with a clear-span bridge at this location. The Water Board may consider Project mitigation credit for such a retrofit.

Riparian Impacts and Mitigation
Project implementation would result in approximately 1.3 or 1.1 acres of permanent impacts to riparian woodland, depending upon the chosen Project alternative. Page 3.3-8 of the DEIR notes that “permanent loss of riparian vegetation will be compensated for at a ratio to be determined in cooperation with the California Department of Fish and Game (CDFG).” Please note that the Water Board also has jurisdiction of riparian woodland; adequacy of any proposed mitigation must be determined in cooperation with the Water Board, as well as CDFG.

Waste Discharge Requirements
Please be aware that because the Department is projecting a significant area of permanent impact to jurisdictional waters and wetlands, it is possible the Project may require the review of Waste Discharge Requirements/401 Certification before our Board, which tends to be a lengthier certification process than issuance of a 401 certification signed by the Water Board Executive Officer. To the degree the Department can reduce permanent impacts to jurisdictional waters and wetlands, the possibility the certification will need to go before our Board will be reduced. Should the Department be unable to significantly reduce projected permanent impacts, we highly recommend consulting with Water Board staff and identifying potential mitigation opportunities as soon as possible.

Post-Construction Stormwater Runoff Impacts
Depending upon the chosen design alternative, the Department is proposing either approximately 128 or 123 acres of new impervious surface, and either approximately 252 or 220 acres of reworked impervious area. Impervious areas would be a source of automobile-related pollutants and may result in alterations to local hydrology.

Pollutant Treatment
As noted in the Study, the Water Board will require the Department provide treatment of stormwater runoff from new and reconstructed areas of impervious surface. Specifically, the Water Board shall require treatment of stormwater runoff from a Project area equivalent to the area of all new and redeveloped impervious surface.
media with a depth of no less than eighteen inches. The soil media shall be approximately 50% -
70% sand and 30% - 40% compost. The mix may also include topsoil or other soil ingredients
with clay content not exceeding 3% overall. These soil media specifications may be altered to
conform with alternative mixes that have been demonstrated to effectively filter stormwater
pollutants and provide at least 5 inches per hour permeability over the long term. The Bay Area
Stormwater Management Agencies Association (BASMAA) is currently developing
specifications for a soil mix that will be used by municipalities to meet treatment requirements of
the recently issued Municipal Regional Permit. The Department may utilize the final BASMAA
soil mix specification, or the current Contra Costa Clean Water Program (CCCWP) soil mix,
which is very similar to the BASMAA mix under development. Until the BASMAA soil mix is
accepted by the Water Board, the Department should use an engineered soil mix based on the
above criteria, such as the CCCWP criteria.

Page 3.2.2.9 of the DEIR notes that “[B]ecause of the limited permeability of the soils and
potentially high groundwater, infiltration devices and other filters allowing percolation of
stormwater back into the ground are not a consideration.” The Water Board does not find that
this statement, by itself, releases the Department from consideration of biofiltration swales,
designed as specified above. Page 3.2.2.12 of the DEIR notes that groundwater levels in the
Project area range from three feet to 18 feet below ground surface. Biofiltration swales may be
feasible in locations where groundwater is as low as approximately 3.5 feet below the ground
surface. Underdrains may also be used in instances where backing-up of stormwater is a concern.
If the Department proposes swales that are not designed in a manner consistent with the above
guidelines, full treatment credit will not be granted for those swales.

Hydromodification
Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion
and/or changes of sediment transport in receiving waters (hydromodification). The Water Board
finds that due to the significant amount of added impervious area, the proposed project may cause
hydromodification impacts to receiving waters.

The DEIR does not address potential hydromodification effects that may result from Project
implementation; Page 3.2.2.6 of the DEIR notes that “the exact amount of new or reconstructed
pavement tributary to each waterway for each project alternative has not been determined at this
phase of the project.” The DEIR is lacking a proper assessment of potential hydromodification
impacts; hydromodification effects to the Project’s receiving waters cannot be assessed if the area of
proposed new impervious area draining to those waters has not been determined. The DEIR infers
on page 3.3.97, that there would be a less-than-significant impact to special status fish species as a
result of changes in channel morphology, in part, because “no long-term changes to channel
morphology are expected.” However, an analysis of potential hydromodification impacts to each of

2 Water Board Order No. R2-2009-0074, NPDES Permit No. CAS612008
3 http://www.cccleanwater.org/Publications/Guidebook/AppendixB_1-21-09_sc3-17-09.pdf
the creeks has not been performed, and therefore, the Department has not done the necessary exercise(s) to determine any likelihood of permanent changes to creek morphology, and any resultant impacts to habitat of special status fish species.

The Department must characterize the extent project implementation will result in hydromodification impacts, and propose mitigation for any significant impacts. Waste Discharge Requirements and/or 401 water quality certification will not be issued by the Water Board for any portion of the Project until hydromodification impacts have been evaluated and appropriately mitigated.

**Waters of the State**

Page 3.3-17 of the DEIR notes that “Drainages that are not under USACE jurisdiction but have beneficial uses would be considered waters of the State that would be regulated by the RWQCB…” Waters of the State are defined in the Porter-Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.”

The presence of beneficial uses may be a consideration in determining if an aquatic resource is a State water, however, it is not a requisite attribute; potential beneficial uses may also be a consideration in determining whether an aquatic resource is a waters of the State. For instance, a cement-lined drainage has the potential to provide groundwater recharge and wildlife habitat, although, the cement lining may be preventing that drainage from possessing these beneficial uses. Similarly, a wetland may have been degraded by localized hydrological or direct physical alterations, but the beneficial uses of that wetland may be restored by reversion of those alterations.

**No Net Loss**

In the Cumulative Impacts section of the DEIR, page 3.6-6, the Department states that, “the cumulative impacts of the proposed project in combination with other existing and reasonably foreseeable projects on wetland resources would be reduced to a less than significant level through implementation and compliance with the no net loss requirements under Section 404 of the Clean Water Act.” This section incorrectly states that the Clean Water Act requires no net loss of wetlands. No net loss of wetlands refers to a federal policy that establishes a goal to achieve no net loss in the functions and values of the nation’s wetlands. The existence of the policy does not guarantee that cumulative impacts to wetlands will be reduced to a less-than-significant level; it is recognized in the Memorandum of Agreement Between The California Department of the Army and The Environmental Protection Agency, The Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, that, “no net loss of wetlands functions and values may not be achieved in each and every permit action.” The language in this section of the DEIR should be revised to omit reference to no net loss as a requirement. Additionally, this section should not make a claim that existence of the no net loss policy will ensure that cumulative impacts to wetlands will be reduced to a less-than-significant level.

4 http://water.epa.gov/lawsregs/guidance/wetlands/mitigate.cfm

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*California Environmental Protection Agency*
Water Board staff look forward to meeting with Department and other resource agency staff to discuss the Project and further avoidance and minimization options. If you have any questions, comments, or concerns, please contact me at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

Sincerely,

Brendan Thompson
Environmental Specialist

cc (via e-mail): State Clearinghouse
Mr. Hardeep Takhar, Caltrans
Mr. Dale Bowyer, Water Board
Ms. Melissa Escaron, CDFG
Ms. Shin-Roei Lee, Water Board
Ms. Melanie Brent, Caltrans
Mr. John Cleckler, USFWS

Ms. Carolyn Mulvihill, EPA
Ms. Andrea Meier, USACE
Ms. Janet Adams, STA
Ms. Maggie Townsley, ICF International
Mr. Cyrus Vafai, Caltrans
Ms. Jacqueline Pearson-Meyer, NOAA/NMFS
Comment Letter 21, Brendan Thompson, Environmental Specialist, California Regional Water Quality Control Board, 10/27/10

Response to Comment 21-1
Comment noted.

Response to Comment 21-2
Comment noted.

Response to Comment 21-3
During the final design phase, the designers will review opportunities to avoid and minimize impacts to jurisdictional wetlands through the use of steeper embankment slopes (2:1 instead of the advisory design standard 4:1 slope) and retaining walls. A mitigation measure was added for Alternatives C and C, Phase 1 (see Section 3.3.5.1) that reduces potential impacts on wetlands by revising the project design to include a retaining wall of the south side of SR 12E.

Response to Comment 21-4
The feasibility of constructing a clear-span bridge over Ledgewood Creek with improvements to SR 12E has been reviewed as a part of Alternative C, Phase 1 and has been determined to not be feasible at this time. The existing SR 12E crossing over Ledgewood Creek consists of a 5-cell, 106 foot long box culvert. Alternative C, Phase 1 would widen SR 12E by one lane in the eastbound direction (a total of 14 feet, 12 foot lane plus 2 feet shoulder widening). It is not feasible or cost effective to replace the existing box culvert with a new bridge to accommodate the incremental widening proposed in Alternative C, Phase 1 due to cost and traffic handling. Further, it is not possible to close the regional facility to raise the profile of SR 12 and replace the box culvert with a bridge. This option may be re-examined as a part of a future phase for Alternative C, should additional funding be identified.

Response to Comment 21-5
Temporary activities atop wetlands are likely to result from light grading and storm water quality improvements, but could also result from construction access through a confined working space or equipment operating in areas constructing permanent improvements.

Response to Comment 21-6
Comment noted. The use of geotextile and aggregate will be avoided in wetlands; timber mats and other methods to minimize compaction of wetland soils will be used.

Response to Comment 21-7
Construction staging plans will be developed during the final design phase, taking into account public safety, right-of-way limits, environmental and permitting construction windows, and logical, feasible construction sequencing. To the extent feasible, duration of temporary impacts to wetlands will be minimized.

Response to Comment 21-8
Impacts to perennial and seasonal drainages have been quantified and added in a new column in Tables 3.3.2-1 through 3.3.2-4 in Section 3.3.2.1 of the Final EIR/EIS. Mitigation proposed for
impacts to perennial creeks are riparian in nature, but the mitigation in Section 3.3.2.1 has been modified to include the requirement for compensation to be in terms of linear feet of benefit provided, rather than in acres.

Response to Comment 21-9
The Department and STA are currently investigating riparian restoration opportunities on properties in the immediate vicinity of the project. The Department and STA have prepared a draft conceptual mitigation plan as part of the formal NEPA/404 integration process which the RWQCB has participated and provided input.

Response to Comment 21-10
As noted in the response to comment 21-4, it is not feasible or cost effective to replace the existing box culvert with a clear span bridge as a part of the improvements for Alternative C, Phase 1. Replacing the existing box culvert with a bridge would require raising the profile of SR 12 by approximately 6 feet to accommodate the bridge superstructure remaining above the Ledgewood Creek water surface elevation during flood events. To replace the culvert with a clear span structure would entail closing SR 12E for nearly a year and no detour would be feasible as part of Alternative C, Phase 1. Under Alternative C, traffic could be detoured through the proposed Beck Avenue interchange, though it would entail considerable overbuilding of the ramps to accommodate the detour traffic. Therefore, while constructing a clear span bridge over Ledgewood Creek is not feasible as part of Alternative C, Phase 1, it may be re-examined as a part of a future phase for Alternative C, should additional funding be identified.

Response to Comment 21-11
Comment noted. The NEPA/404 integration process has included discussion of impacts to seasonal and perennial drainage features that fall under the jurisdiction of the RWQCB.

Response to Comment 21-12
Comment noted. Through the NEPA/404 integration process the Department and STA have conducted an evaluation of avoidance and minimization measures for impacts to CWA and 404 waters. This evaluation resulted in the ability to reduce the permanent fill of CWA and 404 waters by 1.8 acres.

Response to Comment 21-13
The bioswales proposed by the Department to mitigate potential stormwater runoff impacts will be designed to meet Water Board criteria.

Response to Comment 21-14
Hydromodification requirements are dependent on characteristics of the receiving waters. Certain characteristics preclude the need for hydromodification facilities. For instance, hardened channels, tidally influenced waterways and streams that experience aggradation are not subject to hydromodification facilities. Adjacent to the project footprint, some of the streams are within the influence of the mean high tides. Other streams are actively aggrading (filling) due to the flattened gradients from the upper watershed reaches to the near tide reaches. The Department and STA are committing to characterizing the extent of the project’s hydromodification impacts and would identify measures to reduce impacts prior to applying for a Section 401 Water Quality Certification.
**Response to Comment 21-15**
Comment noted. Waters of the state are non-jurisdictional features in the study area include seasonal drainages (irrigation and roadside ditches) and seasonal wetlands. Waters of the state in the study area are depicted in Figures 3.3-2a, 3.3-2b, 3.3-2c, and 3.3-2d in Volume 2 of the EIR/EIS and listed in Tables 3.3.2-1 through 3.3.2-4 in the Final EIR/EIS.

The word “potential” has been added to the discussion of waters of the State in the Final EIR/EIS in Section 3.3.

**Response to Comment 21-16**
The cumulative analysis discussion in Section 3.6 has been revised to clarify that federal policy (not the Clean Water Act) establishes the goal of no net loss of functions and values of wetlands. The revision also removes the statement that compliance with no net loss requirements would reduce cumulative impacts to less-than-significant, and states that cumulative impacts on wetlands are reduced over time through compliance with the no-net-loss goal.
I would like to submit the following comments on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the I-80 I-680 SR-12 Interchange Project:

We own Chevron, SJB on Benicia Valley Exit and the vacant land. Both the alternatives effect our business. I am trying to market the vacant land next to us/chase and now I cannot, since we don’t know which plan are you going. I have to sit on this land till you decide.
Public Meeting Comment 22, Manoj Sahni, Comment Sheet, 09/23/10

Response to Comment 22-1
The commenter expresses a general concern about the project alternatives and impacts on their property. During the final design and right-of-way negotiation process a more exhaustive assessment of specific impacts to each property will be undertaken. Property owners will be compensated in full accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Alternative C has been selected as the preferred alternative. An explanation of this process and the reasons for this decision are provided in Section 2.5 of the Final EIR/EIS.
Appendix L. Responses to Comments

Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project

October 2012
L-133

Appendix L. Responses to Comments

PUBLIC MEETING
September 23, 2010
6:00 – 8:00 PM
Solano County Administration Building, Room 1600
675 Texas Street, Fairfield, CA

COMMENTS SHEET

Name: WOODY DARNIEUS
Address:  
City/State/Zip: Fairfield, CA 94533
Affiliation: Supervisor Ind. Sunny Side Farm
Phone:  
Email:  

Comments may be submitted tonight or mailed/ emailed to:
Caltrans, District 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS-8B
Oakland, CA 94623-0660
E-mail: Howell_chan@dot.ca.gov

Please note: Comments must be received by 5:00 p.m. on Monday, October 11, 2010

I would like to submit the following comments on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the I-80 I-680 SR12 Interchange Project:

ALTERNATIVE C – IMPROVED INTERCHANGE AT I-80 AND RD TO PRD.

THE EAST SIDE ON RD/ OFF RAMP TO SR 12 FROM RD TO PRD
IS TO CLOSE TO EXISTING BUILDING AND TRAFFIC flows
AROUND TO THE BACK OF SUNNY SIDE. REACHING BAYS
S.S. SAMBOCK IS ASKING FOR DISTRIBUTED PLANS OR BOTH
B AND C AT RD TO PRD.

B IS PUTTING TOO MUCH IN ONE SMALL PLACE

(Please use reverse side if additional space is needed.)

Thank you for participating in tonight’s Public Hearing.
Public Meeting Comment 23, Woody Darnelle, SuperStore Ind. Sunnyside Farms, Comment Sheet, 09/23/10

Response to Comment 23-1
The commenter expresses a concern about the project alternatives and impacts on their property. The Department has conducted an analysis of impacts to private property based on the engineering plans for each alternative and included that analysis and its findings in the EIR/EIS (see Section 3.1.4). During the final design and right-of-way negotiation process further design details will be developed. Property owners will be compensated in full accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
COMMENT SHEET
Public Meeting
September 23, 2010
6:00 – 8:00 PM
Solano County Administration Building, Room 1600
675 Texas Street, Fairfield, CA

Name: LESLEY BRUNNER  Affiliation: HOP GREEN VALLEY LACE
Address: none:
City/State/Zip: FAIRFIELD CA 94534 Email:

Comments may be submitted tonight or mailed/emailed to:
Caltrans, District 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS-8B
Oakland, CA 94623-0660
E-mail: Howell_chan@dot.ca.gov

I would like to submit the following comments on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the I-80 I-680 SR12 Interchange Project:

I LIKE OPTION C. WE REALLY NEED THE NEW WIDER OVERPASS AT GREEN VALLEY RD. ALSO NEED AN OFF RAMA AT SUSIUIN VALLEY RD. FAIRFIELD HAS APPROVED A 400 HOME PROJECT FURTHER ALONG GREEN VALLEY RD. THIS MEANS THERE WILL BE AT LEAST 200 RESIDENCES USING THE GREEN VALLEY ON-OFF RAMPS. WE SHOULD ALSO ADDRESS PEDESTRIANS TRYING TO CROSS GREEN VALLEY RD OR BUSINESS CENTER AT THIS POINT IT IS DANGEROUS WITH NEW ON-OFF RAMPS, IT WILL BECOME DEADLY.

(Please use reverse side if additional space is needed.)

Thank you for participating in tonight's Public Hearing.
Public Meeting Comment 24, Lesley Brunner, HOA Green Valley Lake, Comment Sheet, 09/23/10

Response to Comment 24-1
Comment noted.

Response to Comment 24-2
The Draft EIR/EIS traffic forecasts include all residential and non-residential growth expected through 2035, and the recently-approved 400-unit project referred to is included within those projections. The intersection of Green Valley Road/Business Center Drive currently includes crosswalks on all four legs, pedestrian push-buttons, and minimum pedestrian crossing times. This intersection is projected to operate below the City of Fairfield’s LOS standard of D under 2035 PM peak hour conditions, for the No Build and Phase 1 alternatives, but will operate acceptably under 2035 PM peak hour conditions for the Full Build Alternatives. The Draft EIR/EIS’s avoidance, minimization and mitigation measures include the design and construction of intersection improvements “to minimize the impact of traffic pattern changes associated with the proposed project’s ramp terminal and non-ramp terminal intersections.” The improvements would be designed by the Department in cooperation with the City of Fairfield, in the case of the subject intersection, and would therefore conform to the City’s requirements for adequate pedestrian accommodation and service.
Appendix L. Responses to Comments

Final Environmental Impact Report/Environmental Impact Statement
Interstate 80/Interstate 680/State Route 12 Interchange Project

L-137

Comment Sheet

Public Meeting
September 23, 2010
6:00 – 8:00 PM
Solano County Administration Building, Room 1600
675 Texas Street, Fairfield, CA

Name: Linda Mello Affiliation: Homeowner
Address: Phone:
City/State/Zip: Fairfield, CA 94534 Email:
Comments may be submitted tonight or mailed/mailed to:
Caltrans, District 4
Attn: Howell Chan
Environmental Analysis Office Chief
P.O. Box 23660, MS-8B
Oakland, CA 94623-0660
E-mail: Howell_chan@dot.ca.gov

Please note: Comments must be received by 5:00 p.m. on Monday, October 11, 2010

I would like to submit the following comments on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the I-80 I-680 SR12 Interchange Project:

Alternative C seems like a much more viable solution for many reasons:
1) Addresses having an on-ramp for westbound traffic on Suisun Valley Rd
2) Moves the interchange away from the congestion of the truck stop
3) Creates a combined interchange for I-80, I-680, and SR12
4) From my understanding C creates a new interchange for high school traffic
5) Moves a noisy interchange away from homes
6) Spacing out the mess of traffic occurring truck stop

Thank you for participating in tonight’s Public Hearing.
Public Meeting Comment 25, Linda Mellor, Comment Sheet, 09/23/10

Response to Comment 25-1
Comment noted.
CALIFORNIA DEPARTMENT OF TRANSPORTATION

PUBLIC MEETING

I-80/I-680/SR 12 INTERCHANGE PROJECT

DRAFT ENVIRONMENTAL IMPACT
REPORT/ENVIRONMENTAL IMPACT STATEMENT

Thursday, September 23, 2010
6:00 o'clock p.m.
Solano County Administration Building
675 Texas Street
Room 1610
Fairfield, California

REPORTED BY: MARY DUTRA, CSR #9251
Caltrans and the STA have completed the environmental analysis for the I-80/I-680/SR 12 Interchange Project. Required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) the Draft EIR/EIS studies the effects that the proposed project may have on the environment. The public is encouraged to provide comment.

Verbal or written comments may be submitted at the public meeting on September 23, 6:00 to 8:00 p.m. at the Solano County Administration Building, 1st Floor, 675 Texas Street, Fairfield, California.

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PUBLIC COMMENTS

MR. PERMANN: Walter Permann, P-e-r-m-a-n-n.
Address, 2110 Pebble Drive, Alamo, California.

We own the property at 4885 Fulton, F-u-l-t-o-n, Drive, Fairfield, California.

I'm concerned about the traffic flow on Lopes Road at the intersection of Fulton Drive. The U-turn proposed, I feel, is not satisfactory for the existing traffic conditions.

I am a licensed state engineer and would like to discuss the situation. You can contact me at area code (925) 687-3500 in my office at Concord,
California. Thank you very much.

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MS. VALINE: My name is Michelle Valine, V-a-l-i-n-e. I'm owner of the Valine Ranch. I believe I'm the only person or property owner that is affected by three, possibly four, of these projects. I'm a third-generation Suisun Valley farmer, fourth-generation Californian. There's a lot of history in Suisun Valley that has my family name associated with it, and I'm not just referring to the first time that they took an easement through my grandfather's property for Highway 40.

The topic is not history, it's progress. And I'm not, as a property owner, trying to stand in the way of progress; I'm seeking to be treated fairly and with respect. And in the words of my dear friend Bernie Moore (phonetic), fair may be subjective, respect is not. I have yet to be treated with either.

At the inception of the Highway 12 connector project a representative of Solano Transportation Authority sat in my home and ensured me repeatedly that the project would have no impact on my quality of life, my safety, or my personal well-being. Nothing could be further removed from the truth, nothing could be more different than the traumatized life I have had
to live the last year and a half.

I can provide a complete and detailed list
of all the offenses, but I have had -- since the start
of the project, I have had hay stolen from the
haystack, wood stolen from the wood pile, I've had
buildings graffitied, I've had fences graffitied, I've
had an endless parade of trespassers, people walking
their dogs, people riding their bikes, riding
motorcycles, dirt bikes, riding their horses who are
just curious as to where the road went. And they all
end up on my property, and when I ask them to leave, I
all too often am verbally accosted for the request.

I have had countless engineers, contractors,
subcontractors on my property where they shouldn't be.
And again, I'm treated with disrespect when I ask them
to leave.

My well -- the contractor pumped groundwater
to keep their construction site clean or clear of
water. They never bothered to check our wells on the
property. My well was contaminated. I now have
orange toilets, sinks, showers, dishwashers, a washing
machine and a couple loads of orange laundry.

The dust has been horrific. I have had
personal health issues as a result. Most people go
home to find refuge; I have to drive through hell to
get there and then live in the middle of it.  

What I'm asking is that STA, the board of supervisors find a way to buy all the property that's being affected by these projects at one time so that I can move forward with my life. To live as I have lived under the conditions I have lived in the last year is unreasonable to expect of anyone.

My whole life I've had my horses there and my emotional outlet there, a source of income. I have not had them for a year. It is not any way to live. I deal with the -- in my job with the expenditure of federal and state funds and I know that for every rule there's an exception or there's a clause that allows for exceptions to be made. I'm asking them to find the exception and buy the three pieces of property, not to amputate my ranch, my family history, and my financial well being a piece at a time and leave me to bleed to death emotionally and financially.

---o0o---

MS. SAHNI: Pam Sahni, and we own the Super Serve Chevron. We have a Jack in the Box retail center with that and an empty parcel right next to our station. So we were looking at the alternatives, and both of them would affect us. One would be devastating; it would completely wipe us out. It
would basically go right through our station, our
empty land, to widen the expansion. The other
alternative, which is a little bit more palatable, but
at this point it looks like they would take some of
our land in conjunction of doing it. These are both
in the phase ones. We definitely -- I just want to
make sure that I'm saying we prefer the right one.
We prefer -- we prefer alternative C to
alternative B. We prefer C to B. B would take over
and basically we wouldn't have a business any longer.
We spent a lot of money building and developing the
site.

We have been in the Fairfield area since the
'90s. We rebuilt our Chevron site in 2003. We put
about $5 million into the site. So for us it would be
like a major, mind-blowing kind of a devastating
impact if they were to take over.

It's a good business, it's a running
business, it pays its tax and supports the community.
So we definitely want you guys to consider the other
alternative that wouldn't be so devastating to us,
basically. That's what I want to say.

---oo---
(Whereupon, the proceedings adjourned at
8:00 o'clock p.m.)
Public Meeting Comment 26, Walter Permann, Oral Comment, 09/23/10

Response to Comment 26-1
The comment refers to the access to the properties near the current intersection of Lopes Road and Fulton Road. Under Alternative C and its fundable first phase, the access to this area from Fermi Drive to the south will be eliminated due to the construction of the new I-680 –to – I-80 connector and the connection of the current northern portion of I-680 to Red Top Road, as a local (non-freeway) roadway. However, access to Fulton Drive will still be available via Lopes Road from the north, and via Watt Drive from the south. A second access route from the south is, as the commenter notes, to take the new local roadway to be provided on the current I-680 alignment, and turn left at the intersection with Auto Plaza Court and left again onto Lopes southbound. However, this route may not be as convenient as taking Fermi to Watt northbound, and taking a right on Fulton.
Public Meeting Comment 27, Michelle Valine, Oral Comment, 09/23/10

Response to Comment 27-1
The commenter discusses issues and effects they have experienced over many years during the planning and construction of various roadway projects in the area and across her property. Many of the issues and effects the commenter describes have been related to the construction of the Suisun Parkway project (previously referred to as the North Connector) which was constructed across a portion of the commenter’s property. However, the commenter notes issues and effects associated with engineers, contractors, and subcontractors that have visited the commenter’s property during the planning of the project. STA apologizes for any inconvenience these activities have caused the commenter. STA’s intent is to reduce the effects of its projects on project area residents and property owners to the extent feasible. STA’s engineers and contractors are instructed to perform their work in accordance with property owner approval, within designated areas and to always treat property owners with respect. Moving forward, the development of a site control plan would be enforced by the Resident Engineer during construction to avoid any inconveniences to the project area residents and property owners.

Response to Comment 27-2
Although the I-80/I-680/SR 12 Interchange Improvement project has not yet been initiated, once it has been, construction site BMPs would be implemented before and during construction activities to reduce the pollutants in the stormwater discharges throughout construction. These include hydraulic mulch, hydrosedding, soil binders, silt fence, sediment traps, sand bags, fiber rolls, and straw bale barriers. The development of a site control plan would be enforced by the Resident Engineer during construction to avoid any inconveniences to the project area residents and property owners. Contractors will further be prohibited from using and polluting water wells.

Response to Comment 27-3
Although the I-80/I-680/SR 12 Interchange Improvement project has not yet been initiated, once it does, construction site BMPs to control dust would be applied during construction activities. These may include application of water or dust palliative, application of a soil binder on unpaved roads, implementation of speed limits, sprinkling, temporary paving, and expedited revegetation of disturbed slopes. The development of a site control plan would be enforced by the Resident Engineer during construction to avoid any inconveniences to the project area residents and property owners. The Department will diligently control construction dust to the extent feasible.

Response to Comment 27-4
The acquisition of property needed to construct and operate the project would be done in strict compliance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The commenter’s property is located along I-80 east of Suisun Creek. While Alternative B and Alternative C affect the commenter’s property in the same manner, Alternative B, Phase 1 and Alternative C, Phase 1 do not include improvements in this area and would not require acquisition of the commenter’s property. The commenter’s property may be affected with construction of the relocated I-80 Westbound (WB) Truck Scales, which is part of both ultimate project alternatives (Alternative B and Alternative C). The timing of improvements beyond Phase 1 has not been determined. Acquisition of the
commenter’s property, if necessary, would follow the appropriate procedures under the Uniform Relocation Assistance and Real Property Acquisition Policies Act and all other applicable laws.
Public Meeting Comment 28, Pam Sahni, Oral Comment, 09/23/10

Response to Comment 28-1
The commenter notes a preference for Alternative C which the Department has identified as the Preferred Alternative.

Acquisition of the commenter’s property, or any part thereof, if necessary, would follow the appropriate procedures under the Uniform Relocation Assistance and Real Property Acquisition Policies Act and all other applicable laws.
Dan Wilson Creek
Suisun Creek
Green Valley Creek
Jameson Canyon Creek
Western Segment
Eastern Segment
Central Segment
New Roadway Connecting I-80/Red Top Road Interchange and Business Center Drive
New Roadway Connecting Red Top Road at I-80 to SR 12
UPRR Overcrossing Providing Access to Suisun City
New Interchange at Red Top Road and SR 12W
Improved Interchange at I-80 and Red Top Road
Realignment of I-680 to Connect with SR 12W/I-80 Interchange
New Interchange at I-80/I-680/SR 12W
Old I-680 Alignment Added to Local Jurisdiction
Improved/Expanded Interchange at I-80 and SR 12E
Improved Interchange at I-80 and Abernathy Road
New Interchange at I-680 and Red Top Road
Realignment of Pipeline
Improved Interchange at Suisun Valley Road and I-80
New Single Span Bridge over Suisun Creek
New Single Span Bridge over Green Valley Creek
New Single Span Bridge over Dan Wilson Creek
Widened Bridge over Ledgewood Creek
New Overcrossing and Interchange at Pennsylvania Avenue and SR 12E
New Overcrossing and Interchange at Pennsylvania Avenue and SR 12E
Removal of Highway Access from Jackson Street and Webster Street
New, Expanded Westbound Truck Scale Facility
Improved Interchange at I-80 and Green Valley Road
New Single Span Bridge over Green Valley Creek
16 inch Sea Level Rise (~mid-century estimate)
55 inch Sea Level Rise (~end-of-century estimate)

Disclaimer: Indicated data in these maps do not account for existing shoreline protection or wave activity. Users agree to hold harmless and indemnify the State of California and its representatives and its agents for any liability associated with the use of the maps. The maps and data shall not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).
Projected Sea Level Rise Relative to Alternative C Phase 1


Legend
- Proposed New or Expanded/Improved Roads
- Proposed New or Expanded/Improved Bridge/Overcrossing
- 16 inch Sea Level Rise (~mid-century estimate)
- 55 inch Sea Level Rise (~end-of-century estimate)

Disclaimer: Inundation data used in these maps do not account for existing shoreline protection or wave activity. These maps are for informational purposes only. Users agree to hold harmless and blameless the State of California and its representatives and its agents for any liability associated with the use of the maps. The maps and data shall not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).
List of Technical Studies
List of Technical Studies

The following technical studies have been prepared and are available for review at the Department’s District 04 office at 111 Grand Avenue in Oakland, California.

- **I-80/I-680/SR 12 Interchange Project Community Impact Assessment.** (Circlepoint 2009)
- **I-80/I-680/SR 12 Interchange Project Visual Impact Assessment.** (Circlepoint 2012)
- **Historic Property Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.** (ICF Jones & Stokes 2009)
- **Historic Resources Evaluation Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.** (ICF Jones & Stokes 2009)
- **Archaeological Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.** (ICF Jones & Stokes 2009)
- **Archaeological Extended Phase I and Geoarchaeological Assessment, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.** (ICF Jones & Stokes 2009)
- **I-80/I-680/SR-12 Interchange Project, Location Hydraulic Study & Summary Floodplain Encroachment Report.** (Mark Thomas & Co. and Nolte Associates 2009)
List of Technical Studies

- **I-80/I-680/SR-12 Interchange Project, Stormwater Data Report.** (Mark Thomas & Co. and Nolte Associates 2009)

- **Environmental Geotechnical Memorandum, I-80/I-680/SR 12 Interchange Project, Solano County, California, 04-Sol-12, 680, 80 PM Var.** (Parikh Consultants, Inc. 2009)

- **Addendums to the Environmental Geotechnical Memorandum, I-80/I-680/SR 12 Interchange Project, Solano County, California, 04-Sol-12, 680, 80 PM Var.** (Parikh Consultants, Inc).

- **I-80/I-680/SR 12 Interchange Project, Paleontological Sensitivity Analysis.** (ICF Jones & Stokes 2009)

- **Initial Site Assessment, I-80, I-680, SR-12 Improvement Project, Solano County** (Geocon Consultants 2008)

- **I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update.** (Geocon Consultants 2009)

- **Interstate 80/Interstate 680/State Route 12 Interchange Project Air Quality Technical Report.** (ICF Jones & Stokes 2009)

- **Noise Study Technical Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project.** (ICF International 2010)

- **Interstate 80/Interstate Route 12 Interchange Natural Environmental Study.** (ICF International 2010)

- **Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project, Solano County, California.** (ICF Jones & Stokes 2009)

- **Site Assessment for California Red-legged Frog for the Interstate 80/Interstate 680/State Route 12 Interchange Project, submitted to the U.S. Fish and Wildlife Service (USFWS) on March 3, 2009, for review (ICF International 2009).**

- **Fish Passage Assessment for Green Valley, Ledgewood, and Suisun Creeks, Solano County, California.** (ICF International 2010)

- **Interstate 80/Interstate 680/State Route 12 Interchange Project Energy Technical Report** (ICF International 2010)

- **Assessment of Fault Rupture and Analysis of Displacement Hazard, Solano Transportation Authority Interchange Project, Cordelia, California (I80/I680/SR12 Interchange)** (William Lettis & Associates 2009)

- **Interstate 80/Interstate 680/State Route 12 Interchange Project Biological Assessment** (ICF International 2010).

- **Biological Opinion on the Effects of the Proposed Interstate 80/Interstate 680/State Route 12 Interchange Phase 1 Project, Solano County, California (EA 0A5300)** (April 2012)

- **Interstate 80 High-Occupancy Vehicle Lane Project Initial Study/Proposed Mitigated Negative Declaration (2007).**