

Butte City Bridge Project



Initial Study with Proposed Mitigated Negative Declaration/Draft Section 4(f) De Minimis Determination

*Glenn County, California
District 3 – GLE – 162 (PM 76.3/78.6)
EA 03-3F060/E-FIS 0312000052*

January 2019

**Prepared by the
State of California, Department of Transportation**



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General Information about this Document

What's in this document?

The California Department of Transportation (Caltrans) has prepared this Initial Study with proposed or Mitigated Negative Declaration (IS/MND) which examines the potential environmental effects of a proposed bridge replacement project on State Route 162, in Glenn County, California. Caltrans is the lead agency under the California Environmental Quality Act (CEQA). This document tells you why the project is being proposed, how the existing environment could be affected by the project, the potential impacts of the project, and proposed avoidance, minimization, and/or mitigation measures.

What should you do?

- Please read this document
- Additional copies of this document and related technical studies are available for review at Caltrans District 3, 703 B Street, Marysville, Ca 95901, and at the Princeton Branch Library, 232 Prince Street, Princeton, Ca 95970. This document may be downloaded at the following website (<http://www.dot.ca.gov/dist3/departments/envinternet/envdoc.htm>).
- Attend the public open house on March 14, 2019 at Princeton High School.
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public open house and/or send your written comments to Caltrans by the deadline.
- Please send comments via postal mail to:

California Department of Transportation
Attention: Rajpreet Bihala, Environmental Planner
Department of Transportation, District 3
703 B Street
Marysville, CA 95901
- Send comments via e-mail to: Rajpreet.Bihala@dot.ca.gov
- Be sure to send comments by the deadline: April 4, 2019

What happens after this?

After comments are received from the public and reviewing agencies, Caltrans may (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans could complete design and construct all or part of the project.

Butte City Bridge Project

*Replace Bridge No. 11-0017 on State Route 162
over the Sacramento River in Glenn County,
from Postmile 76.3 to 78.6*

Draft Initial Study with Proposed Mitigated Negative Declaration/Draft Section 4(f) De Minimis Determination

Submitted Pursuant to: Division 13, California Public Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

1-3-2019

Date of Approval



Suzanne Melim
Office Chief
California Department of Transportation
CEQA Lead Agency

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

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Proposed Mitigated Negative Declaration

Pursuant to: Division 13, California Public Resources Code
SCH: 0000000000

Project Description

The California Department of Transportation (Caltrans) proposes to replace the Sacramento River Bridge (Bridge No. 11-0017) on State Route (SR) 162 at postmiles 76.3 through 78.6 in Glenn County.

Determination

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

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

- The proposed project would have no effect with regard to coastal zone, growth, land use and planning, mineral resources, population and housing, public services, recreation, and tribal cultural resources.
- The proposed project would have less-than-significant impacts with regard to aesthetics, agriculture and forest resources, air quality, cultural and paleontological, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation and traffic, and utilities and service systems.
- With the following mitigation measures incorporated, the proposed project would have less than-significant impacts with regard to biology.

Measure BIO-1: Compensate for the Loss of Valley Elderberry Longhorn Beetle Habitat

Caltrans proposes to compensate for adverse effects on VELB through the purchase of VELB mitigation credits at a USFWS-approved mitigation bank.

Elderberry Total Mitigation

Alternatives	Riparian	Credits	Non-Riparian	Credits
A2	2.21	53	8.21	199
C2	4.54	110	23.48	569
D	4.66	113	19.95	483

In total, Caltrans proposes to compensate for 252 credits for Alternative A2, 678 credits for Alternative C2, and 596 credits for Alternative D. Compensation and measures are further discussed in Appendix G, USFWS Biological Opinion.

Measure BIO-2: Compensate for the Temporary and Permanent Loss of Riparian Communities

Caltrans proposes to implement compensatory mitigation for the permanent loss of 0.072 acre of riparian habitat through on-site mitigation and purchasing mitigation credits to ensure no net loss of riparian habitat. Compensation and measures are further discussed in Appendix H, NMFS Biological Opinion.

Measure BIO-3: Compensate for Loss of Oak Woodland Habitat

If compensation is required beyond the on-site restoration and enhancement, Caltrans will develop an Oak Woodland Mitigation Plan to provide compensatory mitigation for the permanent conversion of oak woodland as a result of the project.

Measure BIO-4: Compensate for Loss of Wetlands and Non-Wetland Waters

Caltrans will provide compensatory mitigation for the project-related permanent and temporary loss of wetlands and non-wetland waters. Final compensatory ratios will be determined during the permitting process to ensure no net loss.

Measure BIO-5: Compensate for the Temporary Effects to and Permanent Loss of Stream Habitat (Sacramento River)

CDFW has identified the Butte City Bridge as an above average mortality area for salmonids due to the wooden fenders acting as a refuge for predatory fish species such as largemouth bass. The removal of the fenders and the wood piles from the river should result in a reduction of salmonid predation in this area and will increase the amount of aquatic habitat.

Measure BIO-6: Minimize Affects to Special-Status Fish and Fish Habitat

Caltrans proposes to follow the measures and recommendations discussed in the NMFS Biological Opinion (App. H) to ensure minimization of effects to special-status fish and their habitats.

Measure BIO-7: Compensate for the Effects to Western Yellow-Billed Cuckoo Habitat

Riparian credits will be purchased at a USFWS approved mitigation bank at a USFWS and CDFW approved ratio to compensate for permanent impacts to riparian YBCU foraging habitat

Measure BIO-8: Avoidance and Minimization for the Effects to Migratory Birds, Special-Status and Non-Special-Status Roosting Bats

Caltrans will implement avoidance and minimization measures to reduce potential impacts on migratory birds and roosting bats protected under the MBTA.

Measure BIO-9: Avoidance and Minimization for the Effects to Swainson's Hawk

Species specific measures, such as pre-construction surveys will be implemented to avoid and minimize effects on Swainson's Hawks.

Suzanne Melim, Chief
North Region, Environmental Services, South

Date

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List of Abbreviated Terms

ADL	Aerially deposited lead
BMPs	best management practices
ARB	California Air Resources Board
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CNPS	California Native Plant Society
Porter-Cologne Act	California's Porter-Cologne Water Quality Control Act
CO	carbon monoxide
CAA	Clean Air Act
CWA	Clean Water Act
CFR	Code of Federal Regulations
CD	community development
DPM	diesel particulate matter
DSA	Disturbed Soil Area
FMMP	Farmland Mapping and Monitoring Program
FHWA	Federal Highway Administration
H ₂ S	hydrogen sulfide
LSAA	Lake or Streambed Alteration Agreement
Pb	lead
LEDPA	least environmentally damaging practicable alternative
MS4	municipal separate storm sewer systems
NAAQS	National Ambient Air Quality Standards
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries Service	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NR	natural resources
NO ₂	nitrogen dioxide
O ₃	ozone
PM ₁₀	particles of 10 micrometers or smaller
PM _{2.5}	particles of 2.5 micrometers and smaller
PM	particulate matter
PS	public safety
RWQCB	Regional Water Quality Control Board
ROW	Right-of-way
SRNWR	Sacramento River National Wildlife Refuge
CAAQS	state ambient air quality standards
SR	State Route
SWRCB	State Water Resources Control Board
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SO ₂	sulfur dioxide
TMDLs	Total Maximum Daily Loads
air toxics	toxic air contaminants
USACE	U.S. Army of Engineers

US 101
USC
USC
U.S. EPA
UCMP
WPCP

U.S. Highway 101
United States Code
United States Code 16
United States Environmental Protection Agency
University of California Museum of Paleontology
Water Pollution Control Program

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) is the lead agency under the National Environmental Policy Act (NEPA), as delegated by the Federal Highway Administration (FHWA) and under the California Environmental Quality Act (CEQA). Caltrans proposes to fully replace the Sacramento River Bridge (Bridge No. 11-0017) on State Route (SR) 162 in Glenn County with a new bridge between postmiles (PM) 76.3 and 78.6 on SR 162. Figure 1 in Section 1.3.1 shows the project location and vicinity.

1.2 Project Purpose and Need

The purpose of this project is to improve safety by replacing the Sacramento River Bridge (Bridge No. 11-0017) and viaduct with a bridge and viaduct, widen shoulders and extend the service life of the pavement throughout the project limits to meet current design standards.

The existing steel bridge was deemed seismically vulnerable due to section loss in the pilings at several piers and truss members of the bridge superstructure. Significant liquefaction potential exists within the subsurface material that supports the steel bridge and viaduct segments. Furthermore, instability for scour depths can occur during a 100-year flood event. In addition, the viaduct concrete girders are exhibiting signs of distress due to insufficient shear capacity. The 1948 bridge along with the 1961 lengthened viaduct segment were each designed for a 50-year service life and are currently beyond their expected service lives. Within the project limits, the existing shoulder widths do not meet current standards, and the existing asphalt concrete pavement is in poor condition requiring grinding and overlay.

1.3 Project Description

Caltrans is proposing a seismic retrofit project to replace the existing structure by replacing both existing segments of the steel bridge (Bridge No. 11-0017) structure spanning the Sacramento River on State Route (SR) 162 in Glenn County. The new bridge would be constructed on a parallel alignment on either the north side (Alternative A2) or the south side (Alternative C2) of the existing bridge, or on the existing alignment (Alternative D) (Figures 2, 3, and 4 in Section 1.3.1).

The existing bridge was built in 1948 and encompasses a decommissioned swing and fixed steel truss bridge, and a reinforced concrete viaduct. In 1961, the bridge underwent construction extension of the westerly end to carry the roadway above the floodplain to the westerly levee. Structure Maintenance and Investigations (SMI) conducted inspections for the entire bridge and viaduct section in 2012 and found substantial section loss and exfoliated layers of steel at the fixed truss bridge. Subsequent bridge analysis found high risk of liquification during a seismic event. Based on these findings, the Bridge Maintenance Strategy commission directive for the existing Butte City Bridge was to program the project in the State Highway Operation and Protection Program (SHOPP) to replace the bridge. The original support cost was programmed to

replace the truss portion of the bridge and later revised to replace the entire bridge on a parallel/existing alignment including roadway improvements through Butte City.

1.3.1 Build Alternatives

The proposed project begins where SR 162 diverges east from SR 45 (Figure 1). For all alternatives, the proposed replacement structure would be a pre-stressed concrete box girder superstructure supported on two-column bents. The columns would be 5-foot diameter cast-in-steel-shell (CISS) piles/extension. Under all alternatives, the new bridge would be approximately 4,389 feet long, with 12-foot lanes and standard 8-foot shoulders in both directions of travel. The roadway and new shoulders would be contoured to accommodate the wider shoulders for approximately 100 feet east of the bridge. All of the guard railing east of the bridge would be replaced and transitioned into the bridge railing. The driveway that accesses the levee north of the bridge would be moved eastward approximately 50 feet to accommodate the new bridge approach slab railing end treatment. The slope north of the highway would likely be built-up with imported material to reroute the driveway from the highway back onto the levee. All new slopes and driveways would be built within Caltrans right-of-way (ROW). The bridge approach embankment slopes would be generally 4:1 or flatter, but no steeper than 2:1.

Caltrans is also proposing to replace the existing viaduct across the Sacramento River floodplain from PM 76.70 to 77.45 (a total length of 3,200 feet). The replacement structure would be a typical slab-on-pile extension. The columns would be 2-foot diameter cast-in-steel-shell (CISS) piles/extension. The new viaduct would span approximately 45 feet between column rows, allowing fewer columns than the existing viaduct. The CISS pile shell would be installed using conventional pile driving equipment to an approximate depth of 60 feet. It is almost certain that ground water would be encountered during the drilling phase, so dewatering would be required. Falsework would be erected after columns are poured. Falsework would consist of steel stringers on timber posts and pads, probably two or three pads per span. Construction would likely progress in a linear fashion from one end to the other, starting at abutment 1 on the west end of the viaduct. The viaduct construction would not require a trestle.

Other work connected with the project includes placing new traffic signing and striping, constructing new ditches for roadside runoff, extending or placing new culverts and over-drains within the town of Butte City, placing new bridge approach guardrail, reconstructing driveways and levee road connections, and realigning the County Road 61/SR 162 intersection, possibly warranting the addition of intersection lighting as well. Any objects (such as trees or utilities) within the clear recovery zone (within 20 feet from the traveled way) that cannot be made yielding would be removed, relocated, or shielded with new guard rail if need be.

Any traffic count census loops within existing pavement would be replaced as needed. Failed pavement areas within the lanes and shoulders would be replaced and the highway would be overlaid with new asphalt concrete (AC). Any excess roadway excavation material that cannot be reused as embankment would be disposed of in conformance with the provisions in Caltrans' Standard Specifications.

Erosion control measures would be implemented to manage disturbed soil areas. The storm water treatment best management practice (BMP) is to maximize site perviousness by deploying bio-filtration consistent with the ability to convey bridge runoff to the abutments for treatment. Bio-filtration could be achieved by swales/strips, detention devices, or infiltration devices.

Alternative A2 and Alternative C2 both would be constructed as described above. During construction, temporary lane closures may be necessary, but would be performed during non-peak hours. The existing bridge would remain open while the new bridge is under construction, so no bridge closure would be necessary.

Alternative D, which would be built on the existing alignment, would require a 72-hour road closure. During the closure, a detour would be in place that would travel north from County Road 61 for 18 miles to Ord Ferry Road, east for 6 miles to 7 Mile Road, and south on 7 Mile Road and Road Z for approximately 12 miles to SR 162. The total detour is approximately 35 miles. Any required closures would be coordinated with emergency service providers in advance of construction.

Alternative D would be constructed using a slide-in method. This method involves building the new superstructure parallel to the existing bridge on temporary supports. The old bridge would then be demolished, new substructure constructed, and the new bridge slid into place. The new substructure would be constructed above the existing structure to reduce overall traffic disruption time. This method would require building two trestles and two temporary platforms, one on each side of the existing bridge over the river. The contractor would build the new foundations in the river, then build the new superstructure on a temporary platform to the side of the existing bridge. When the superstructure is complete, the old bridge would be pushed onto one of the temporary platforms and the new bridge would be pushed into place.

For the viaduct portion under Alternative D, the foundation piles and a grade beam would be cast along each side of the existing viaduct. When the bridge is closed, a crane would be used to place precast panels across the grade beams to form a deck. A final wearing surface would be placed on the deck prior to opening to traffic. The old bridge would be demolished from underneath the new bridge structure as needed during construction or, if feasible, after the new structure is open for traffic.

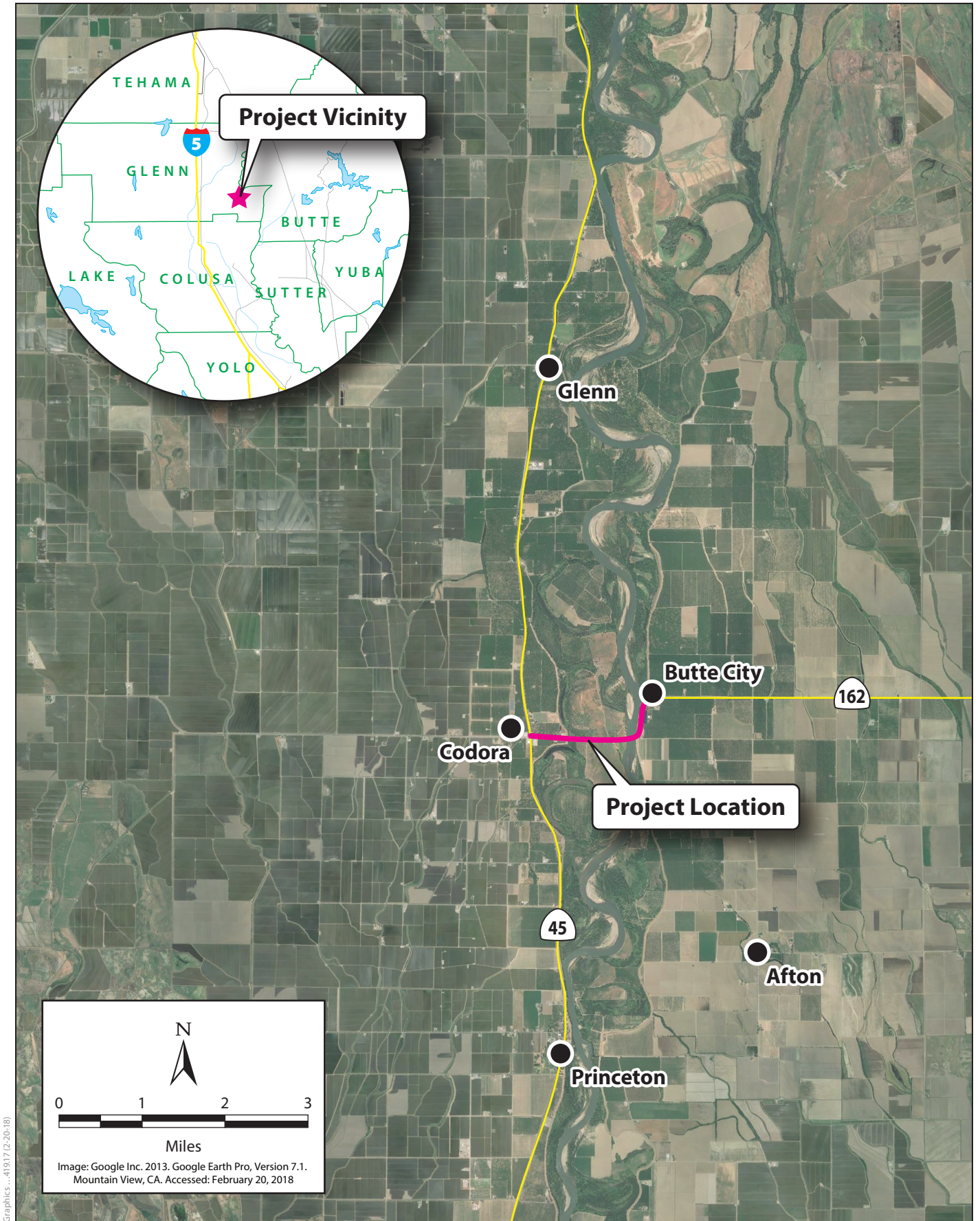
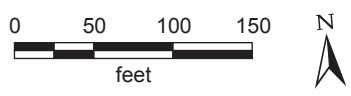


Figure 1
Project Vicinity and Location

Figure 2.
Alternative A2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		



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Figure 2a
Alternative A2 (page 1 of 8)

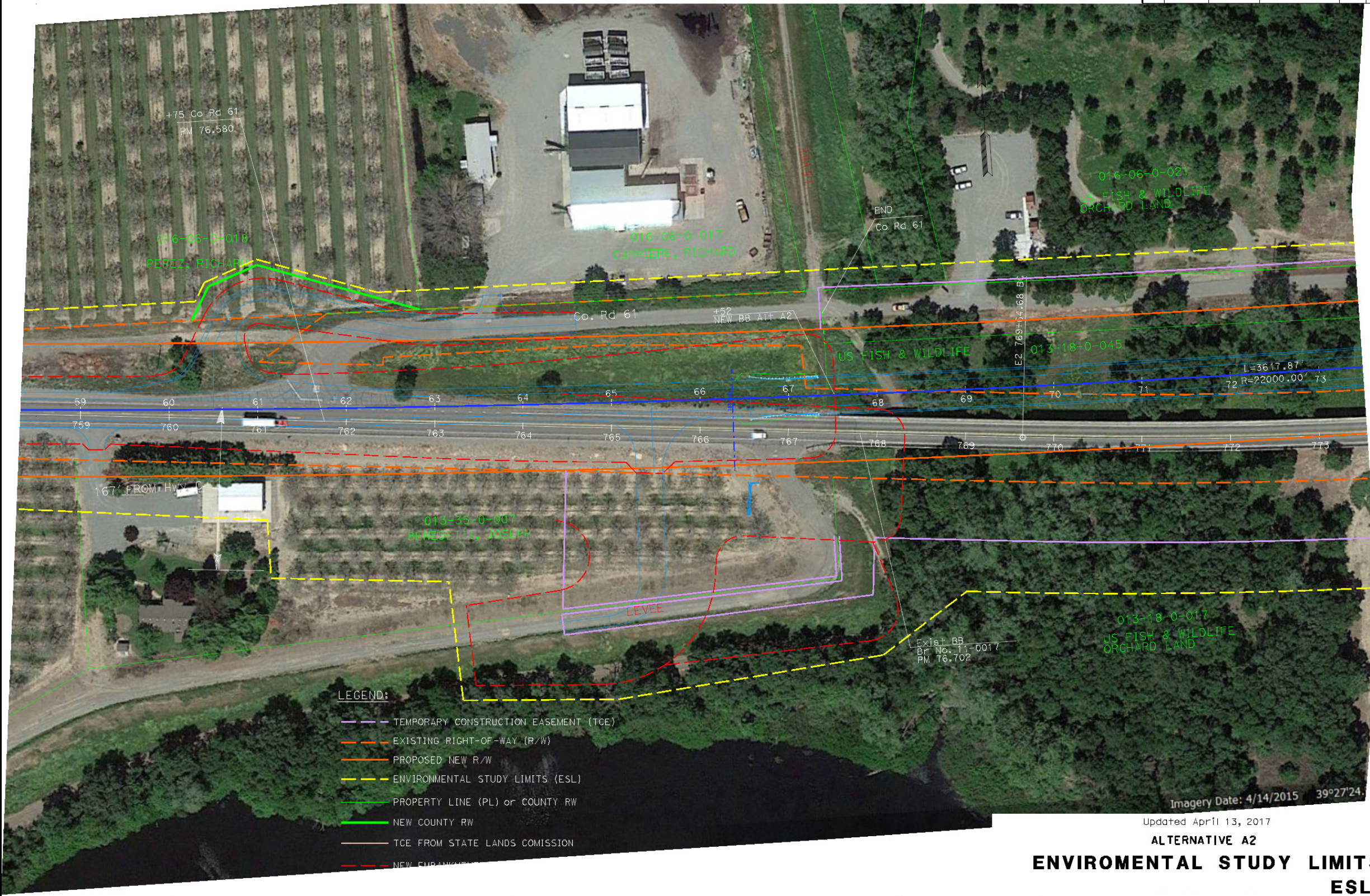
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 - PROPOSED NEW R/W
 - ENVIRONMENTAL STUDY LIMITS (ESL)
 - PROPERTY LINE (PL) or COUNTY RW
 - NEW COUNTY RW
 - TCE FROM STATE LANDS COMMISSION
 - NEW EMBANKMENT

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Figure 2b
 Alternative A2 (page 2 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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Google earth

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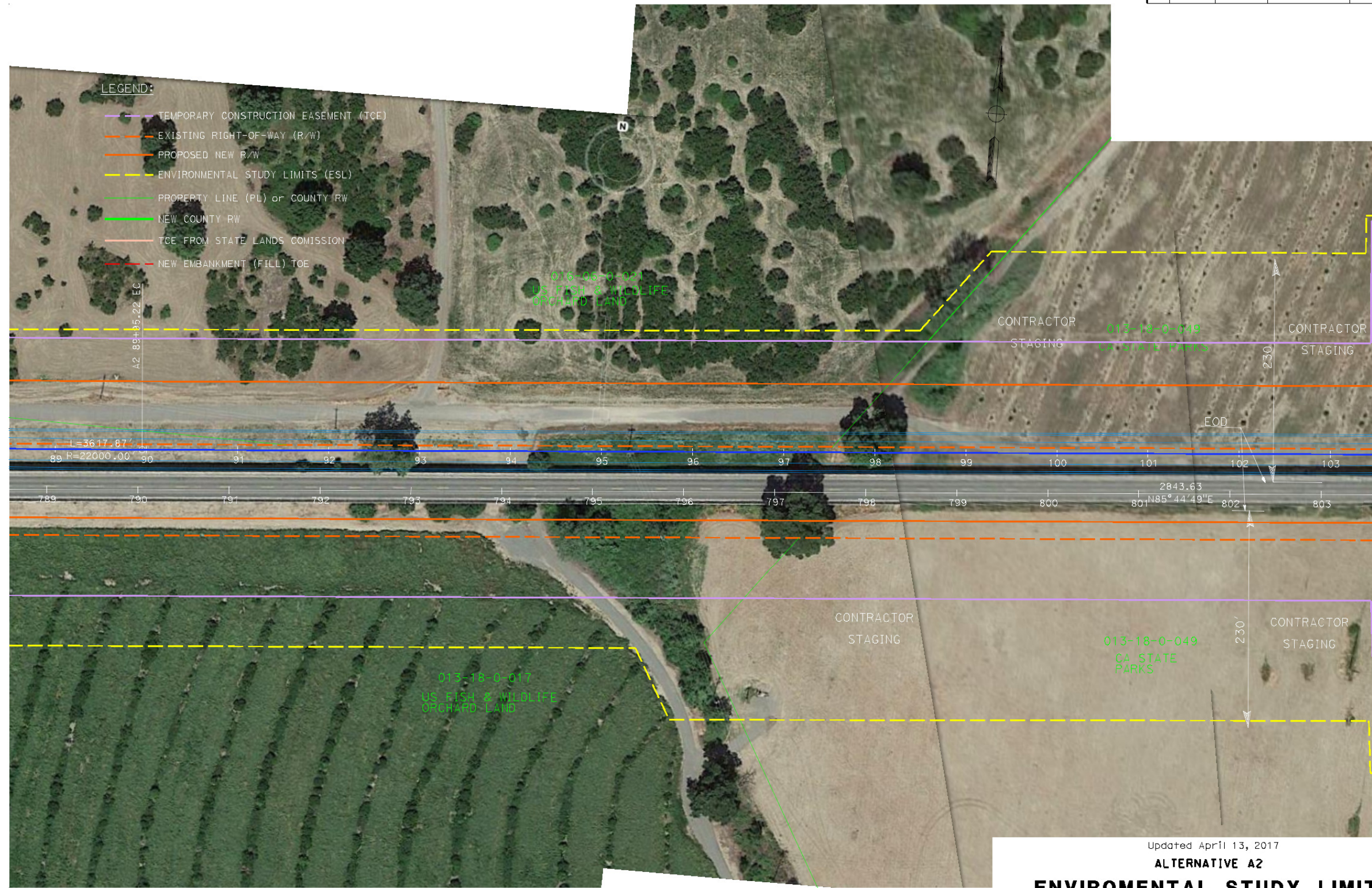
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Figure 2c
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Figure 2d
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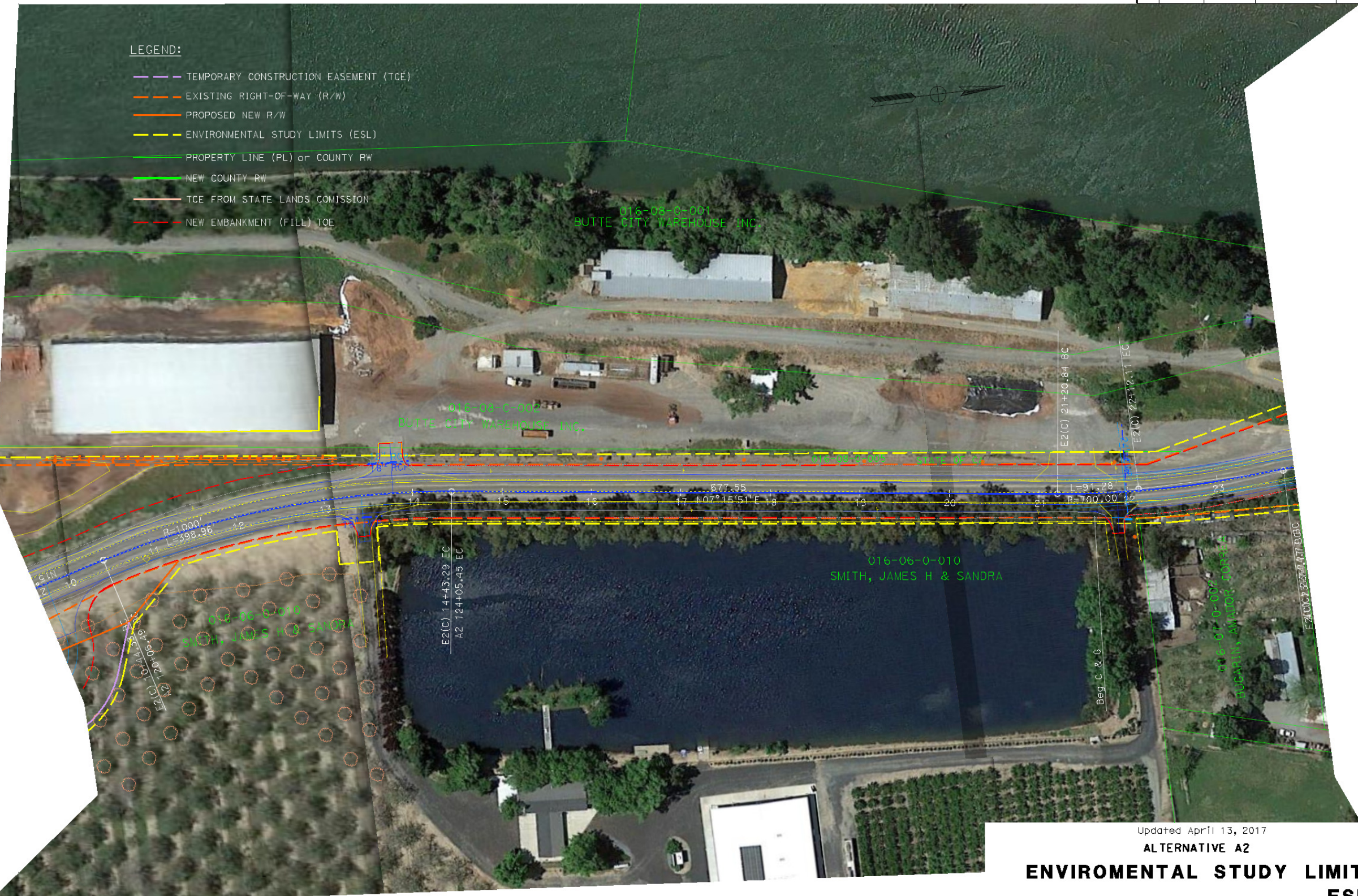


Figure 2f

Alternative A2 (page 6 of 8)

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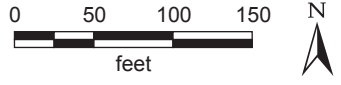
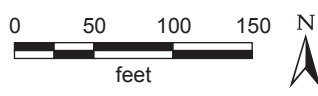
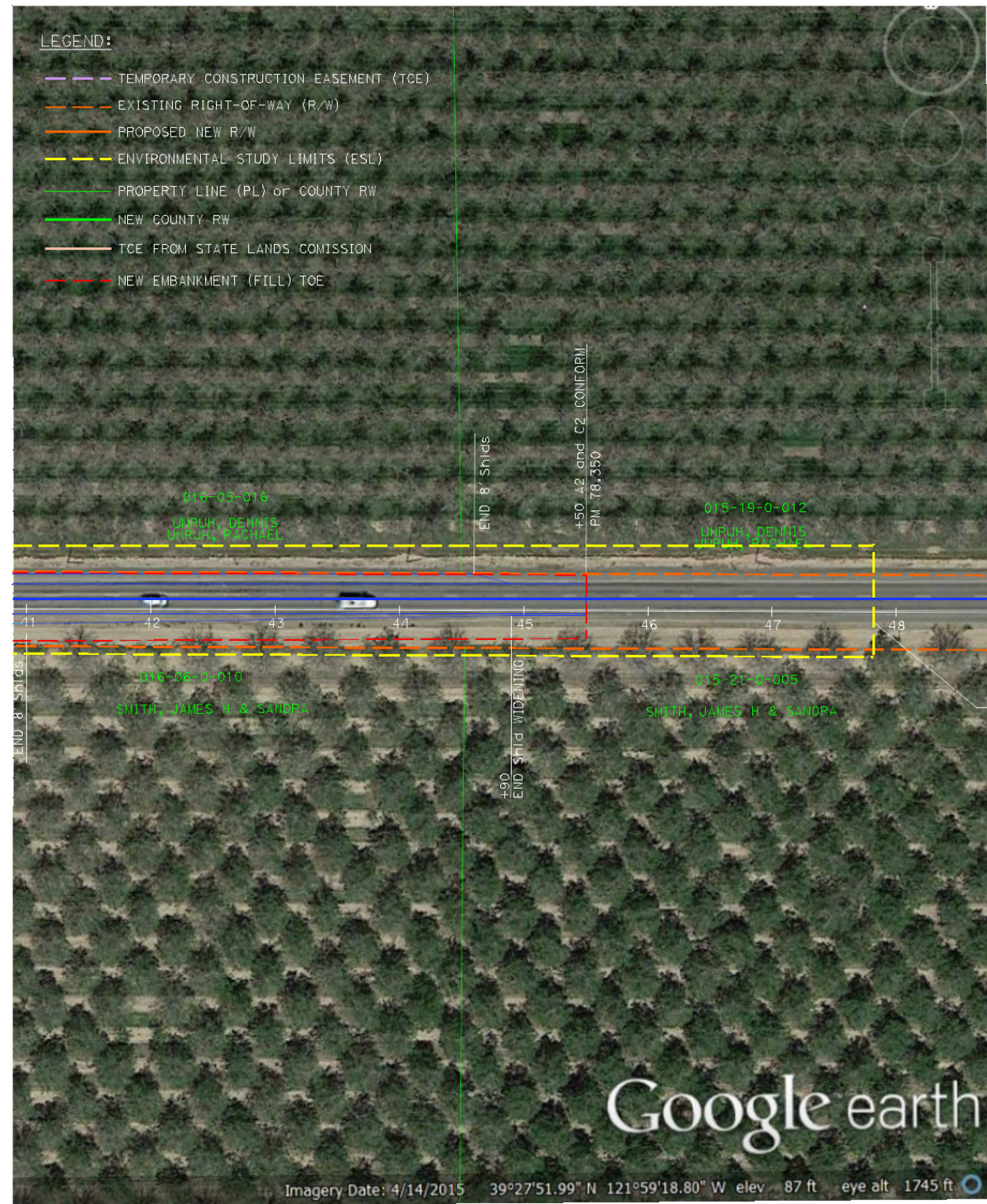


Figure 2g
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Figure 2h
Alternative A2 (page 8 of 8)

Figure 3.
Alternative C2



Figure 3a
 Alternative C2 (page 1 of 8)

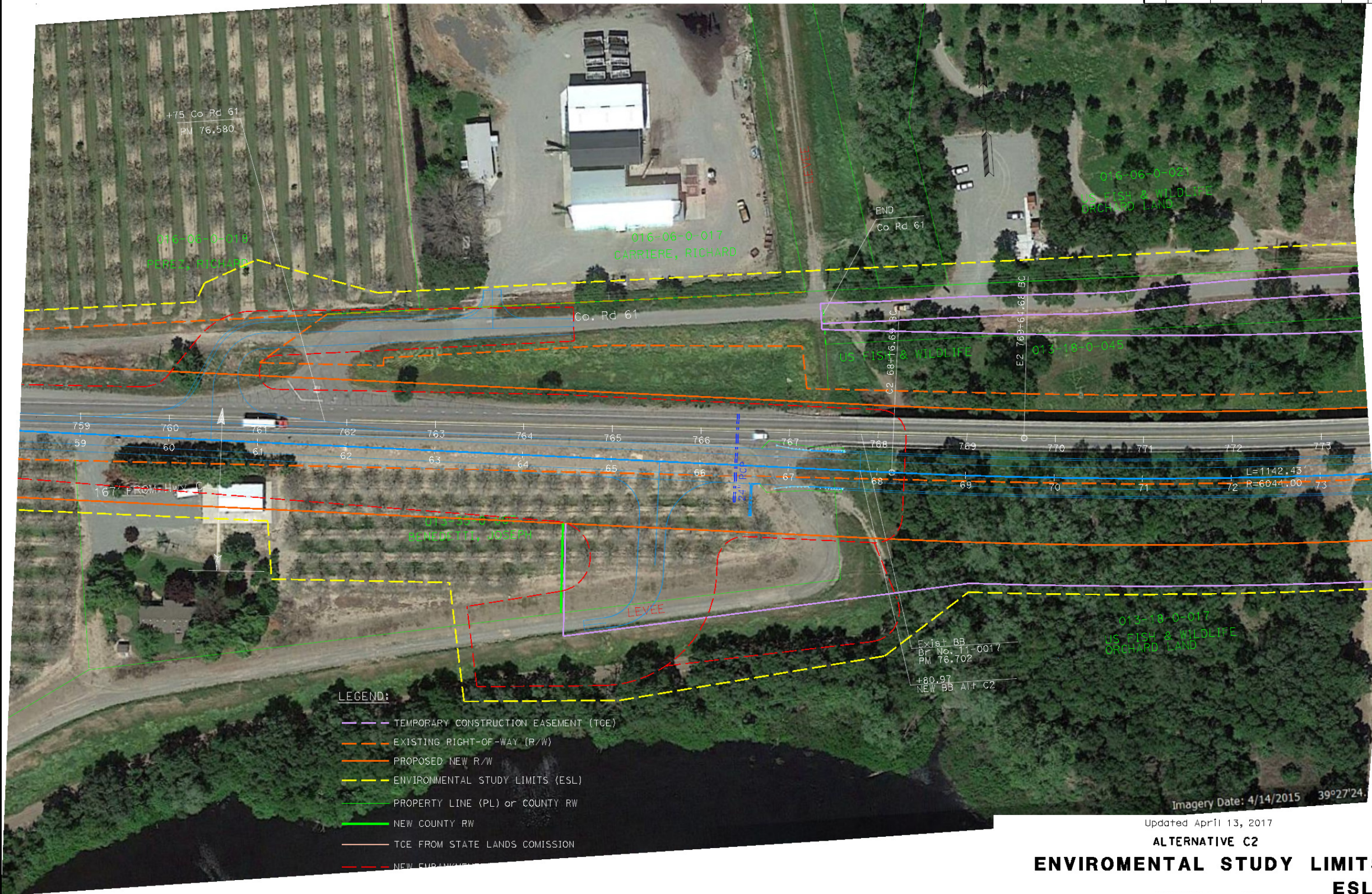
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ALTERNATIVE C2

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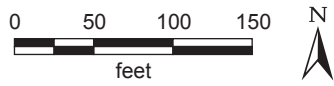
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Figure 3b
Alternative C2 (page 2 of 8)

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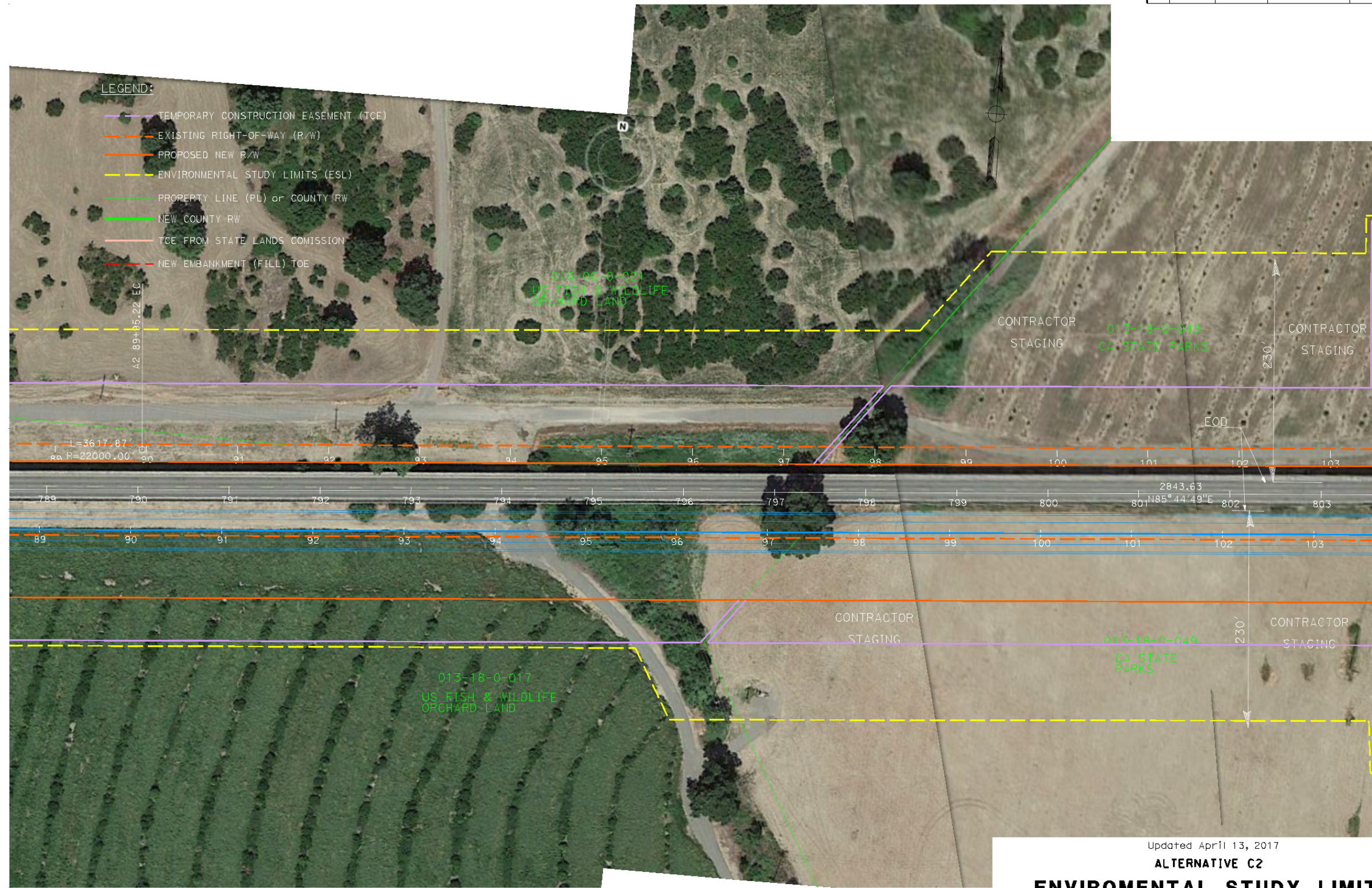


Graphics...419.17 (2-20-18)

Figure 3c
Alternative C2 (page 3 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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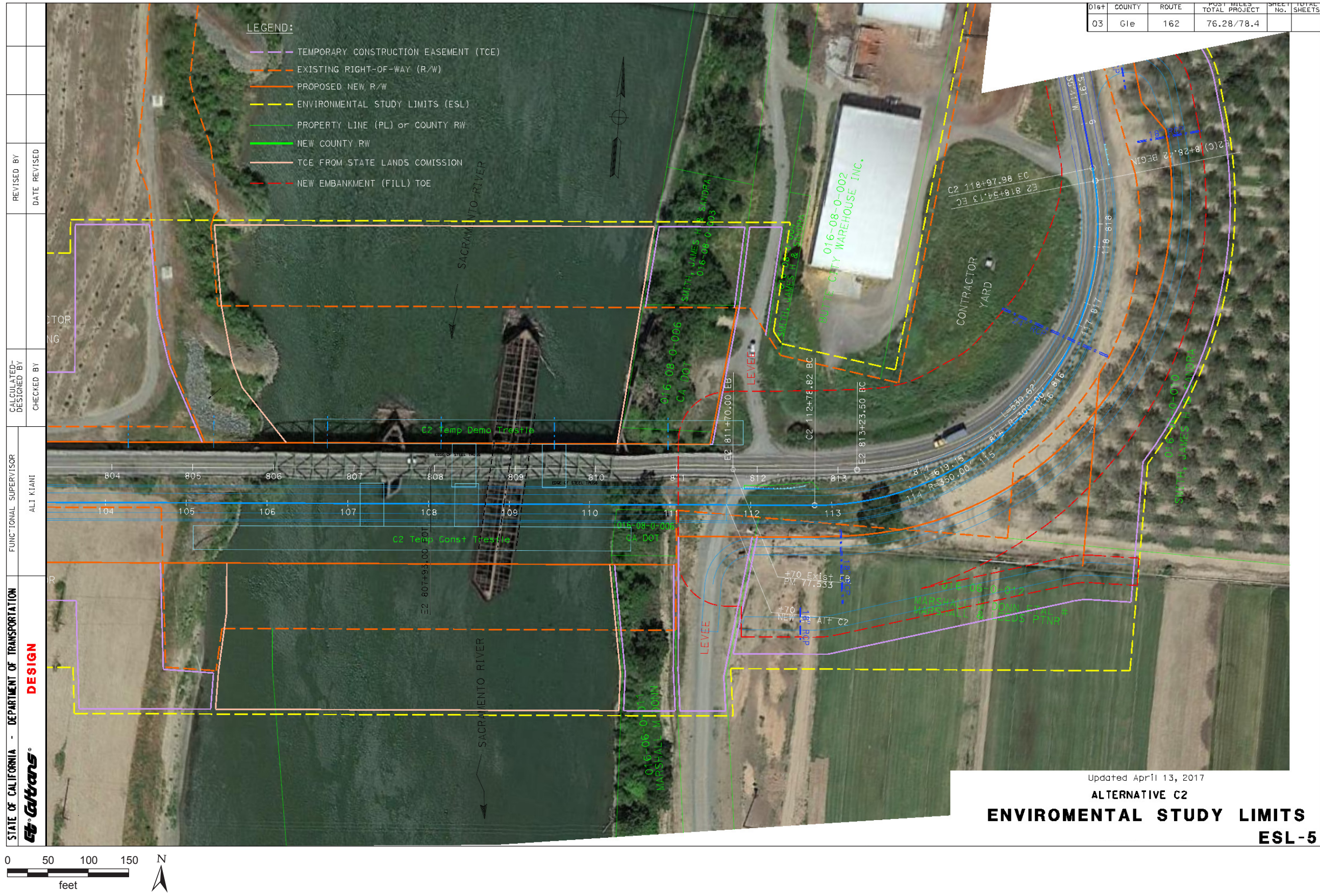
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ALTERNATIVE C2
ENVIRONMENTAL STUDY LIMITS
ESL-4

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Figure 3d
Alternative C2 (page 4 of 8)



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		

Figure 3e
Alternative C2 (page 5 of 8)

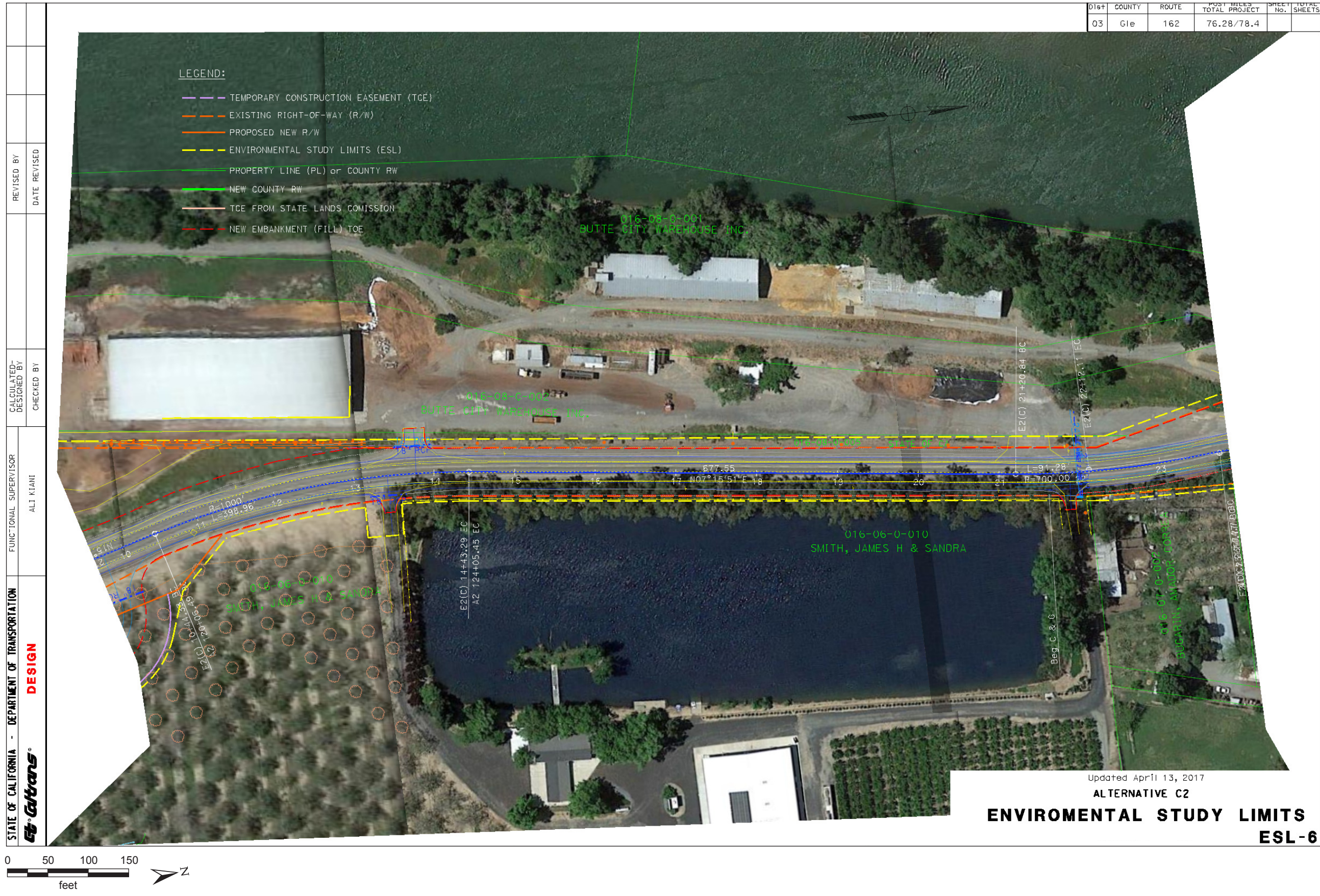
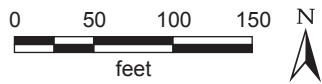


Figure 3f
Alternative C2 (page 6 of 8)

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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ALTERNATIVE C2

**ENVIROMENTAL STUDY LIMITS
ESL-7**

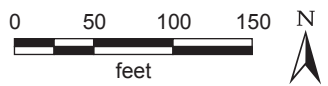
Figure 3g
Alternative C2 (page 7 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		

REVISIONS	REVISOR	DATE	DESCRIPTION

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ALTERNATIVE C2
ENVIRONMENTAL STUDY LIMITS
ESL - 8

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Figure 3h
 Alternative C2 (page 8 of 8)

Figure 4.
Alternative D

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Caltrans DESIGN	ALI KIAMI	CHECKED BY	DATE REVISOR

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		



Updated May 10, 2017
ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-1

Graphics...419.17 (2-20-18)

Figure 4a
 Alternative D (page 1 of 8)

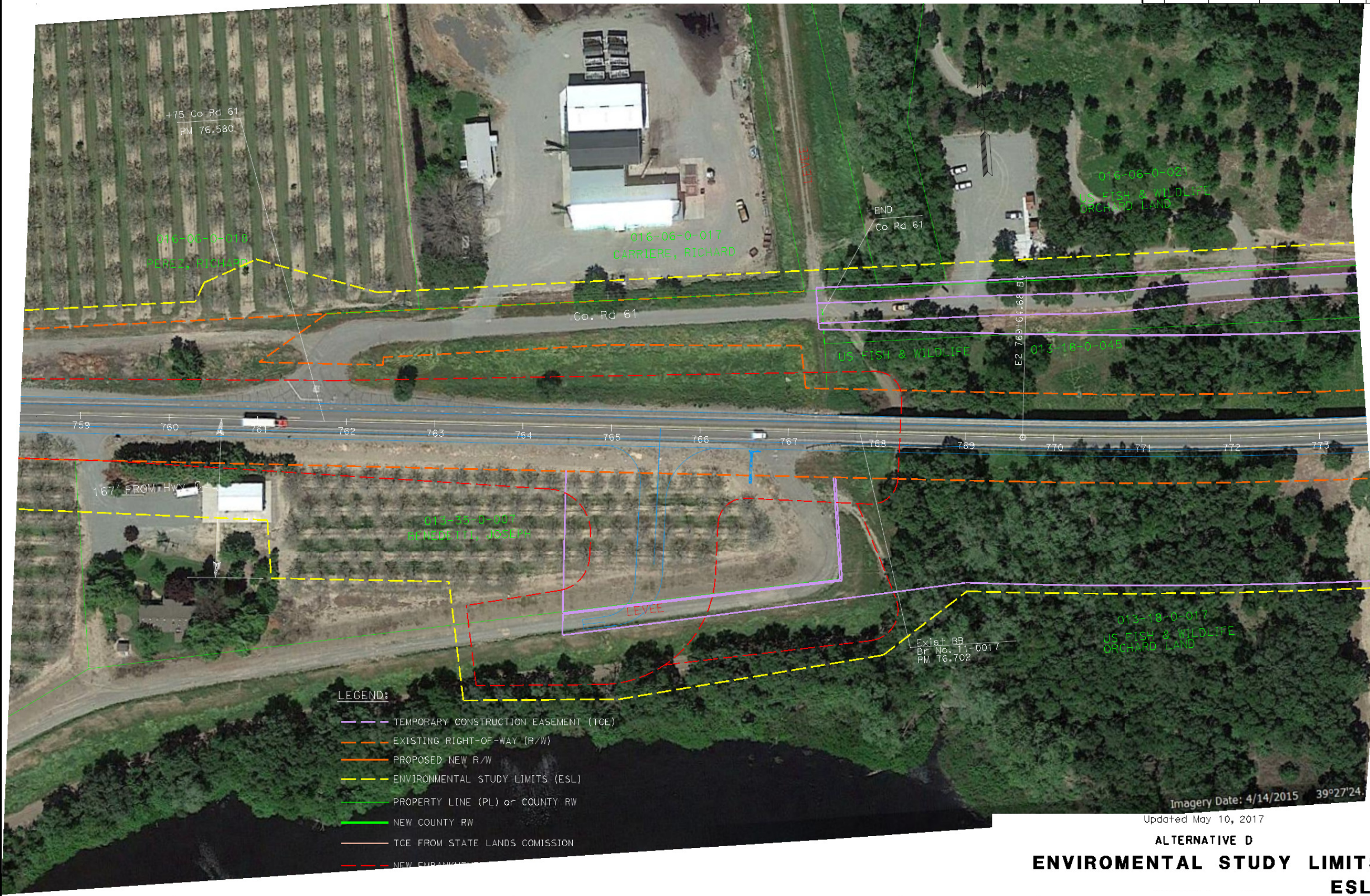
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03	Gle	162	76.28/78.4		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

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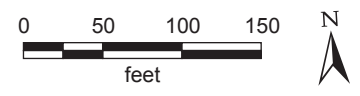
REVISED BY
 DATE REVISED



- LEGEND:**
- TEMPORARY CONSTRUCTION EASEMENT (TCE)
 - EXISTING RIGHT-OF-WAY (R/W)
 - PROPOSED NEW R/W
 - ENVIRONMENTAL STUDY LIMITS (ESL)
 - PROPERTY LINE (PL) or COUNTY RW
 - NEW COUNTY RW
 - TCE FROM STATE LANDS COMMISSION
 - NEW EMBANKMENT

Imagery Date: 4/14/2015 39°27'24"
 Updated May 10, 2017

ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-2



Graphics: 419.17 (2-20-18)

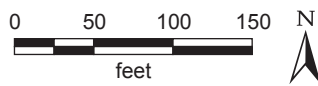
Figure 4b
Alternative D (page 2 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		

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	ALI KIAMI	DESIGN
	REVISIONS: REVISOR: _____ DATE: _____ CHECKED BY: _____ CALCULATED/DESIGNED BY: _____	



Updated May 10, 2017
ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-3

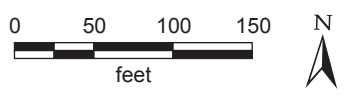
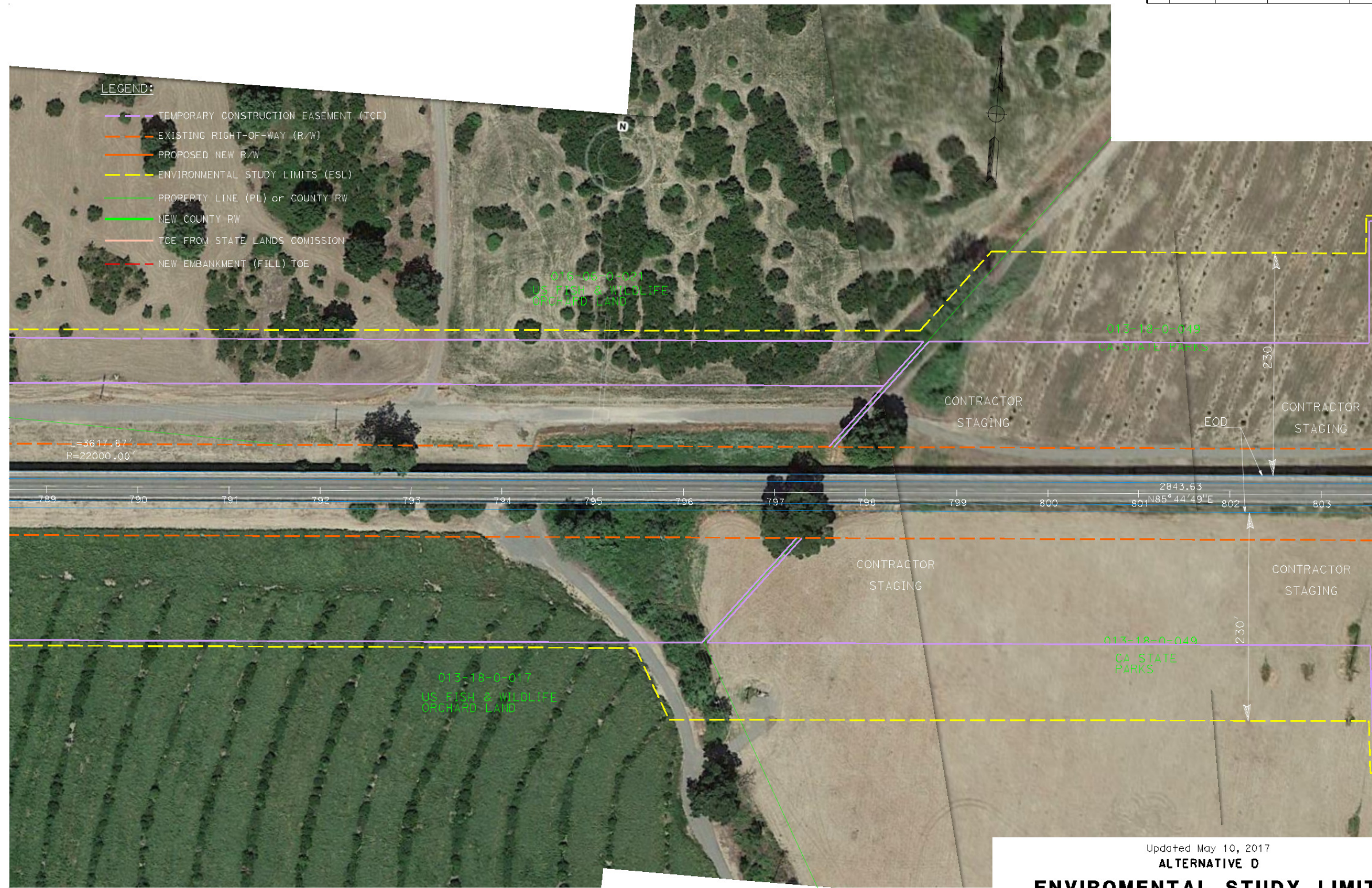


Graphics...419.17 (2-20-18)

Figure 4c
Alternative D (page 3 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN	FUNCTIONAL SUPERVISOR	ALLI KIANI	CALCULATED-DESIGNED BY	CHECKED BY	REVISOR	DATE
Caltrans							



Updated May 10, 2017
ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-4

Graphics: 419.17 (2-20-18)

Figure 4d
Alternative D (page 4 of 8)

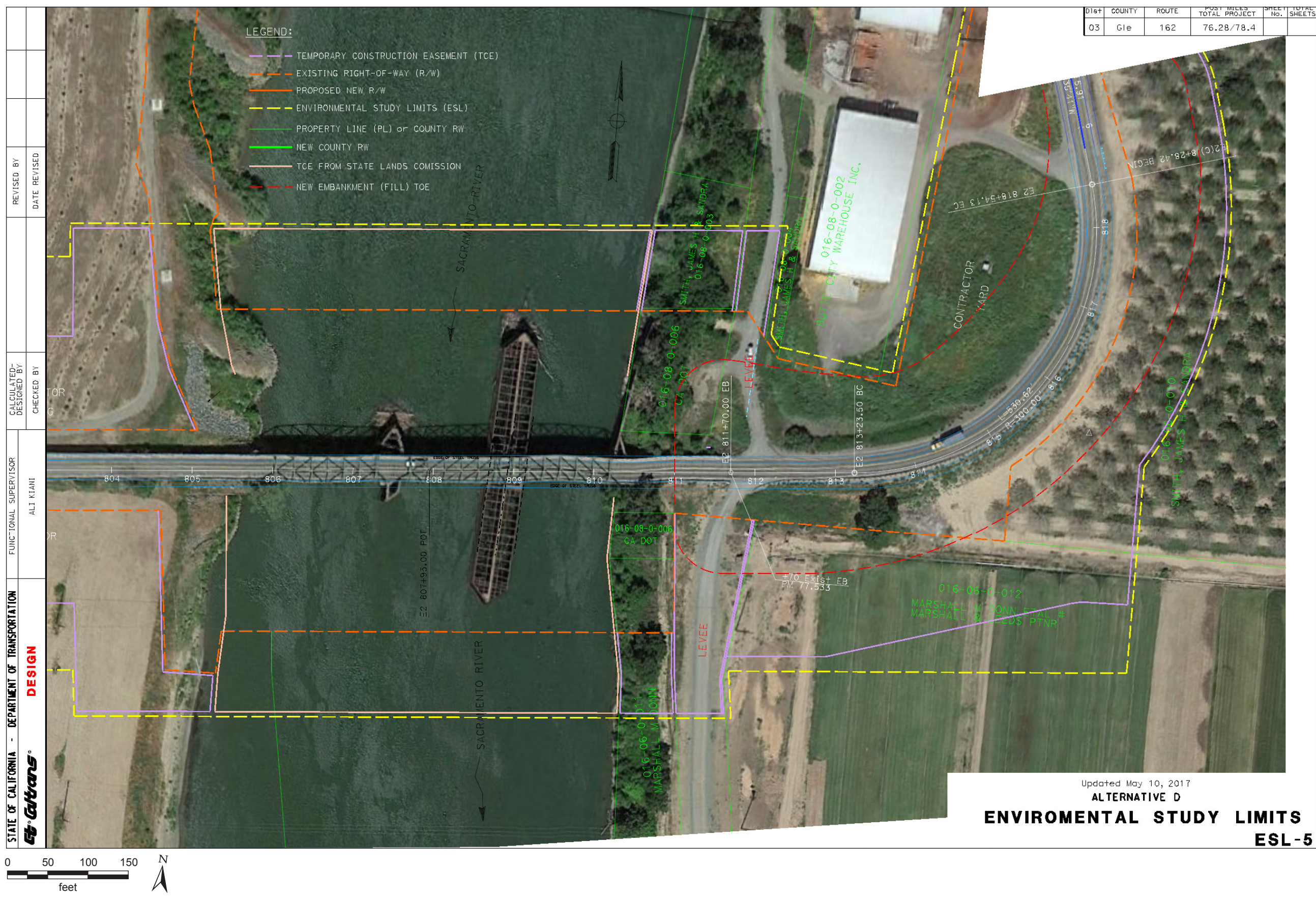
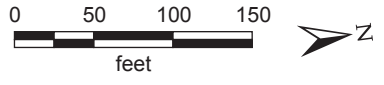
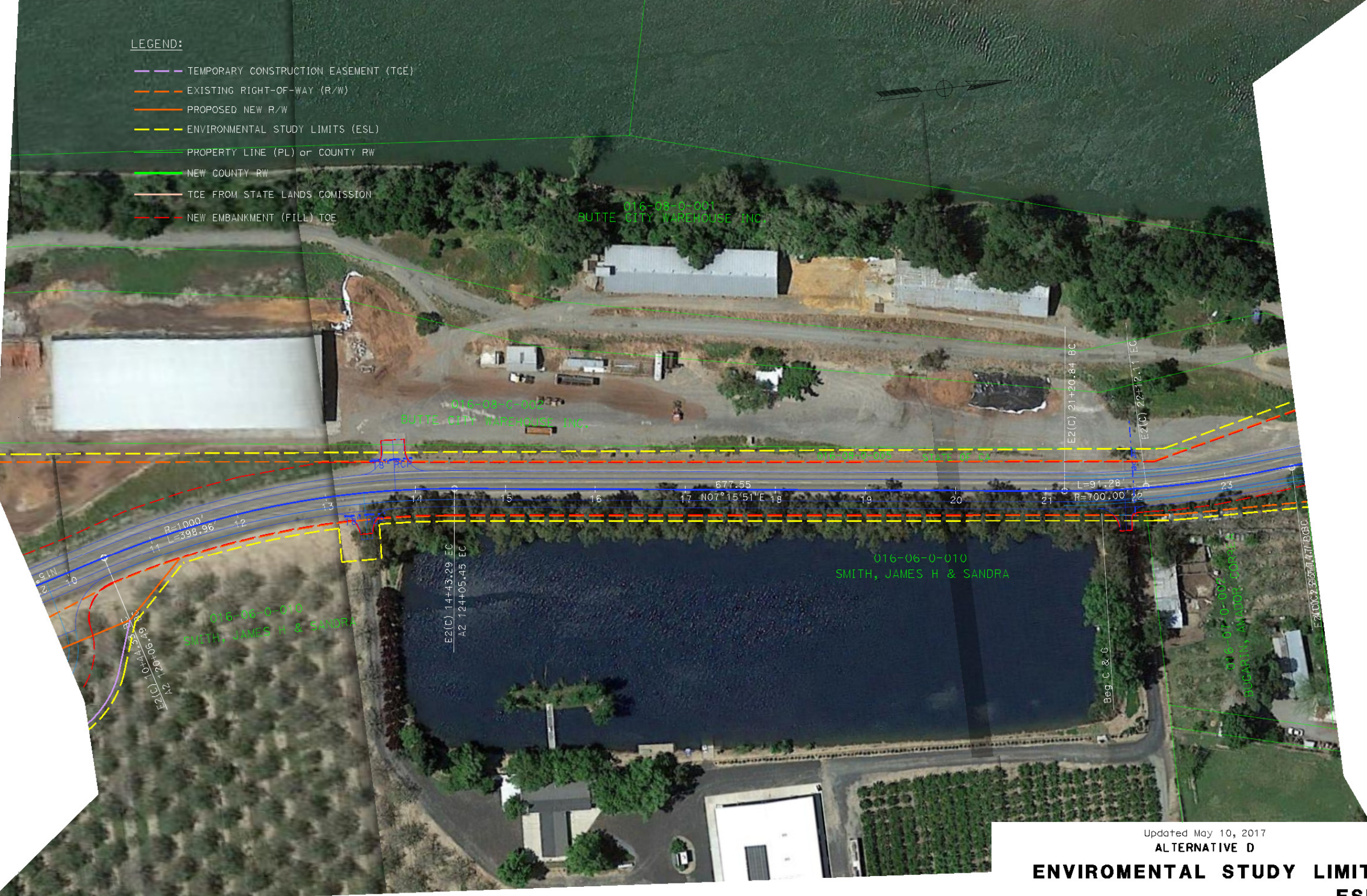


Figure 4e
Alternative D (page 5 of 8)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION Caltrans DESIGN	FUNCTIONAL SUPERVISOR	ALI KIANI	CALCULATED-DESIGNED BY	REVISOR	DATE REVISOR
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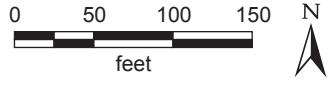
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		



Updated May 10, 2017
 ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-6

Figure 4f
 Alternative D (page 6 of 8)

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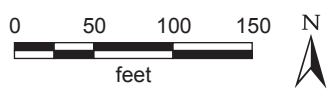
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03	Gle	162	76.28/78.4		

Updated May 10, 2017
ALTERNATIVE D
ENVIRONMENTAL STUDY LIMITS
ESL-7

Figure 4g
Alternative D (page 7 of 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Gle	162	76.28/78.4		

REVISION	REVISOR	DATE	DESCRIPTION



- LEGEND:**
- TEMPORARY CONSTRUCTION EASEMENT (TCE)
 - EXISTING RIGHT-OF-WAY (R/W)
 - PROPOSED NEW R/W
 - ENVIRONMENTAL STUDY LIMITS (ESL)
 - PROPERTY LINE (PL) OF COUNTY RW
 - NEW COUNTY RW
 - TCE FROM STATE LANDS COMMISSION
 - NEW EMBANKMENT (FILL) TOE

CALCULATED-DESIGNED BY:
CHECKED BY:

FUNCTIONAL SUPERVISOR:
ALI KIANI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

Updated May 10, 2017
ALTERNATIVE D
**ENVIRONMENTAL STUDY LIMITS
ESL-8**

Graphics...419.17 (2-20-18)

Figure 4h
Alternative D (page 8 of 8)

1.3.2 Construction

1.3.2.1 Equipment

It is anticipated that excavators, dozers, cranes, pavers, dump trucks, concrete trucks, concrete pumps, vibratory and impact pile driving hammers, and pile driving equipment would be required to construct the new bridge.

1.3.2.2 Water Drafting

Standardized minimization measures in the Storm Water Pollution Prevention Plan (SWPPP) require wetting of stockpiles, disturbed areas, and road surfaces for dust abatement and erosion control. Water would potentially be drafted from the Sacramento River during the dewatering of the piles and cofferdams. Should water drafting become necessary for dust suppression or other activities, it will be conducted in accordance with National Marine Fisheries Service (NFMS) guidelines for water drafting.

1.3.2.3 Access Roads

Temporary access roads would be required to access work below the bridge. These proposed temporary roads would most likely be located on the north and south sides of the new bridge and viaduct. These roads would have an overall width of approximately 25 feet. For the most part, construction of temporary access roads would take place within existing dirt roads or driveways.

1.3.2.4 Vegetation Removal

Some riparian vegetation would be removed to construct a small portion of the temporary access roads, the new bridge and viaduct abutments and piers, and for removal of the existing abutments and piers. Trees and shrubs would be removed where they conflict with the proposed new bridge structure, or where access is necessary to facilitate the demolition and removal of the existing bridge structure. Any areas of the river banks that are disturbed during construction would be returned to as near pre-construction conditions as feasible.

1.3.2.5 Temporary Trestles

Trestles would be required for construction of the new bridge and removal of the existing bridge. Two trestles would be built, either or both upstream or downstream of the proposed and existing bridges, between 20 and 75 feet from the new and old structures. The trestles would be elevated and supported on temporary piles to maintain water flows. A section of the river would remain open between the piles throughout the duration of construction.

1.3.2.6 Pile Installation for Temporary Trestles

Pile installation for the temporary trestles would be conducted using an impact hammer or vibratory hammer. Vibratory pile driving is a preferred method for minimizing the exposure of fish to potentially harmful pile-driving sounds and would be used to drive the trestle piles whenever feasible. It is assumed that piles would be driven to approximately 40 feet, but depth may vary depending on substrate composition. It is estimated that a maximum of 15 piles per day would be placed. Under those assumptions and considering equipment operating capacity, the likely maximum strikes per day would be 12,000. Each pier would be constructed with 4 to 6 piles. Trestle pile driving is estimated to last 20 to 40 days. Driving piles would take place between June 1 and October 15, when the Sacramento River is at its lowest.

1.3.2.7 Falsework

Falsework would be used to support the bridge structure while under construction. The temporary falsework would be supported by the trestles' steel beams and steel piles that are approximately 16- to 20-inch diameter. The falsework piles would be driven to 40 feet. The temporary steel piles would be designed to resist the peak flow determined by the permitting agency. Considering equipment operating capacity, the likely maximum strikes per day would be 12,000.

1.3.2.8 Bridge Abutment and Pier Foundation

The abutments, piers, and retaining walls for the new bridge require different foundations. All footings would be CISS pile shafts except at the abutments, which would be CISS or CIDH pile caps. The area of the abutment cap, which is on land, is estimated to be 210 square feet.

1.3.2.9 Permanent Pile Installation for the Bridge

Eight 5-foot diameter CISS piles, between 80 and 120 feet in length, would be driven in water or directly adjacent (within 17 feet of the water). Two piles would be driven to construct each pier, with one pile per bent (pier). Both impact and vibratory hammers would be used. Between 20 and 100 strikes per foot of embedment are expected, depending upon pile length and capacity. The expected depth the piles would be driven in the riverbed is between 80 and 100 feet. A maximum of 10,000 strikes per day is estimated. CISS pile driving is estimated to last 8 to 16 days.

Pile driving for the viaduct may occur simultaneously with pile driving in the water. However, 5-foot diameter bridge piles and 2-foot diameter trestle piles in the water would not be driven simultaneously.

1.3.2.10 Sound Attenuation

A sound attenuation strategy will be needed to protect fish. Due to the flow of the river, use of an uncontained bubble curtain is unlikely. A dewatered casing is the most likely method of attenuation during installation of the 5-foot diameter piles. Seat casings would be installed with a vibratory hammer and allowed to sink with their own weight, or with an excavator. A cofferdam may also be utilized at the contractor's discretion.

1.3.2.11 Cofferdams

Cofferdams would likely be used for removal of the existing bridge piers. It is possible that they would also be used for removal of existing fenders and for attenuation during pile driving. Cofferdams would most likely be in the range of 700 to 2,400 square feet.

1.3.2.12 Sheet Pile Installation

Sheet piles would be installed if cofferdams are needed. It is estimated that 10 to 15 pairs would be installed each day over 10 to 40 days. This would amount to approximately 500 linear feet of temporary sheet pile driven into the riverbed. Sheet piles would be installed with vibratory hammers or impact hammers.

1.3.2.13 Demolition and Construction Waste

A catchment device would be installed to collect all demolition debris. No demolition debris would be allowed to fall into the river. All piles would be removed to 3 feet below finished grade (standard) or completely removed if required. A cofferdam may be used if necessary. Construction waste that is not slated for salvage would become the responsibility of the contractor, requiring disposal or recycling at an approved facility.

1.3.2.14 Staging Areas

The main staging areas are located within the wide temporary construction easement (TCE) areas on and beyond the east and west banks of the river. An optional staging area has been designated within Caltrans ROW north of the road on the east side of the river. Parking, staging, and storage of equipment and materials would take place in previously disturbed open areas that have yet to be determined.

1.3.2.15 Construction Schedule

The proposed project is scheduled for construction over three seasons, anticipated to take place between 2019 and 2021. Construction activities above the ordinary high-water mark (OHWM) will occur outside of the in-water work window. In-water work activities would occur during the dry season (June 1–October 15), and would be confined to three summer seasons.

Construction in and over the water would be conducted during daylight hours. Work on the trestle and support work such as equipment fueling, or repair may be conducted during hours of

darkness in upland staging areas. Lighting that might be necessary for construction activities above the OHWM would be directed away from the Sacramento River.

1.3.2.16 Site Restoration

After construction activities have been completed, temporary fill and construction debris would be removed. Disturbed areas would be restored to pre-project conditions and may include replanting of native vegetation and reseeding with native hydroseed.

1.3.3 Alternatives Considered but Eliminated from Further Consideration

Two concept alternatives were considered during the scoping phase; Alternative 3 and Alternative 1.

Under Alternative 3, the bridge would be replaced on the current alignment and SR 162 would be realigned to the south and east of Butte City, traversing land that is currently in agriculture. This alternative was rejected because of additional impacts on private property owners resulting from the right-of-way acquisition required.

Under Alternative 1, the bridge would be replaced on the same alignment and the alignment of SR 162 would remain the same. Construction was anticipated to last approximately 7 months and result in bridge closure for that period of time. The detour established for this time frame was to reroute traffic north to Ord Ferry Road to cross the Sacramento River; a total detour of 72 miles. The community rejected the detour because of impacts on emergency services, the farming community, and schools. Therefore, this alternative was rejected.

1.4 Permits and Approvals Needed

Table 1 identifies the agencies that Caltrans is or will be coordinating with to obtain permits or approvals for the proposed project.

Table 1. Permits and Approvals Needed

Agency	Permit/Approval	Status
U.S. Army Corps of Engineers	Section 404 authorization for fill of waters of the United States	Permit application will be submitted after environmental document approval
U.S. Army Corp of Engineers	Section 408 authorization for alteration of USACE project	Permit application will be submitted after environmental document approval
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification	Application will be submitted after environmental document approval
State Water Resources Control Board	Section 402 coverage under the NPDES Construction General Permit (Order No. 2009-0009-DWQ)	Part of construction contract
U.S. Fish and Wildlife Services	Endangered Species Act Section 7: Consultation and Incidental Take Statement	Received June 6, 2018
National Marine Fisheries Service	Endangered Species Act Section 7: Consultation and Issuance of a Letter of Concurrence	Received October 5, 2018
California Department of Fish and Wildlife	California Fish and Game Code Section 1602: Lake or Streambed Alteration Agreement	Permit application will be submitted after environmental document approval
California Department of Fish and Wildlife	California Fish and Game Code Section 2081: Incidental Take Permit	Application will be submitted after environmental document approval

Chapter 2 CEQA Environmental Checklist

2.1 Project Description and Background Summary

Project Title:	Butte City Bridge
Lead agency name and address:	California Department of Transportation
Contact person and phone number:	Rajpreet Bihala, (530) 741-5535
Project Location:	Butte City, Glenn County, CA
Project sponsor's name and address:	Caltrans
General plan description:	
Zoning:	
Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)	Replacement of the existing bridge on SR 162 over the Sacramento River.
Surrounding land uses and setting; briefly describe the project's surroundings:	Agricultural and wildlife preserve
Other public agencies whose approval is required (e.g. permits, financial approval, or participation agreements):	USACE, RWQCB, USFWS, NMFS, CDFW
Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.	Caltrans has contacted California Native American tribes to initiate consultation pursuant to Public Resources Code Section 21080.3.1. Draft cultural reports have been sent to Enterprise Rancheria for review.

2.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project. Please see the checklist below for additional information.

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

Determination

On the basis of this initial evaluation:

<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

2.3 CEQA Environmental Checklist

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 will indicate that there are no impacts to a particular resource. A “No Impact” answer in the last column of the checklist reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA impacts only. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, as well as standard measures that are applied to all or most Caltrans projects such as Best Management Practices (BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below.

2.4 Aesthetics

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.4.1 Regulatory Setting

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 [PRC] Section 21001[b]).

2.4.2 Environmental Setting

The project area is located on SR 162 in Glenn County between SR 45 and Butte City. The visual setting is mostly rural with little development. Butte City is an unincorporated community that was established in 1883 and is located on the east bank of the Sacramento River. The Sacramento River is the main visual element in the project setting. The riparian environment along the banks of the river adds contrast to the fields and nearby orchards. Currently, the project corridor is a mix of roadway facility, scattered residential developments, and views of fields and orchards with some views of open spaces. With one exception of a house along the project alignment in the western portion of the project, several residences are located in Butte City.

2.4.3 Discussion of Environmental Evaluation Questions 2.4 – Aesthetics

Checklist Item: a) Less than Significant

Scenic vistas are often panoramic views that have high-quality compositional and picturesque value. Within the project vicinity, scenic vistas are available primarily from the SR 162 mainline, where the roadway viewing position allows visual access to the hillsides and ridgelines.

The replacement of the existing bridge, as well as vegetation/tree removal, would have a moderate impact on the scenic quality of the project area. As such, the project would have an effect on scenic vistas and resources. Although the impact would lessen once the project is completed and the roadway is replanted, the initial impact would be moderate. Implementation of standard avoidance and minimization measures listed below would ensure impacts on scenic vistas and resources would be less than significant.

Checklist Item: b) No Impact

This highway corridor is not a state- or Glenn County-designated scenic highway. Therefore, there would be no impact on scenic highways.

Checklist Item: c) Less than Significant

Viewer sensitivity and overall resource changes at the project are considered moderate to low with regard to the replacement bridge work. Although the proposed project would replace an existing bridge, the visual character and quality of the project would be compatible with implementation of standard avoidance and minimization measures listed below.

Construction would remove vegetation and possibly trees within the project footprint. This vegetation provides an attractive visual resource and improves the aesthetics of the existing roadway corridor. The most noticeable aspects of the completed project will be any loss of vegetation, such as the mature trees, that would need to be removed around the new bridge site. The loss of vegetation, particularly large, established trees, shrubs, and ground cover, would have a moderate effect on the spatial character adjacent to the roadsides. This would adversely affect the visual character of the site and its surroundings. Although the impact would lessen once the project is completed and the replanted vegetation grows, the initial impact would be moderate. Implementation of avoidance and minimization measures listed below would ensure impacts on scenic vistas and resources would be less than significant.

Checklist Item: d) Less than Significant

Nighttime construction may occur; therefore, high-intensity nighttime lighting could be needed. Lighting would be aimed away from the river to avoid impacts on special-status fish species. There are no residences or businesses in the immediate vicinity of the bridge, however residences located in Butte City might experience impacts from nighttime lighting during construction. Implementation of avoidance and minimization measures described below would ensure nighttime lighting impacts would be less than significant.

The bridge structure could be a source of glare, depending on the color selection for the structure, and vegetation removal would slightly increase glare in the project area. The primary viewers would be motorists passing through the area, who would not be affected by glare any more than under existing conditions. Because there are few sensitive receptors (i.e., residences) in the area, it is unlikely changes in light or glare would be noticed by anyone other than motorists. The project scope does not propose any lighting to the structure, but USCG might require directional lighting due to the “navigable waters” Sacramento River status. Visual impacts regarding light and glare would be less than significant.

2.4.4 Avoidance, Minimization, and/or Mitigation Measures

Where appropriate and to the degree possible, implementation of the following minimization measures are incorporated into the project and would diminish any possible visual impacts that may occur as a result of the project.

- Nearby bridges should be examined for their aesthetic characteristics. Materials, texture, and colors have already been established at those locations and should be continued and included on the bridge for this project.
- Choose railing that complements the surrounding area and allows views of the river and nearby landscape from the bridge.

Work in and near Butte City would be limited to daytime whenever feasible, to reduce nighttime construction lighting impact on nearby residences. All lights will be screened and directed downward toward work activities and away from the night sky, particularly residential areas, to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible.

- All disturbed areas will receive soil stabilization measures that may include erosion control (hydroseed), bonded fiber matrix, compost, and rolled erosion control product (netting/blanket). Materials and locations will be determined during the PS&E phase.
- Areas that will require ground disturbance by removing vegetation will be restored before completion of the construction project. The trees and vegetation should be protected, where feasible. Vegetation removal will be limited to only that necessary to construct the project.
- Special care will need to be given to any work that is done near the river, and any vegetation that is removed will need to be replaced with appropriate vegetation that is indigenous to the area.
- All disturbed areas, including access roads, will be re-graded to their pre-construction profiles and contours.
- Drainage work for culvert extensions and ditch relocation may require some channel restoration work. This will require BMPs and soil stabilization. This work will be conducted under the guidance of the District's Landscape Architect.
- Vegetation control under new guardrail systems should be considered where repetitive maintenance activity to control vegetation would otherwise be required. The need for, and types of, vegetation control must be determined on a location-by-location basis with input from local Maintenance staff as well as the Landscape Architecture unit.
- If the project requires equipment/staging areas, Caltrans Special Provision, Section 5.1 indicates that the contractor will be responsible for securing locations for staging and storage. At the end of construction all areas used for staging, access, or other construction activities will be repaired pursuant to Section 5-1.36 "Property and Facility Preservation."

2.5 Agriculture and Forest Resources

<p>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.</p>				
Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.5.1 Regulatory Setting

The California Environmental Quality Act (CEQA) 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 landowners through reduced property taxes to discourage the early conversion of agricultural and open space lands to other uses.

2.5.2 Environmental Setting

The project area contains farmland designated by the California State Department of Conservation Farmland Mapping and Monitoring Program (FMMP) as Prime Farmland and Unique Farmland (California Department of Conservation 2014). A small amount of urban and built-up land is concentrated in Butte City. Figure 5 shows important farmland in the project vicinity, and Figure 6 shows parcels enrolled in Williamson Act contracts.

According to the *Glenn County 2016 Agricultural Crop & Livestock Report* (Glenn County 2016), the gross production value of agricultural commodities in the county was \$748,461,000 in 2016. Almonds were the leading crop in Glenn County, valued at \$224,274,000. Walnuts were the second leading crop with a value of \$149,120,000. Paddy rice was third in value at \$100,125,000. These three crops represent 6 percent of the total commodity value for the county in 2016 (Glenn County 2016).

There are no timberlands in the project area.

2.5.3 Discussion of Environmental Evaluation Questions 2.5 – Agriculture and Forest Resources

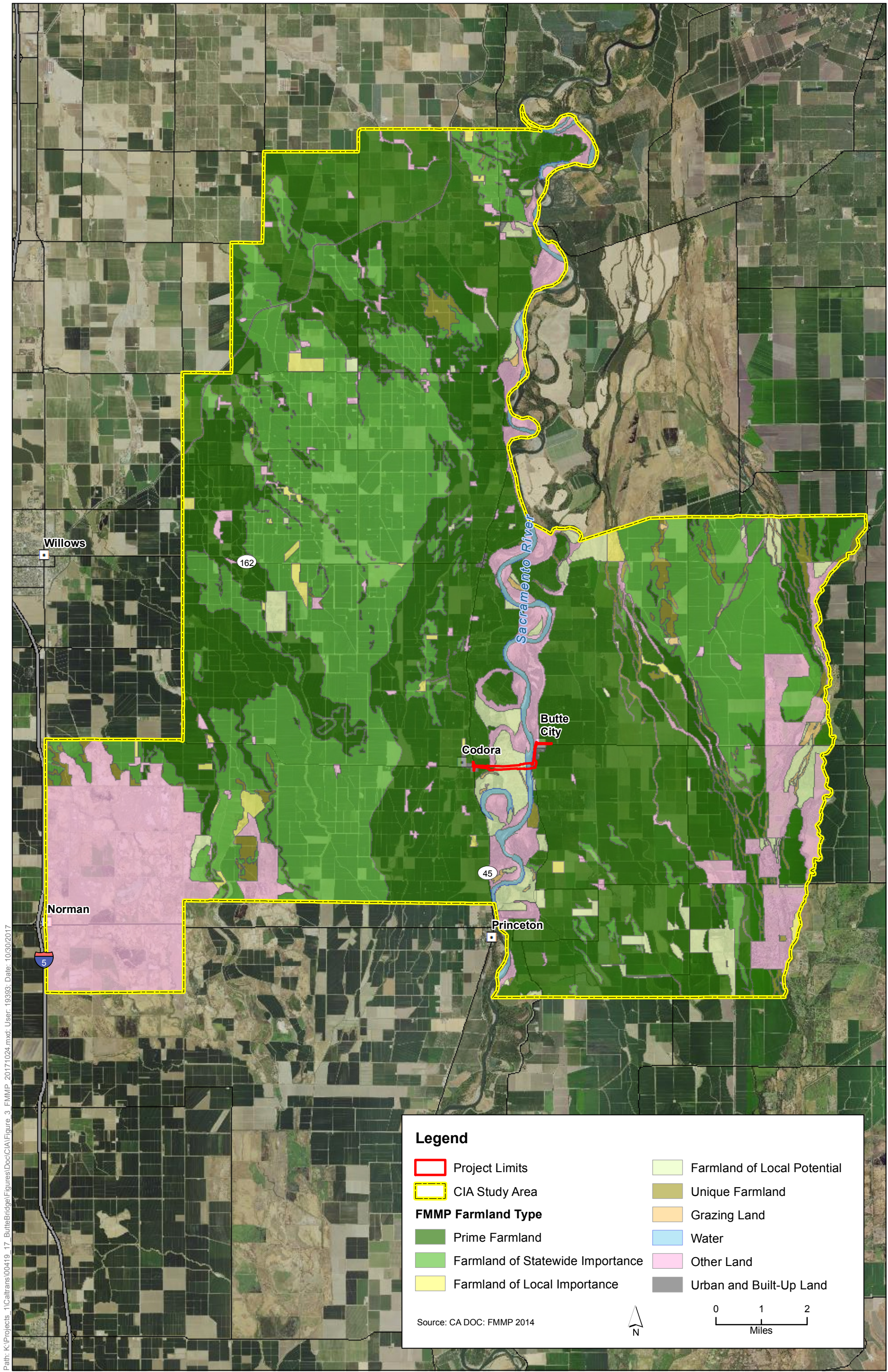
Checklist Items: a, b, e:

The “Less than Significant Impact” determinations are based on project scope and field reviews. The proposed project would occur on land designated as urban/built-up land, not farmland. Changes in land use patterns including farmland and timberland would not occur. Figure 5 shows important farmland in the project vicinity, and Figure 6 shows parcels enrolled in Williamson Act contracts. Temporary and permanent land use acquisitions would occur and vary by alternative. Table 2 below shows the impacts on Important Farmland by alternative. Under all alternatives, ROW acquisition would not result in any relocations. All acquisitions would be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Table 2. Important Farmland Temporary (TCE) and Permanent (ROW) Acquisitions

Important Farmland	Alternative A2		Alternative C2		Alternative D	
	TCE	ROW	TCE	ROW	TCE	ROW
Prime Farmland	2.32	7.76	1.52	8.95	2.84	7.82
Farmland of Local Importance	13.23	12.82	12.34	13.02	16.2	12.94
Grazing Land	0	0	0.15	0.09	0.23	0.0
Total	15.55	20.58	14.09	22.06	19.27	20.76

There are parcels enrolled in Williamson Act contracts to the east of SR 162 in the project area. The amount of ROW by alternative is shown in Table 3 below. Under each alternative, the strips of land to be acquired are immediately adjacent to SR 162. Acquisition of these narrow strips of



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Legend

Project Limits	Farmland of Local Potential
CIA Study Area	Unique Farmland
FMMP Farmland Type	
Prime Farmland	Grazing Land
Farmland of Statewide Importance	Water
Farmland of Local Importance	Other Land
	Urban and Built-Up Land

Source: CA DOC: FMMP 2014

N
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Figure 5
Farmland Mapping and Monitoring Program

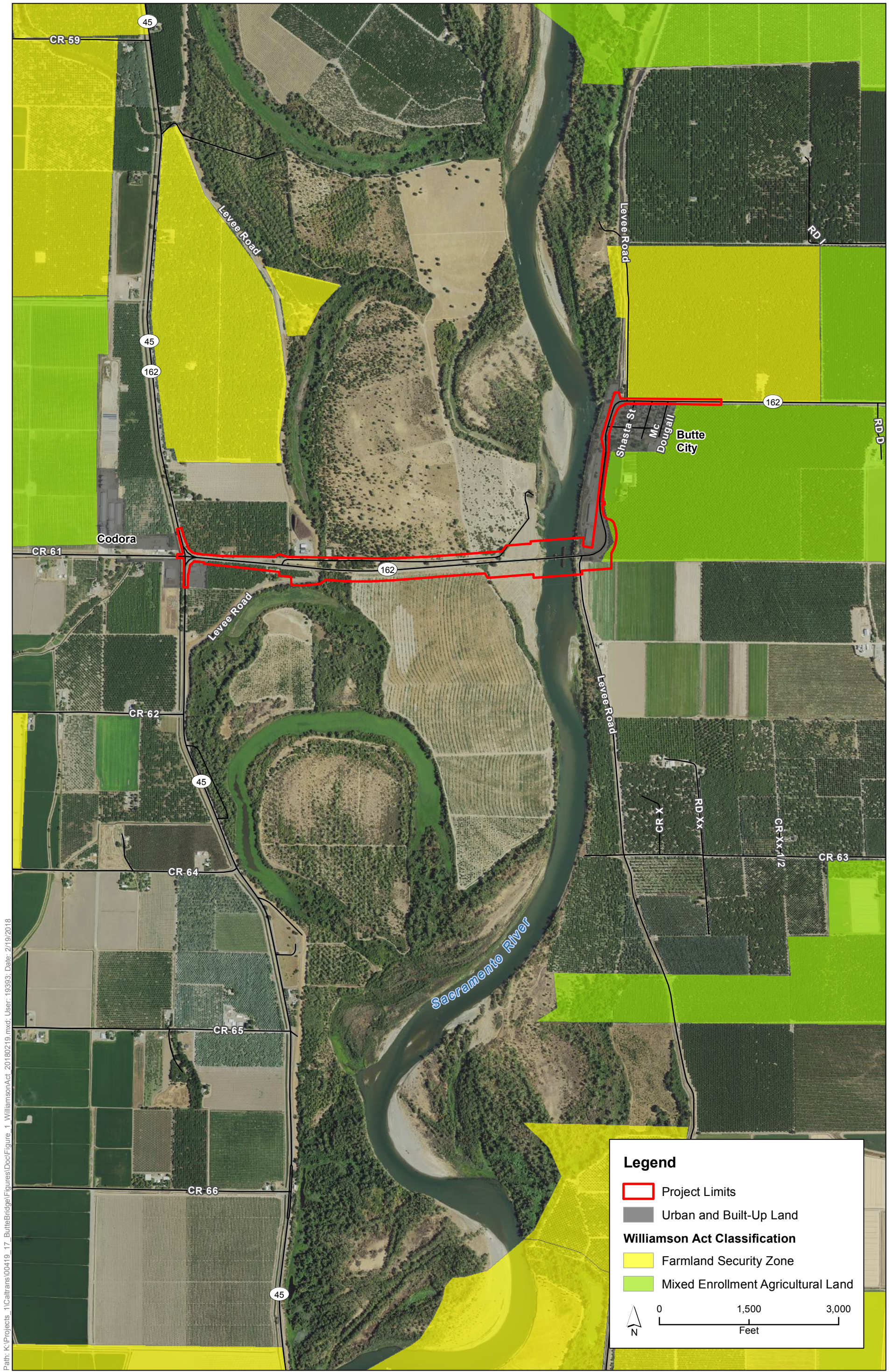


Figure 6
Section 4(f) Resources - Butte City Bridge Project

land would not take the parcels out of agricultural projection and would not cancel the Williamson Act contracts. This impact would be less than significant.

Table 3. Temporary (TCE) and Permanent (ROW) Impacts to Williamson Act Lands

	Alternative A2	Alternative C2	Alternative D
ROW	1.75	1.49	2.73
TCE	0.54	0.70	1.02

Some ROW acquisition will be required under each of the alternatives, with the greatest amount under Alternative D (2.73 acres). TCE will be necessary under all alternatives as well, with the greatest amount under Alternative D (1.02 acre). Under each alternative, the strips of land to be acquired are immediately adjacent to SR 162 (Figure 6). The acquisition of these narrow strips of land would not take the parcels out of agricultural production and would not cancel the Williamson Act contracts. This impact would be less than significant

Checklist Items: c, d:

The “No Impacts” determinations are based on project scope and field reviews. There are no timberlands in the project vicinity, therefore no impacts to timberland would occur.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures related to real property acquisitions are required. All acquisitions would be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act.

2.6 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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.6.1 Regulatory Setting

The Federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality, while the California Clean Air Act is its corresponding state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards (CAAQS) have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5}), and sulfur dioxide (SO₂). In addition, national and state standards exist for lead (Pb) and state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and CAAQS are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel “conformity” requirement under the CAA also applies.

2.6.2 Environmental Setting

The project is located within the northern Sacramento Valley Air Basin (SVAB) which includes all of Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn, Butte, Tehama, and Shasta Counties and parts of Solano and Placer Counties. The SVAB extends from south of Sacramento to north of Redding and is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The project is located on SR 162 in Glenn County.

The climate of the project area is characterized by hot, dry summers and cool, wet winters. During the summer months from mid-April to mid-October, significant precipitation is unlikely, and temperatures range from daily maximums approaching 100°F to evening lows in high 50s and low 60s. During the winter, highs are typically in the 60s with lows in the 30s.

Wind direction is primarily up- and down-valley due to the channeling effect of the mountains to either side of the valley. During the summer months, surface air movement is from the south, particularly during the afternoon hours. During the winter months, wind direction is more variable.

The mountains surrounding the valley can also contribute to elevated pollutant concentrations during periods of surface or elevated surface inversions. These inversions are most common in late summer and fall. Surface inversions are formed when the air close to the surface cools more rapidly than the warm layer of air above it. Elevated inversions occur when a layer of cool air is suspended between warm air layers above and below it. Both situations result in air stagnation. Air pollutants accumulate under and within inversions, subjecting people in the region to elevated pollution levels and associated health concerns. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground.

Existing air quality conditions in the project area can be characterized in terms of the National Ambient Air Quality Standards (NAAQS) and California ambient air quality standards (CAAQS) that the federal and state governments have established for several different pollutants and by monitoring data collected in the region. Glenn County is designated as unclassified or attainment for all NAAQS. Since the project is located in an attainment/unclassified area for all current NAAQS, conformity requirements do not apply.

However, Glenn County is currently designated as nonattainment for the CAAQS for PM10 (ARB 2017). Particulate matter can cause damage to human lungs when it enters the body through the respiratory system. The extent of the damage depends on the toxicity of the substance and the particle size. Sources of these pollutants include industries that emit airborne pollution, agricultural operations, dust resulting from high winds and soil erosion, dust from construction, vehicular travel on paved and unpaved roads, and vehicular exhaust emissions.

2.6.3 Discussion of Environmental Evaluation Questions 2.6 – Air Quality

Checklist Item: a) Less than Significant

During construction activities associated with the project, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Emissions from construction equipment also are expected and would include carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), directly-emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel particulate matter (DPM). Construction activities are expected to increase traffic congestion in the area, resulting in temporary increases in emissions from traffic during the delays.

Fugitive dust would also be generated during grading and construction operations. Sources of fugitive dust include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site may deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions may vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions 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.

Construction-related emissions associated with the project would be temporary and limited to the immediate area surrounding the construction site. Implementation of standard avoidance and minimization measures described below would minimize air quality impacts from construction activities. In addition, the project would not change traffic volume, fleet mix, speed, or any other factor that would cause an increase in emissions relative to the no build alternative; therefore, this project would not cause an increase in operational emissions. Accordingly, the project would not conflict with or obstruct implementation of any air quality plan and this impact would be less than significant.

Checklist Item: b) Less than Significant

As described under Checklist Item (a), construction-related emissions associated with the project would be temporary and limited to the immediate area surrounding the construction site and the project would not cause an increase in operational emissions. Therefore, the project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation and this impact would be less than significant.

Checklist Item: c) Less than Significant

As described under Checklist Item (a), construction-related emissions associated with the project would be temporary and limited to the immediate area surrounding the construction site and the project would not cause an increase in operational emissions. Therefore, the project would not result in a cumulatively considerable net increase of any criteria pollutant and this impact would be less than significant.

Checklist Item: d) Less than Significant

Sensitive receptors are generally defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include schools, hospitals, and residential areas. Primary pollutants of concern to sensitive receptors are CO, DPM, 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 NO_x).

The project area is located within a rural environment that includes nearby sensitive receptors, such as single- and multi-family residences. The nearest sensitive receptors are located 20 feet from the project site.

Construction

As described under Checklist Item (a), construction activity associated with the project would result in air pollutant emissions and earth movement that could generate dust near sensitive receptors. Implementation of standard avoidance and minimization measures described below would minimize air quality impacts to sensitive receptors from construction activities.

According to *A General Location Guide for Ultramafic Rock in California*, there are no geologic features normally associated with naturally occurring asbestos (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to naturally occurring asbestos emissions during construction activities. However, construction activities that involve the demolition of the existing bridge structure could expose construction workers to asbestos-containing materials and lead-based paint. Implementation of the Caltrans standard measure to develop a lead and asbestos plan would ensure this impact would be less than significant; see Section 2.11, *Hazards and Hazardous Materials*. Consequently, there would be a less-than-significant impact to sensitive receptors from construction-related emissions.

Operations

As described under Checklist Item (a), the project would not cause an increase in operational emissions. Consequently, there would be no impact to sensitive receptors from operation of the project.

Checklist Item: e) Less than Significant

As mentioned in the discussion for Checklist Item (d), construction activity would occur near sensitive receptors. However, construction activities would be temporary in nature and would not be likely to result in nuisance odors that would violate Glenn County Air Pollution Control District Article IV, Section 78, Nuisance. Implementation of standard avoidance and minimization measures described below would also minimize odor impacts from construction activities. In addition, the project would not cause an increase in operational emissions.

Therefore, the project would not create a significant level of objectionable odors and this impact would be less than significant.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures are implemented as part of Caltrans' standard procedures.

- The construction contractor must comply with the 2015 Caltrans Standard Specifications in Section 14. Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including the Glenn County Air Pollution Control District regulations and local ordinances. Section 14-11.04 is directed at controlling dust.
- Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.
- A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.
- Environmentally sensitive areas will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.
- Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.
- All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.
- Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

2.7 Biological Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.7.1 Regulatory Setting

2.7.1.1 Wetlands and Other Waters

Federal

Waters of the United States (including wetlands) 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 United States Code [USC] 1344) is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. 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 of Engineers (USACE) with oversight by the United States Environmental Protection Agency (U.S. EPA)

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. 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 40 Code of Federal Regulations [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 dredged or fill material into the aquatic system (waters of the United States) 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.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the Federal Highway Administration (FHWA) and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

State

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Wildlife (CDFW), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs).

Sections 1600–1607 of the California Fish and Game Code (CFGC) 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 CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement (LSAA) will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or

may not be included in the area covered by a Streambed Alteration Agreement obtained from CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the CWA. Please see the Hydrology and Water Quality section for additional details.

Plants

The USFWS and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. *Special-status* is a general term for species that are 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 the Threatened and Endangered Species Section in this document for detailed information regarding these species. This section of the document discusses all the other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 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. Caltrans projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900–1913, and the California Environmental Quality Act (CEQA), CA Public Resources Code, Sections 2100–21177.

Animal Species

Many state and federal laws regulate impacts on wildlife. The USFWS, National Oceanic and Atmospheric Administration (NOAA) Fisheries (also known as NMFS) and CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are discussed in the following section. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty 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
- Section 4150 and 4152 of the California Fish and Game Code

Threatened and Endangered Species

The primary federal law protecting threatened and endangered species is 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 FHWA are required to consult with the USFWS and NMFS to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a no effect finding. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the CESA, CFGC Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. Section 2081 of the CFGC prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of 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 CDFW. 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.

2.7.2 Environmental Setting

The information presented here is taken from the *Sacramento River Bridge at Butte City Natural Environment Study*, prepared in February 2018. Biological resources were evaluated within the established environmental study limits for the project. The environmental study limits correspond to the project area, which consists of the project footprint (i.e., area of temporary and permanent impacts—the maximum estimated extent of ground-disturbing activities, including

staging areas), the adjacent Caltrans ROW, and additional areas outside the ROW to accommodate potential changes to the project limits during project implementation.

The majority of the project area is located below the SR 162 viaduct, which is maintained by Caltrans through a cooperative agreement with the Central Valley Flood Protection Board. Most of the area directly below the viaduct is ruderal habitat.

The project area west of the Sacramento River is bordered to the north and south by state parks land and the Sacramento River National Wildlife Refuge (SRNWR) Sul Norte and Codora/Packer Units. The state parks land, currently maintained by the SRNWR, is adjacent to the project area on both sides of SR 162. Dominant land cover types present within the project area include developed areas (roads, bare ground, and landscaping), ruderal disturbed areas, grassland, agricultural lands, valley oak woodland, riparian communities, and open water (Sacramento River).

2.7.2.1 Natural Communities of Concern

There are two types of natural communities of concern present within the project area: valley oak woodland and riparian communities.

Valley Oak Woodland

Valley oak woodland is considered sensitive by the CDFW because of its important wildlife habitat value and the ongoing decline of oak woodland communities from habitat conversion and disease. It is identified as high priority on the CDFW Natural Communities List. In addition, the passing of the Oak Woodlands Conservation Act, followed by enactment of Senate Bill (SB) 1334, further demonstrates the concern about and sensitivity of oak woodland in California. Valley oaks specifically are protected under State Senate Concurrent Resolution No. 17, Oak Woodlands. The law requires state agencies to assess and determine the effects of their actions within any oak woodlands containing valley oaks. In addition, the measure requires those state agencies to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where designated oak species are removed from oak woodlands.

Within the project area, as shown in Figure 7, valley oak woodland primarily occurs in the floodplain on the west side of the Sacramento River. It is composed of valley oaks with an understory of introduced annual grasses, Himalayan blackberry (*Rubus armeniacus*), and poison oak. Small groups of isolated valley oaks occur outside the floodplain. River Partners planted 270 acres of valley oak habitat on the SRNWR Codora Unit south of the viaduct. Six acres of the River Partners valley oak restoration site is within the project area.

Riparian Communities

Great Valley Mixed Riparian Forest (GVMRF) occurs within the project area associated with the oxbow, south of the project area. GVMRF is globally and State Ranked as G2 S2.2, threatened at a high risk of extinction with a restricted range. Riparian habitat is protected under Section 1600 of the CFGC.

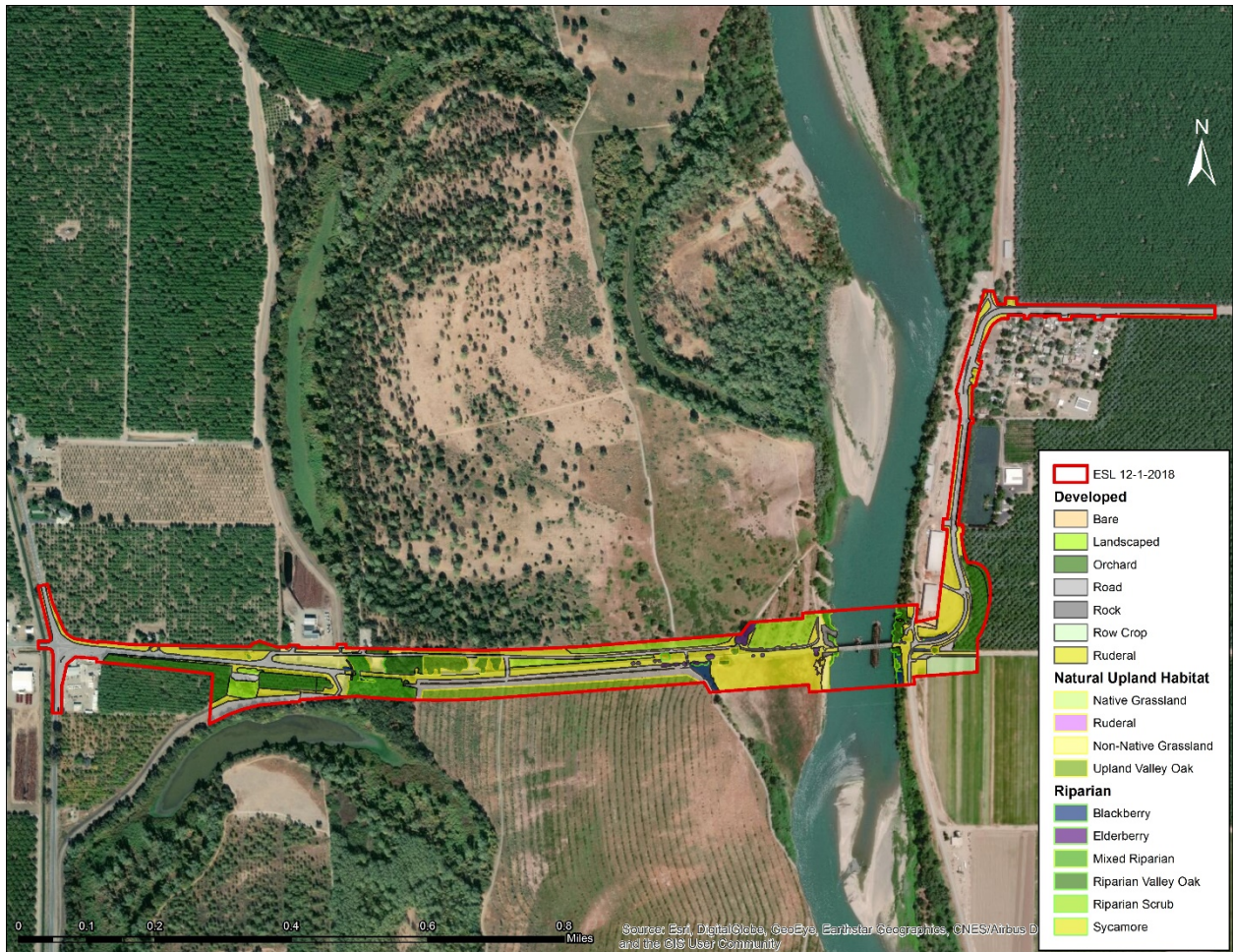


Figure 7. Vegetation Map

Forty-two percent of the project area is below the levees within the Sacramento River floodplain. Riparian habitats within the levee can be classified as great valley mixed riparian, riparian scrub, and valley oak riparian.

Great Valley Riparian Scrub is defined as young primary succession, which includes streamside thickets dominated by one or more willows or by other fast-growing shrubs and vines. This habitat occurs along the west bank of the Sacramento River within the project area.

Great Valley Mixed Riparian Forest consists of willows and cottonwoods and contains a mixture of more upland, later successional species that may include valley oak, black walnut, ash, and sycamore. This habitat occurs directly adjacent to the oxbow south of the project and along the east bank of the Sacramento River.

Riparian Valley Oak Woodland consists of woodlands dominated by mature valley oaks. This community is common on floodplains higher and farther from the main channel than other riparian plant communities. The riparian valley oak woodland within the project area is in a dense stand with a closed canopy. The adult oaks range from medium to large at 49 to 115 feet (15 to 35 meters) tall, and are typically the only tree present. The understory consists of introduced annual grasses, poison oak (*Toxicodendron diversilobum*), Himalayan blackberry, and blue elderberry (*Sambucus mexicana*). This habitat occurs north of the Great Valley Mixed Riparian Forest away from the unnamed oxbow.

Wetland and Non-Wetland Waters

Wetlands and non-wetland waters are protected by state and federal regulations under Section 1602 of the CFGC, Section 404 of the CWA, and the Porter-Cologne Water Quality Control Act. Wetlands and non-wetland waters are considered “special aquatic sites” for the functions and values they provide to wildlife as well as their water detention/recharge properties.

A preliminary delineation of wetlands and non-wetland waters was conducted in the project area in 2016. The study resulted in the delineation of 0.113 acre of forested seasonal wetland and 7.773 acres of open water riverine (Sacramento River) within the project area. CDFW, Central Valley RWQCB, and USACE have jurisdiction of the forested seasonal wetland and riverine habitats.

2.7.2.2 Special-Status Plant Species

Nineteen special-status plants were evaluated for their potential to occur within the project area based on known populations within the project vicinity (Appendix F). However, there is no suitable habitat (e.g., marsh, meadow, vernal pool, or chenopod scrub) for any of these species within the project area and therefore, special-status plants are not expected to occur within the project area.

2.7.2.3 Special-Status Terrestrial Wildlife Species

Twenty-three special-status terrestrial wildlife species were evaluated for their potential to occur within the project area based on known occurrence data in the project vicinity. Suitable habitat

for 14 of those species is present within the project area (giant garter snake, valley elderberry longhorn beetle, yellow-breasted chat, yellow warbler, western burrowing owl, Swainson's hawk, white-tailed kite, northern harrier, bald eagle, golden eagle, western yellow-billed cuckoo, bank swallow, American badger, and western red bat.

Giant Garter Snake

Giant garter snake (GGS) (*Thamnophis gigas*) is an aquatic snake endemic to the wetlands of California's Central Valley. The GGS is state- and federally listed as a threatened species.

No specific surveys of the project area were conducted for GGS, and none were observed during other field surveys. There is one CNDDDB occurrence from 1974 within the project area. This occurrence was recorded on the east side of the Sacramento River and encompasses 3 square miles, due to lack of location information. All other occurrences within 5 miles of the project area are located on the east side of the Sacramento River, more than 4 miles from the project area. The project area on the east side of the river does not contain any GGS habitat. Work on the east side is restricted to shoulder widening, driveway work, sidewalks, lighting, and storm water culvert replacements. The storm water drainages convey storm water from the road during rain events and are dry the rest of the year; accordingly, the drainages are not considered GGS habitat.

As shown in Figure 8, no suitable aquatic habitat for GGS occurs within the project area. The Sacramento River is not suitable habitat for GGS due to the presence of large predatory fish, lack of shallow emergent vegetation, speed of flow, and the presence of sandy substrates. The forested seasonal wetland at the west end of the project is only inundated during California's winter wet season, and does not support emergent vegetation; therefore, it is not suitable aquatic habitat. The closest likely suitable aquatic habitat is an unnamed oxbow lake, approximately 80 feet south of the project area. Razor Slough, an oxbow north of the project area, is also likely suitable aquatic habitat, but is farther away at approximately 500 feet.

Because the southern boundary of the project area is within 80 feet of the unnamed oxbow lake, open areas within approximately 200 feet of this habitat are considered potential upland GGS habitat. The unnamed oxbow ends with a thin strip of riparian that opens up to a dirt road and a levee with a gravel road on top. Small mammal burrows (including ground squirrel) are present within the levee and adjacent dirt road and could be used by GGS for winter and summer refuge. On the other side of the levee is a walnut orchard. GGS are unlikely to occur in orchard because of the continuous canopy coverage, management activities, and distance to aquatic habitat.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB) is federally listed as a threatened species. Within 5 miles of the project area, there are nine known occurrences of VELB. One of those occurrences, documented in 1987, is located within the project area.

VELB spends most of its life in the larval stage, living within the stems of elderberry shrubs. USFWS considers shrubs with stems measuring 1 inch or more in diameter at ground level to be suitable habitat for VELB. A survey to locate and map elderberry shrubs was conducted in 2015

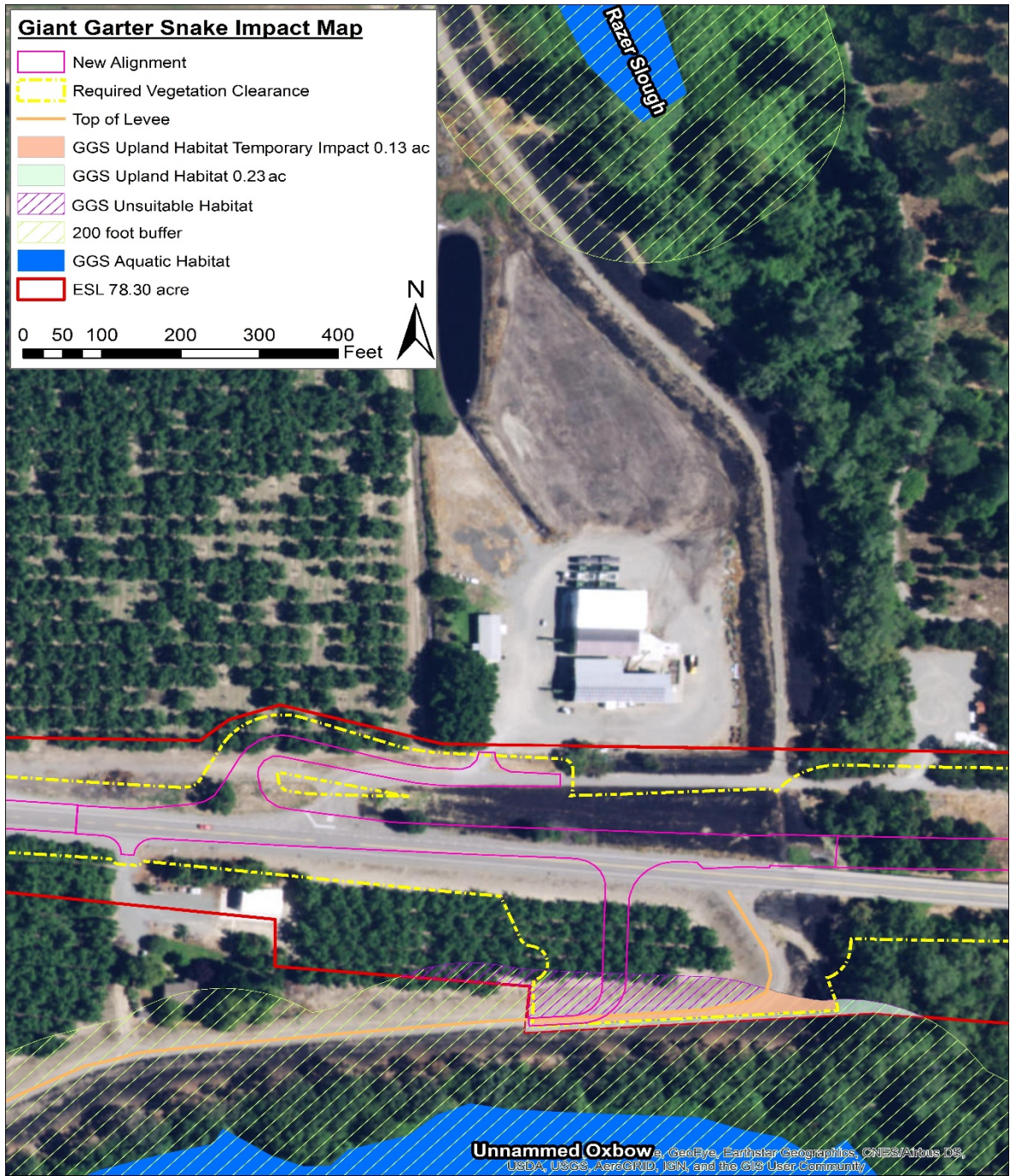


Figure 8. Impacts to GGS Habitat

and identified 43 elderberry shrubs within the project area. Caltrans conducted an additional survey in 2017 to verify the 2015 results and to survey parts of the expanded project area that were not covered under the original survey. Caltrans located 49 additional elderberry shrubs within the expanded project area. There are a total of 92 elderberry shrubs within the project area. Only shrubs with at least one stem greater than one inch at ground level were mapped as VELB habitat. The surveys included an assessment of whether the shrubs contained exit holes (indicative of larval activity) and whether they are growing within areas mapped as riparian habitat.

The expanded project area now includes sections of the SRNWR Codora Unit restoration project south of the bridge. The restoration project, conducted by River Partners, planted elderberry and associated native species in 2011. Thirty-nine of the elderberry shrubs mapped within the project area were planted as part of this restoration effort.

Due to the size of the project and the number of elderberry shrubs present within the project area, Caltrans separated the analysis of VELB into four groups determined by location (Figure 9). Group 1 consists of the elderberry shrubs on the west end of the project, Group 2 consists of the elderberry shrubs planted for the restoration project on the SRNWR Codora Unit, Group 3 consists of the naturally occurring elderberry shrubs on the west side of the river, and Group 4 consists of all the elderberry shrubs on the east side of the river.

The project area does not overlap designated USFWS critical habitat for VELB. The closest critical habitat is located 28.7 miles south of the project area, near Sacramento.

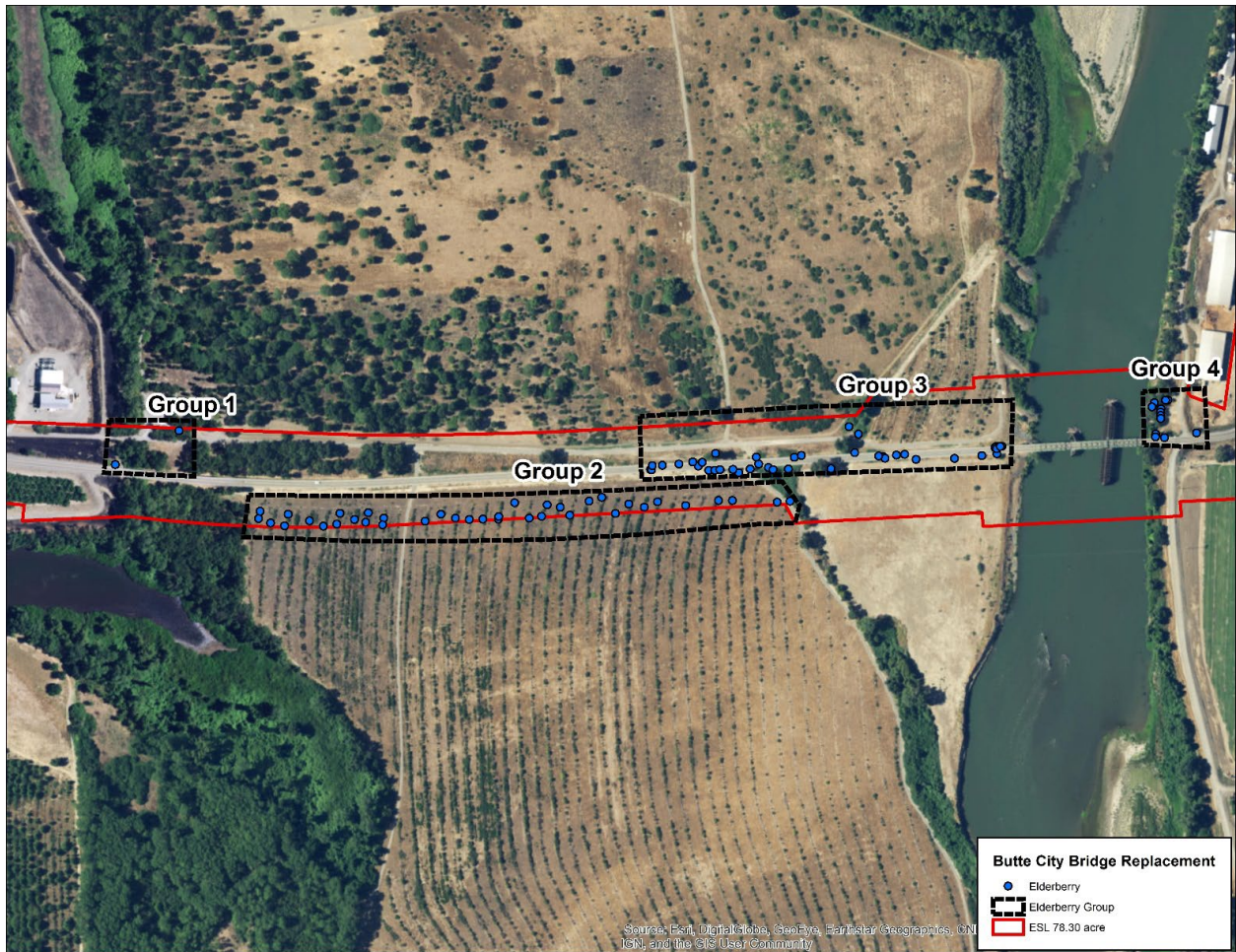


Figure 9. Elderberry Group Map

Nesting Birds

All migratory birds, including feathers or other parts, nests, eggs, or products, are protected under the MBTA of 1918 (16 USC 703–712). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, except as allowed by implementing regulations (50 CFR 21). Disturbance that causes nest abandonment or loss of nest productivity (e.g., killing or abandonment of eggs or young) may be considered a “take” and is potentially punishable by fines and imprisonment. Incidental take permits are not issued for this act. Any proposed project must take measures to avoid the take of any migratory birds, nests, or eggs. All nesting birds protected under this law would need to be avoided during project construction. Active nests of most birds are also protected under Section 3503 of the CFGC. Raptor nests are protected under Section 3503.5.

Birds use a variety of locations for nesting: the ground, shrubs and trees, and cavities, crevices, and human-made structures. The bird breeding season varies by latitude and elevation, but in the project vicinity, it extends from approximately February 1 through September 30. Sixty-nine different species of birds were identified during the yellow-billed cuckoo (YBCU) surveys during the nesting season. Inactive cliff swallow nest structures were observed beneath Butte City Bridge. Two state-threatened birds and one species of special concern were identified during these surveys. Raptors and other migratory birds could nest in habitats present in and adjacent to the project area, excluding developed areas. Eight species of diurnal raptors were observed within the project area.

Special-status birds within potential to nest in the project area are discussed below.

Western Yellow-Billed Cuckoo

The western distinct population segment (DPS) of yellow-billed cuckoo (YBCU) is federally listed as a threatened species. As shown in Figure 10, all riparian habitat along the banks on the Sacramento River from Yuba City north to Red Bluff is designated as YBCU critical habitat. Similar suitable nesting habitat exists within the project area; however, some riparian areas within the project area were determined to be unsuitable for YBCU, such as narrow strips along the banks of the Sacramento River and the predominantly oak tree riparian habitat. There are several CNDDDB observations of YBCU close to the project area in recent years.

Caltrans conducted YBCU protocol-level surveys on June 20, July 5, July 26, and August 10 and 11, 2017, led by 10(a)1(A) recovery permit-holder Sean McAllister, with participation from Caltrans staff Hanna Harrell and Rob Meade. Methods adhered to protocol guidelines as described by Halterman et al. (2015). No YBCU were detected during any of the survey visits. Sixty-nine other bird species were identified during the course of the surveys.

Given that there were no YBCU detections during the 2017 protocol-level surveys within the project area, the biologists concluded with 95% confidence that YBCU were not present in the survey area. However, the survey protocol was designed to only determine presence of YBCU with a high level of confidence.

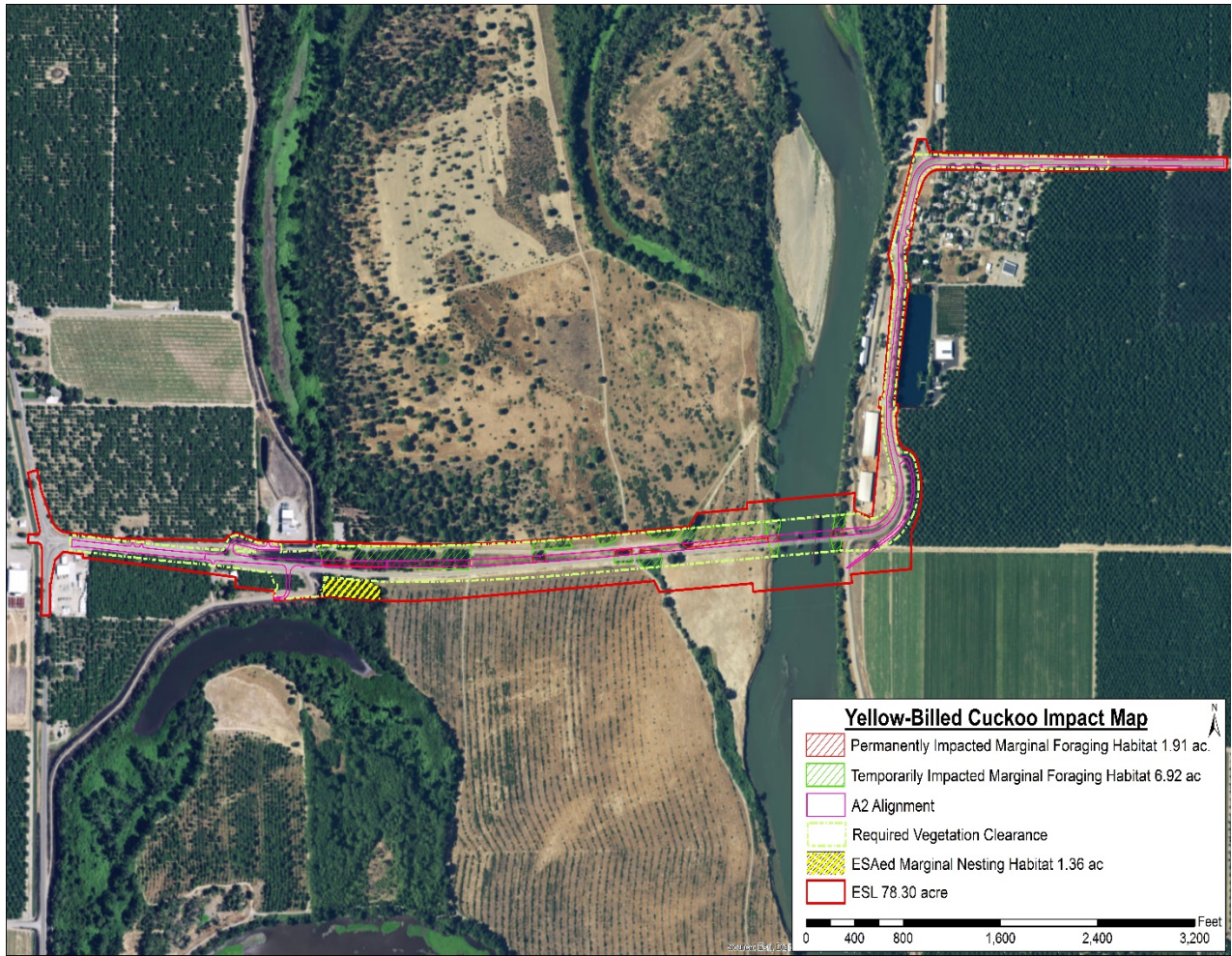


Figure 10. Impacts to Western Yellow-Billed Cuckoo

YBCU are known to seek outbreaks of their preferred prey (e.g., caterpillars, katydids, grasshoppers, cicadas). Periodic outbreaks of such prey items as the western tent caterpillar (*Malacosoma californicum*) are likely key drivers of the distribution and local abundance of YBCU in any given year, such that a site may be occupied for a number of years before becoming unoccupied, or vice versa. In coastal northern California, YBCU have occurred during the breeding season intermittently over the last 15 years, and there is some indication that YBCU occurrences in that region may be correlated with presence of tent caterpillars (McAllister & Falxa, in prep.). A recent comprehensive YBCU survey of the Sacramento and Feather Rivers reported a significant short-term decline (Dettling et al. 2015). Although the severe decline that has occurred over the last 100 years is attributed to habitat loss, Dettling et al. (2015) suggest that some other factor may now be at play. Whether or not prey availability is involved with either historical or recent declines on the Sacramento River is unclear.

Another possible contributing factor is that an extensive habitat restoration project on the lower Colorado River has provided high-quality habitat, resulting in hundreds of nesting YBCU over the last 10 years, at least one of which was banded on the Sacramento River, suggesting that cuckoos that once bred on the Sacramento River may be getting “short-stopped” on their northward migration. If this is true, then it is reasonable to consider that eventually that population will outgrow the carrying capacity of the habitat and that YBCU may continue on to the Sacramento River and other more northerly breeding locations.

Critical Habitat

The project area falls within the proposed critical habitat unit CA-2 Sacramento River (79FR71373; December 2, 2014). This unit follows the Sacramento River for 69 miles, from Colusa to just south of Red Bluff, and covers 35,418 acres. This unit has been a major nesting area for YBCU and is considered an important area to maintain for the species’ recovery. As of March 2018, a final rule on critical habitat for western YBCU has not been published.

Swainson’s Hawk

Swainson’s hawk is a state-listed threatened species.

Swainson’s hawks were observed during the YBCU protocol surveys 4 out of the 6 survey days. All of the Swainson’s hawk observations occurred on the west end of the project area. Due to the frequent observations and the identification of multiple birds during their breeding season, the biologists assumed that Swainson’s hawk were nesting in the vicinity of the project area during the 2017 nesting season. No active Swainson’s hawk nests were located within the project area. Based on the location of perched and foraging birds, the closest 2017 nest location is likely 800 feet south of the viaduct on the south side of the unnamed oxbow.

There are 5.94 acres of suitable nesting habitat for Swainson’s hawk within the project area, consisting of mature riparian forest and oak woodland. These areas were surveyed and one inactive raptor nest was located in a valley oak north of the viaduct during 2017 surveys. There are 28.43 acres of potential foraging habitat within the project area. Foraging habitat within the project area consists of open scrub, native and non-native grassland, row crops, and open ruderal habitat.

Bald Eagle

The bald eagle is a state-listed endangered species and is fully protected under the CFGC and protected under the federal Bald and Golden Eagle Protection Act.

No specific surveys were conducted for bald eagle. One adult bald eagle was observed soaring high above the project area during surveys in May 2015. During the 2017 YBCU surveys conducted in August, a bald eagle was observed flying over Razor Slough, the oxbow north of the project area. In December of 2017, another eagle was observed 0.80 mile south of the project area. A known bald eagle nest was reported to the CNDDDB approximately 6.5 miles north of Colusa in 2014, about 10 miles from the project area. Bald eagles typically reuse the same nest or nest tree year after year, and no large nests (besides an osprey nest) were observed during surveys. However, dispersing adults and new pairs may move into the vicinity. Because bald eagles prefer secluded habitat and very large trees for nesting, it is unlikely that they would nest within the project area or in the immediate vicinity because of the lack of suitable nest trees.

Bank Swallow

The bank swallow is a state-listed threatened species.

Bank swallow nesting habitat exists 0.20 mile south of the viaduct along the eroded west bank of the Sacramento River, 750 feet south of the project area. Bank swallows were observed foraging during the YBCU surveys on June 20 and July 5, 2017.

While bank swallows could forage over open water habitat in the project area, the banks of the Sacramento River within the project area do not provide suitable nesting habitat for the species, so bank swallows are not expected to nest in the project area.

Yellow-Breasted Chat

Yellow-breasted chat is a CDFW species of special concern.

Yellow-breasted chats were observed on June 19 and 20 and July 5, during the YBCU surveys, within the project vicinity but outside of the project area. Suitable nesting habitat is present within the project area.

Northern Harrier

The northern harrier is a CDFW species of special concern.

No northern harriers were observed in the project area during the YBCU surveys in the summer of 2017. One female was observed foraging just south of the project area in October of 2017, outside of their breeding season. Potential suitable foraging and nesting habitat for northern harriers is present within the open scrub and grassland vegetation communities within the project area.

Yellow Warbler

Yellow warbler is a CDFW species of special concern.

No yellow warblers were observed during the 2017 YBCU surveys. Riparian habitats within the project area represent potential nesting habitat for yellow warbler.

Bats

Bats are classified as non-game mammals by CDFW. Bats are afforded protection under various CFGC sections, including Sections 86, 2000, 2014, 3007, and 4150. Several sections under Title 14 of the California Code of Regulations also apply, including but not limited to Section 251.1, Article 20; Section 15380; Section 15382; as do several sections under the California Public Resources Code, Division 13.

A bat habitat assessment was conducted in May 2015. Two biologists walked the length of the SR 162 viaduct and bridge and inspected inside joints and crevices in the bridge for bats and bat sign. The structure on top of the bridge was also inspected. Most of the expansion joints that were inspected along the viaduct contained bats and/or bat guano. Bat guano was also observed on a wooden fender of the bridge on the east bank. Biologists could not obtain access to the fenders in the center of the river to inspect for bat sign, but it is likely bats are using this structure as well.

On 6/6/2018 a Sonobat acoustic survey was conducted from 7:00 to 9:00 pm. The table below lists the species identified during the survey and their associated roosting habitat.

Common Name	Scientific Name	Bridge	Cave/ Mine	Building	Cliff/ Rock Crevice	Tree Bark/ Hollow	Tree Foliage
Pallid Bat	<i>Antrozous pallidus</i>	1	2	1	2	1	
Townsend's big eared bat	<i>Corynorhinus townsendii</i>	2	1	2		3	
Big Brown Bat	<i>Eptesicus fuscus</i>	1	2	1	2	1	
Western Red Bat	<i>Lasiurus blossevillii</i>						1
Hoary Bat	<i>Lasiurus cinereus</i>						1

Silver-haired Bat	<i>Lasionycteris noctivagans</i>					1	
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	2	2		1		
little brown bat	<i>Myotis lucifugus</i>	2	2	1	2	2	
Long-legged Myotis	<i>Myotis volans</i>	2	2	2		1	
Yuma Myotis	<i>Myotis yumanensis</i>	1	2	1	3	2	
Mexican Free-tailed bat	<i>Tadarida brasiliensis</i>	1	2	1	1	3	
<i>1 = use frequently; 2 = use sometimes; 3 = use rarely; Blank = not known to use</i>				Structure Rooster			Tree Rooster

Species identified during the survey that may utilize the bridge as a day roosting include Pallid Bat (*Antrozous pallidus*), Townsend’s big eared bat (*Corynorhinus townsendii*), Big Brown Bat (*Eptesicus fuscus*), Western small-footed myotis (*Myotis ciliolabrum*), little brown bat (*Myotis lucifugus*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), and Mexican free-tailed bat (*Tadarida brasiliensis*). Observations of colonies of bats within the bridge during their breeding season suggests maternity roosts exist within the bridge.

Mixed riparian and valley oak habitats within the project area represent potential roosting habitat for western red bats (*Lasiurus blossevillii*), silver haired bat (*Lasionycteris noctivagans*), pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*), which were all recorded during the June 2018 survey. Western red bats and hoary bats were detected within the project area during a previous 1999 survey. Tree-roosting bats could also be utilizing the bridge fenders, which contained bat guano during 2015 surveys, during night roosting. Western red bat is a species of special concern and is discussed separately below.

Western Red Bat

The western red bat (WRB) is a CDFW species of special concern.

Western red bats were detected within the project area over the Sacramento River during the June 2018 and previous surveys of the area in September 1999. WRB are tree roosters and occur in wide riparian woodlands occupied by cottonwoods and sycamores. Foraging habitat includes

grasslands, shrublands, open woodlands, forests, and croplands. There is roosting and foraging habitat within the project area and WRB is assumed present.

Pallid Bat

The Pallid Bat is a CDFW species of special concern.

Pallid Bats were detected within the project area during the June 2018 sonobat survey. They are known to roost in bridges joints. Foraging habitat includes open woodlands (including orchards), grasslands, and wetlands. There is roosting and foraging habitat within the project area.

Townsend's Big-Eared Bat

Townsend's big-eared bat is a CDFW species of special concern.

Townsend's were detected within the project area during the June 2018 sonobat survey. Foraging habitat includes forest edge habitats, primarily along the edges of riparian vegetation. Foraging habitat is present within the project area however roosting habitat is likely absent. Townsend's roost in relatively large, but enclosed spaces with substantial openings, which are absent from the project area.

Special-Status Fish Species

Four federally listed fish species and four CDFW species of special concern have breeding populations within the Sacramento River or its tributaries and have the potential to be found within the project area. All of the federally listed species have critical habitat within the project area. Those species, their designated critical habitats and essential fish habitat (EFH), are:

- Southern DPS North American green sturgeon (*Acipenser medirostris*) federally threatened (FT), and designated critical habitat
- Central Valley steelhead DPS (*Oncorhynchus mykiss irideus*) FT, and designated critical habitat
- Central Valley spring-run Chinook salmon evolutionarily significant unit (ESU) (*O. tshawytscha*) FT, state-threatened (ST), and designated critical habitat
- Sacramento River winter-run Chinook salmon ESU (*O. tshawytscha*) federally endangered (FE) state-endangered (SE), and designated critical habitat
- Sacramento splittail (*Pogonichthys macrolepidotus*)
- Riffle sculpin (*Cottus gulosus*)
- Pacific lamprey (*Entosphenus tridentatus*)
- Western river lamprey (*Lampetra ayresii*)

The listed species that occur in the Sacramento River where it intersects the project area have overlapping migration periods and varying life histories. At least one of these species may be present in the project area year round.

Southern DPS North American Green Sturgeon

Focused surveys for North American green sturgeon were not conducted. However, it is well documented that green sturgeon occur in the project area. The project area is located south of their spawning habitat and north of their ocean access and seasonal estuary rearing habitat. There is no spawning habitat within the project area. Thus, the aquatic portion of the project area is strictly used as a migration corridor during upstream (adult) migration (March–May) and downstream (adult and juvenile) migration (April–November). Additionally, it has potential to be a freshwater rearing site for juveniles.

Adult and juvenile green sturgeon have the potential to be within the project area during the entire length of the in-water work window (June 1–October 15). The highest peak of occurrences of adults is in June during upstream spawning migrations. Adult and juvenile downstream migrations also occur within the in-water work window, with peak occurrences in June and July.

Critical Habitat

Critical habitat for southern DPS green sturgeon includes the Sacramento River watershed, the lower Feather River and lower Yuba River. The main stream of the Sacramento River where it crosses the project area is within the designated critical habitat. Approximately 4.10 acres of channel were mapped within the project area to the ordinary high-water mark (OHWM) during the wetland delineation.

Central Valley Steelhead

The California Central Valley (CCV) steelhead DPS includes all naturally occurring populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries. Artificially propagated fish from Coleman National Fish Hatchery and Feather River Fish Hatchery are also included in the DPS. CCV steelhead is listed as federally threatened, but is not listed under CESA.

Focused surveys for CCV steelhead were not conducted. However, it is well documented that CCV steelhead occur in the project area. The project area is located south of their spawning habitat and north of their ocean access and seasonal freshwater rearing habitat. There is no spawning habitat within the project area.

The aquatic portion of the project area is used as a migration corridor during upstream (adult) migration (August–March) and downstream (adult and juvenile) migration (April–November). Additionally it has potential as a freshwater rearing site for juveniles year round. Adult have the potential to be within the project area during the last three months of the in-water work window. Juveniles have the potential to within the project area during the entire length of the in-water work window (June 1–October 15). Peak occurrence of juveniles within the project area occurs from January to April.

Critical Habitat

Designated critical habitat for CCV steelhead covers most of California's Central Valley, including the Sacramento and San Joaquin River watersheds. As with the southern green sturgeon, the lateral extent of the critical habitat includes the channel width to the OHWM.

The main stream of the Sacramento River provides rearing, holding, and migration for adult and juvenile steelhead. Essential habitat elements include freshwater rearing sites and migration corridors.

Dams have reduced the availability of CCV steelhead habitat in the Central Valley by at least 95%. Mining, agriculture, urbanization, logging, harvest, hatchery influences, flow management, hydropower generation, and water diversion and extraction have contributed to wild population decline, especially in the southern portion of their range. Factors such as levee construction and bank armoring have altered CCV steelhead critical habitat by reducing floodplain habitat, changing river bank substrate size, and decreasing riparian and shaded riparian aquatic (SRA) habitat. These changes reduce habitat availability and quality.

Winter-Run Chinook Salmon

The Sacramento River winter-run Chinook salmon evolutionarily significant unit (ESU) is listed as endangered under both FESA and CESA.

Focused surveys for winter-run Chinook were not conducted. However, it is well documented that winter-run Chinook occur in the project area. The project area is located south of their spawning habitat and north of their ocean access and seasonal freshwater rearing habitat. There is no spawning habitat within the project area. The aquatic portion of the project area is used as a migration corridor during upstream (adult) migration (December–July) and downstream (juvenile) migration (July–March). The end of adult migration has the potential to be within the project area during the first couple of months of the in-water work window. Juveniles have the potential to be within the project area during July through October of the in-water work window. The peak of juveniles within the in-water work window would occur in September and October.

Critical Habitat

The designated critical habitat for the Sacramento River winter-run Chinook salmon ESU includes the Sacramento River from the Keswick Dam to the mouth of the river and the San Francisco Bay to the Golden Gate Bridge. Essential fish habitat (EFH) features that may occur within the project area are access from the Pacific Ocean to spawning areas in the upper Sacramento River; habitat areas and adequate prey that are uncontaminated; and access for juveniles to downstream migration. Special management considerations are adequate temperature, flow, and water quality.

Spring-Run Chinook Salmon

The Central Valley ESU of spring-run Chinook salmon is listed as threatened under both FESA and CESA. Focused surveys for spring-run Chinook were not conducted. However, it is well

documented that spring-run Chinook occur in the project area. The project area is located south of their spawning habitat and north of their ocean access and seasonal freshwater rearing habitat. There is no spawning habitat within the project area. The aquatic portion of the project area is strictly used as a migration corridor during upstream (adult) migration (March–September), within the in-water work window; and downstream (juvenile) migration (November–March), outside the in-water work window.

Critical Habitat

The aquatic portion of the project area is included in the designated critical habitat for Central Valley spring-run Chinook salmon. The project area provides freshwater rearing habitat with suitable water quantity and quality, natural cover, forage, and passage conditions that support migration and rearing.

Sacramento Splittail

Sacramento splittail is considered a species of special concern by CDFW; it was de-listed as a threatened species by the USFWS in 2003. The species is mainly estuarine, but most young-of-year are reared in fresh water, with some rearing in brackish water. Native to rivers, sloughs, and lakes in the Sacramento and San Joaquin valleys, Sacramento splittail distribution in the Sacramento River over the past 30 years has consistently ranged at least 144 to 184 river miles (232 to 296 river-kilometers [rkm]) upstream of the estuary. Juveniles have been recorded in the Sacramento River year-round 30 miles north of the project area; this population does not migrate downstream after spawning, and individuals could potentially occur in the project area during the in-water work window. Migratory fish have the potential to be in the area seasonally during upriver migration in January and February and downstream migrations in May, but not during the in-water work window of June 1–October 15.

Critical Habitat

No critical habitat has been designated for Sacramento splittail.

Riffle Sculpin

Riffle sculpin is a CDFW species of special concern. In the Sacramento River drainage, these small fish are present in Putah Creek on the west side and most tributaries on the east side, from the American River north to the upper Sacramento and McCloud Rivers. While their primary habitat does not occur in the project area, they are sometimes known to occur in sand gravel runs and backwaters of rivers, which do occur in the project area. Riffle sculpin remain within their habitat types, with limited ability to disperse.

Critical Habitat

No critical habitat has been established for riffle sculpin.

Pacific Lamprey

Pacific lamprey is a CDFW species of special concern. It occurs from Los Angeles to Del Norte Counties and in rivers of the Central Valley. Their upstream range in the Central Valley appears to be limited by impassable dams on the large rivers. The project area is located south of their spawning habitat and north of their ocean access. Thus the aquatic portion of the project area is used as a migration corridor during upstream (adult) migration (March–June and October–November) and downstream (juvenile) migration (March–June). Additionally, it has potential to be a freshwater rearing site for juveniles year round. Habitat in the project area is not suitable for spawning.

Critical Habitat

No critical habitat has been designated for Pacific lamprey.

Western River Lamprey

Western river lamprey is a CDFW species of special concern. Very little is known about the western river lamprey in California, but it is uncommon in the state and potentially in decline. It has been recorded migrating in the Sacramento–San Joaquin River Delta, in tributaries to the Sacramento and San Joaquin Rivers, and elsewhere. The project area is located south of their spawning habitat and north of their ocean access. Thus the aquatic portion of the project area is used as a migration corridor during upstream (adult) migration (September–November) and downstream (juvenile) migration (March–June). Additionally, it has potential to be a freshwater rearing site for juveniles year round. The project area does not contain suitable spawning habitat.

Critical Habitat

No critical habitat has been designated for western river lamprey.

2.7.2.4 Discussion of Environmental Evaluation Questions 2.7 – Biological Resources

Checklist Item: a. Less than significant with mitigation incorporated

Work within the project area could directly or indirectly (through habitat modification) affect wildlife and fish species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, NMFS, or USFWS. No special-status plants have the potential to be present in the project area and therefore impacts to special-status plants would not occur. The following species could be affected by project activities, as discussed below: giant garter snake, valley elderberry longhorn beetle, nesting birds, western yellow-billed cuckoo, Swainson’s hawk, bald eagle, bank swallow, roosting bats, western red bat, southern DPS North American green sturgeon, Central Valley steelhead, Central Valley spring-run Chinook salmon, Central Valley winter-run Chinook salmon, Sacramento splittail, riffle sculpin, Pacific lamprey, and western river lamprey.

Disturbance to Giant Garter Snake – Less than Significant

There is no GGS aquatic habitat within the project area. GGS may occur in the oxbows on either side of the project area during their active season; however no direct effects are expected. This is because all ground disturbance within 200 feet of aquatic habitat will occur on the dry side of the levee within a walnut orchard. No ground disturbance, stockpiling, or staging is planned within potential GGS habitat within the project area. GGS exclusion fencing will be installed to prevent any individual from entering the construction area.

The closest potential aquatic habitat to the project is the unnamed oxbow located 80 feet south of the project area. Vegetation removal on the south side of the bridge will occur outside the bird migratory nesting season (October 1–January 31), which is within GGS winter hibernation season (October–April). During GGS active season, they are not known to occur more than 165 feet from the edge of aquatic habitat. In addition, during their active season they do not enter continuous canopy riparian stands where the project’s vegetation removal will occur. Exclusion fencing will be placed 200 feet from the potential aquatic habitat during their active season before vegetation removal.

Avoidance measures will ensure that there will be no impacts to GGS during vegetation removal. Vegetation removal will occur approximately 380 feet from their aquatic habitat for Alternative A2, 200 feet from aquatic habitat for Alternative C2, and 240 feet from their aquatic habitat for Alternative D.

The closest of the three alternatives to Rasor Slough, the oxbow to the north of the project area, is Alternative A2; it is located 900 feet south of the oxbow. GGS potentially occupying Rasor Slough would be unlikely to be in the disturbance area due to the distance to aquatic habitat.

The presence of GGS on access roads is unlikely due to the distance of the road from suitable aquatic habitat (greater than 600 feet). The likelihood of wandering individuals occurring on the road will be further reduced with the installation of exclusion fencing, as described above.

There is potential that vibration caused by pile driving could cause stress resulting in negative impacts to wintering individuals. However, there are no published studies or reports addressing impacts associated with pile driving, or other activities, resulting in persistent vibrations in terrestrial habitats. Eric Hanson, the leading expert on the species, was contacted and asked about vibration impacts to wintering GGS. In his experience of earth moving projects in occupied winter habitats, GGS tended to remain in place to their detriment. He suspects if pile driving begins before the end of the active season, snakes that are annoyed by the activity would overwinter elsewhere. Pile driving will start within their active season at the closest point to their upland habitat. As construction enters their inactive season, construction will be farther from potential habitat and sensitive individuals should no longer be present.

No indirect impacts to GGS or suitable aquatic or upland habitat are expected. The avoidance and minimization measures listed below, and BMPs, will prevent runoff, sedimentation, spills of hazardous materials, spread of invasive weeds, or other negative effects to GGS aquatic habitat outside the project area.

No adverse impacts are anticipated due to the distance to aquatic habitat and the implementation of avoidance and minimization measures. Therefore, this project may affect, but is not likely to adversely affect, GGS.

Loss or Disturbance to Valley Elderberry Longhorn Beetle – Less than Significant with Mitigation

The direct effects of this project will be the relocation of elderberry shrubs, including stems which may contain larvae, resulting in potential direct take of VELB. Therefore, this project may affect, and is likely to adversely affect, VELB; accordingly, compensatory mitigation is required. The proposed work window also includes 3 months of the adult flight period, increasing the chances of adult mortality. Project impacts will be assessed as indirect impacts, temporary direct impacts, and permanent direct impacts. Impact analysis was based on the 2017 USFWS *Framework for Assessing Impacts to VELB*.

Indirect impacts that would result from the proximity to construction may include impacts from construction dust, changes in hydrology, shading, soil compaction, and removal of associated riparian woodland species.

Temporary direct impacts include the transplanting of the elderberry shrub, and the temporary disturbance of the elderberry's original habitat for 1 year or less.

Permanent direct impacts include the transplanting the elderberry shrub, and temporary disturbance of the elderberry's original habitat for more than 1 year, or permanent impacts to VELB habitat.

With the exception of the bridge columns, there will be no permanent structures built in VELB habitat. The new viaduct will have fewer columns than the existing viaduct because the existing viaduct spans 35 feet between columns and the new viaduct will span 45 feet between columns. All temporarily disturbed areas will be revegetated after the third year of construction is completed. All stockpiling and staging will occur outside VELB habitat.

The existing viaduct will not be demolished until the new viaduct is completed during the third season of work. Elderberries under the viaduct will be fenced until the last season of work. These elderberries are considered temporarily directly impacted. Avoidance and minimization measures and BMPs will be implemented to reduce indirect impacts resulting from the proximity to construction during the first two seasons of work. All transplanted elderberries will be relocated to a USFWS-approved mitigation bank.

Maintaining contiguous areas of suitable habitat is critical for preservation of VELB because of their limited dispersal capabilities and limited habitat availability. The viaduct and the USFWS refuge access road will be relocated just north of the alignment for each alternative. The viaduct is currently not causing any fragmentation impact to VELB. There are elderberries with exit holes directly south of the viaduct, under the viaduct, and directly north of the viaduct. The USFWS access road, to the north of the viaduct, is likely a current point of fragmentation. The new USFWS access road alignment will not cause additional fragmentation.

Under Alternative A2, 15 elderberry shrubs would be permanently affected (1 in Group 1, and 7 each in Groups 3 and 4); 33 would be temporarily affected (all Group 3); and 41 would be indirectly affected (1 in Group 1, 38 in Group 2, and 2 in Group 4).

Under Alternative C2, 44 elderberry shrubs would be permanently affected (1 in Group 1, 8 in Group 2, and 7 each in Groups 3 and 4); 33 would be temporarily affected (all Group 3); and 3 would be indirectly affected (1 in Group 1, and 2 in Group 4).

Under Alternative D, 23 elderberry shrubs would be permanently affected (1 in Group 1, and 7 each in Groups 3 and 4); 33 would be temporarily affected (all Group 3); and 3 would be indirectly affected (1 in Group 1, and 2 in Group 4).

After the third season of work the project area will have the potential for reestablishment by elderberry shrubs.

Caltrans would implement avoidance and minimization measures (described below) including establishing ESA fencing, implementing worker training, and construction monitoring. Even with these measures, the effects of the proposed project on VELB through impacts on their habitat (elderberry shrubs) would be significant. Caltrans would implement compensatory mitigation that would reduce this impact to a less-than-significant level.

Disturbance to Special-Status and Non-Special-Status Nesting Birds – Less than Significant with Mitigation

Construction activities that could adversely affect raptors and other birds nesting in vegetation within and adjacent to active construction areas include above-ambient noise levels, visual impacts, and the removal of nesting and foraging habitat.

Potential impacts of construction noise on birds include changes in the selection of foraging locations, interference with acoustic communications, failure to recognize other important biological signals such as sounds of predators and/or prey, permanent or temporary loss of hearing sensitivity, increased stress, and/or altered steroid hormone levels or other physiological effects.

Swallows nesting on the bridge will have the potential to be exposed to a peak noise level of 115 dBA, which, because exposure would last less than 12 hours a day (6 hours), would be below the level for hearing damage. At that sound level, however, masking and other behavioral and/or physiological effects could occur. Birds are much more resistant to hearing loss and auditory damage from acoustic overexposure than mammals because they can regenerate damaged or destroyed sensory hair cells. Since vegetation will be cleared 100 feet from the bridge under all three alternatives, the closest tree/shrub nesting habitat would be exposed to a noise level of 95 dBA. At 95 dBA there is potential for masking of important communication signals, and possibly behavioral or physiological effects. Within 2,500 feet of the bridge, noise levels during construction will be higher than typical maximum ambient levels. At this distance there is also potential for masking of communication signals from this added noise, which in turn, may also result in other behavioral and/physiological effects. One consequence of above-average noise disturbance could be nest abandonment.

The proposed project would involve temporary and permanent vegetation clearing and would result in the loss of nesting and foraging habitat for several species of special-status and non-special-status birds.

Potentially affected habitats are located along the disturbed margins of SR 162 and likely support primarily common, human and disturbance-adapted species. Therefore, the loss of this relatively low quality potential nesting habitat would not be likely to cause a substantial effect on local or regional populations of common, human and disturbance-adapted bird species. Higher-value foraging and nesting habitat occurs within the floodplain than outside it. Floodplain habitats consists of mature mixed riparian, valley oak woodland, and riparian scrub. Available habitat outside the floodplain consists of the ruderal habitat between the highway and the orchards, and the residential town of Butte City. Floodplain habitats will be revegetated after construction is completed.

Vegetation will be removed prior to the start of construction in 2021 and planted after the end of construction in 2024. There will be temporary loss of nesting habitat during construction and the time it takes for the revegetated site to become re-established.

These impacts will be minimized to the greatest extent possible through the implementation of the avoidance and minimization measures described below. Potential effects on state and federally listed birds are discussed by species below.

Disturbance to Western Yellow-Billed Cuckoo – Less than Significant with Mitigation

No indirect project impacts, such as increased vehicular or pedestrian traffic in suitable YBCU habitat are expected to occur as a result of the project. The proposed project impacts on YBCU are limited to temporary disturbance and permanent removal of a small amount of low-quality foraging habitat and potential nesting habitat that is not currently occupied.

Nesting/foraging habitat consists of the mixed riparian habitat south of the bridge and north of the unnamed oxbow to the south. Alternative A2 would not affect this area. Alternatives C2 and D would result in impacts on nesting/foraging habitat. Impacts on YBCU habitat are shown in Table 4.

Table 4. Impacts on Yellow-Billed Cuckoo Habitat

Alternatives	Foraging Habitat (acres)		Nesting/Foraging Habitat (acres)	
	Permanent	Temporary	Permanent	Temporary
A2	1.91	6.92	0.00	0.00
C2	5.73	0.34	0.21	1.15
D	0.54	5.93	0.00	0.80

The effects to the proposed YBCU critical habitat would be minor. The construction of the viaduct would mainly cause the temporary loss of valley oak habitat, which is marginal foraging habitat. However, this disturbance area would be revegetated in conjunction with the area under the demolished bridge to create a larger patch of contiguous riparian habitat south of SR162 than

is currently present. The project would not increase fragmentation or reduce patch size of suitable habitat or affect prey availability in those patches.

Avoidance and minimization measures restricting the timing of tree removal and construction and mandating reports of sightings would be implemented. Even with these measures, this impact would be considered potentially significant. Revegetation of the project area and the purchase of riparian credits would compensate for the permanent and temporary loss of potential foraging/nesting habitat and reduce this impact to a less-than significant level.

Disturbance to Swainson’s Hawk – Less than Significant with Mitigation

There are no active Swainson’s hawk nests observed or documented within the project area. Several nest records occur within 2 miles of the project area.

The project could affect Swainson’s hawks if active nests are identified within 0.5 mile of the project footprint during pre-construction surveys. Nest disturbance resulting from project construction (e.g., visual and noise disturbance) has the potential to cause nest abandonment or the loss of eggs or chicks. This impact is considered significant because it could result in the direct loss of a listed species. To avoid these impacts, construction will start prior to Swainson’s hawk arrival in California to deter noise-sensitive birds from nesting in areas disturbed by construction noise.

The project requires tree removal within 100 feet of the new alignment under all alternatives. Therefore, there will be no nesting habitat within 100 feet of active construction. The tree removal will occur prior to Swainson’s hawk migration to California to avoid direct impacts to active nests, if present. Swainson’s hawk individuals will not be injured or killed by vegetation removal or other construction activities.

Potential foraging habitat and nesting habitat for Swainson’s hawk occur in the project footprint and would be subject to permanent and temporary impacts, in the amounts shown in Table 5, below. The USFWS wildlife refuge provides an abundance of protected foraging and nesting habitat in the project vicinity. Within the project area, nesting and foraging habitat are not limiting factors. The proposed project will result in minimal habitat loss to the species. All temporary impacts will be restored on-site.

Table 5. Impacts on Swainson’s Hawk Habitat

Alternatives	Nesting Habitat (acres)		Foraging Habitat (acres)	
	Permanent	Temporary	Permanent	Temporary
A2	1.102	2.500	3.014	13.102
C2	0.518	2.679	2.175	13.503
D	0.155	3.517	3.958	10.951

Implementation of avoidance and minimization measures (described below) would avoid adverse effects on nesting Swainson’s hawks (i.e., loss of eggs or chicks). Furthermore, revegetation of the project area and the purchase of riparian credits would compensate for the permanent and

temporary loss of potential nesting habitat. Implementation of avoidance and minimization measures and compensation for permanent and temporary impacts on habitat would reduce impacts on Swainson's hawk to a less-than significant level.

Disturbance to Bald Eagle – Less than Significant

There will be no impact to nesting bald eagles because there is no bald eagle nesting habitat within the project area.

The project may deter bald eagles from foraging within the project area or surrounding area during active construction. Up to two large trees that could be used as perch sites by foraging bald eagles could be removed by the project. However, foraging and perching habitat is not limited in the project vicinity, so this impact would be less than significant.

Disturbance to Bank Swallows – Less than Significant with Mitigation

The proposed project will not directly impact nesting habitat or permanently remove foraging habitat for bank swallows.

There is a potential for impacts to nearby nesting bank swallows. The proposed project's in-water work window is from June 1 to October 15. Bank swallows are present in California from March to early August and breed from May to July. Two months of the breeding season will overlap with the in-water work, which will include pile driving. Nest disturbance resulting from project-related noise and visual effects has the potential to cause impacts to nesting birds. There is no research on how construction noise, like pile driving, impacts nesting swallows. A study on the impacts of ambient noise on nesting swallows found that young swallows change the frequency range of their calls to combat the noise and it has no effect on their growth and survival (Leonard 2008). The implementation of avoidance and minimization measures to conduct surveys and monitor any nests present and notify CDFW would ensure that potential impacts to nesting bank swallows are minimized. Therefore, potential impacts to nearby nesting bank swallows would be reduced to less than significant.

Disturbance or Loss of Roosting Bats – Less than Significant with Mitigation

Construction activities that could adversely affect roosting bats include above-ambient noise levels, visual impacts, and the removal of nesting and foraging habitat.

Based on the number of bats present and the time of the year they are present, there is likely a maternity roost in the bridge. The existing bridge will not be demolished until the new bridge is finished. Appropriate bat habitat will be built into the new bridge or an adjacent structure in order to provide replacement habitat for the maternity roost. Bats will be excluded from the old bridge prior to its demolition. Temporary and permanent vegetation clearing will occur as part of the proposed project, in the amounts shown in Table 6, and would result in the loss of temporary habitat.

The potential effects of highway construction noise on bats are acute acoustic trauma, disturbance and displacement from important food and shelter resources, and signal masking. In

bats, damage to high frequency cells would likely result in impaired echolocation. Damage to lower frequency cells would likely result in impaired capacity for passive listening. Either effect could potentially be life threatening. Young in maternity colonies are particularly susceptible to noise -induced hearing loss during sensitive development periods.

Based on a point source attenuation calculation, noise levels 10 feet from pile driving activities would have a dBA measurement of 115. Noise measured above 101 dBA is considered extreme noise.

The bridge is located in an agricultural town. Heavy trucks and farming equipment regularly use the bridge to transport goods. Daily maximum noise level for heavy truck use of the bridge is 84 dBA. Assuming bats within the project area have habituated to large truck noise, it would take 0.475 mile to attenuate the 115 dbA maximum cause by pile driving to 84 dBA. Within 0.5 mile of the bridge there is potential for auditory impacts to bats.

Bat tree-roosting habitat is not a limiting factor within the project vicinity due to the presence of the SSRNWR. Construction noise impacts will only occur during daylight hours and will not impact foraging habitat.

Bats are well adapted to avoid acoustic damage because they regularly encounter loud sounds from their own and other bats' echolocation signals (e.g., 110 dB). They have evolved very fast protective mechanisms to prevent sensory overload and damage to their auditory system. These include behavioral avoidance, changing the shape and orientation of the pinnae, closing the cartilaginous fold in the outer ear canal, the tympanic reflex, and resonance absorption. These mechanisms can result in a reduction of between 20 and 40 dB. However, effective these mechanisms are, it is not known if they can prevent overexposure from sudden, unexpected anthropogenic noise shocks.

Construction noise has the potential to cause roost abandonment, dysfunctional allocation of time and energy resources to vigilance behaviors and finding alternatives roosts, and degradation of physiological condition and social order. Some bridge roosting bats, like Mexican free-tailed bats, have a level of tolerance to these noise impacts. Implementation of avoidance and minimization measures will reduce the potential for impacts to roosting bats to a less-than-significant level.

Disturbance or Loss of Roosting Western Red Bat – Less than Significant with Mitigation

Potential roosting habitat within the project area consists of mixed riparian, valley oak, and orchards. Potential foraging habitat consists of scrub, grassland, cropland, and ruderal habitat. Impact calculations were split into floodplain and non-floodplain habitats because of the difference in the quality of habitat (Table 7). The floodplain habitat consists mainly of native species and is protected by the USFWS wildlife refuge. Outside the floodplain, habitat is highly disturbed and consists of orchards, residential areas, and strips of ruderal habitat between the orchards and the road. WRB preferred habitat is within the floodplain.

Table 6. Western Red Bat Roosting Habitat Impacts

Potential Roosting Habitat Impacts				
Alternative	Native Floodplain Habitat (acres)		Orchards and Isolated Native Trees Outside of Floodplain (acres)	
	Perm	Temp	Perm	Temp
A2	1.095	2.598	0.528	2.281
C2	0.518	5.752	0.535	2.264
D	0.222	4.575	0.003	2.650

Table 7. Western Red Bat Foraging Habitat Impacts

Potential Foraging Habitat Impacts				
Alternative	Native Floodplain Habitat (acres)		Disturbed Habitat Outside Floodplain (acres)	
	Perm	Temp	Perm	Temp
A2	2.101	11.098	1.100	7.951
C2	1.523	8.804	1.613	4.287
D	3.592	7.564	1.808	6.750

Impacts include loss of breeding, rearing, and foraging habitat. WRB are more flexible than most bats when it comes to maternity roost and will move about as needed to minimize disturbance and maximize foraging opportunity. WRB would likely avoid the roosting area adjacent to the bridge during construction but would be able to return once construction is completed. Considering the relatively minor loss of breeding, rearing, and foraging habitat, inherent flexibility of WRB roost-site selection, and the expansive adjacent habitat, the project is unlikely to reduce the viability of extant populations.

Impacts to day-roosting bats could potential occur during tree-removal and would be considered a significant impact. With the implementation of avoidance and minimization measures summarized for roosting bats, this impact would be reduced to a less-than-significant level.

Tree removal would only occur between October 2 and February 15 in order to avoid impacts to tree-roosting bats during their breeding and young-rearing season.

Impacts to Special-Status Fish Species – Less than Significant with Mitigation

Four federally listed fish species with district population segments (DPS), and evolutionarily significant units (ESU) were determined to potentially occur within the project area. Those species and their designated critical habitats are:

- Southern Green Sturgeon DPS (*Acipenser medirostris*) federally threatened (FT), and designated critical habitat;

- Central Valley Steelhead DPS (*Oncorhynchus mykiss irideus*) FT, and designated critical habitat;
- Central Valley spring-run Chinook Salmon ESU (*O. tshawytscha*) FT, and designated critical habitat;
- Sacramento River winter-run Chinook Salmon (*O. tshawytscha*) ESU federally endangered (FE), and designated critical habitat

Each species and listed population has a unique migration period. Because of this, one or more may occur within the project area year round. The work window was established to allow for construction during a range of time that excludes the greatest number of listed species from occurring in the area. However, the proposed in-water work window includes part of the migration periods for all four listed populations:

- Green sturgeon adults and juveniles have the potential to be in the project area throughout the in water work window. Adult peak occurrence is in June for upstream spawning migrations and juvenile peak occurrence is in June and July for downstream juvenile migration.
- Adult Central Valley Steelhead have the potential to be within the project area during the work window August through October. Juveniles have the potential to be within the project area during the entire length of the in water work window in low abundances. Their peak occurrence is outside the window from January to April.
- Winter-run Chinook salmon's end of adult migration occurs during the first couple months of the work window. Juveniles have the potential to occur during July through October of the work window with a peak occurrence in September and October.
- Spring-run Chinook salmon's peak of adult migration is within the first couple months of the work window and they can be present throughout the entire work window. Juveniles have a low potential of occurring within the work window.

In addition to the above fish species, four California species of concern fish species, Sacramento splittail, riffle sculpin, Pacific lamprey and western river lamprey could also occur in the project area and be affected by construction activities.

Sacramento splittail typically migrate upstream in January and February and spawn on seasonally inundated floodplains in March and April. In May the juveniles migrate back downstream to shallow, brackish water rearing grounds, where they feed on detritus and invertebrates for 1-2 years before migrating back upstream to spawn. Therefore, it Sacramento splittail will not be in the project area during in water construction activities.

Riffle sculpins primarily exist in cool shallow headwater streams where riffles and rocky substrates predominate, which does not occur within the project area. However, they are sometimes known to occur in sand gravel runs and backwaters of small to large rivers which does occur within the project area. They are year round residents within their habitat types with limited dispersal abilities. They could be affected by in water construction activities.

Pacific lamprey use the project area as a migration corridor during upstream (adult) migration (March-June and October-November) and downstream (ammocoetes) migration (March-June). Additionally, it has potential to be a freshwater rearing site for ammocoetes year round due to the presence of silty substrate in the project area.

Direct Impacts

The effects of pile driving noise on fish may include behavioral responses, physiological stress, temporary and permanent hearing loss, tissue damage (auditory and non-auditory), and direct mortality. In general, factors that may influence the magnitude of effects include species, life stage, size of fish, type and size of pile and hammer, frequency and duration of pile driving, site characteristics (e.g., water depth), and distance of the fish from the source of the underwater sound.

Listed salmon and sturgeon are hearing generalists and are less sensitive to loud noises than hearing specialists. Smaller fish are more vulnerable to tissue damage from high sound pressures than larger fish; adults of larger species, such as sturgeon and salmonids, would be expected to better tolerate loud sounds than their smaller juveniles, or fish of smaller species.

Behavioral responses to underwater noise include swimming away from the sound source, which may divert the fish from reaching valuable habitat or feeding areas and result in reduced fitness, reduced ability to locate prey, or exposure to predators. Larvae and eggs can move only slowly or with the current. These longer-term behavioral impacts have not been studied.

Pile-driving noise effects on fish can be reduced through use of an aquatic sound attenuation system such as an air bubble curtain, dewatered attenuation casings, or dewatered cofferdams. In addition, work would only be performed during the in-water work window of June 1–October 15, the dry season. However, the species that occur in the Sacramento River where it intersects the project area have overlapping migration periods and varying life histories. At least one of these species may be present in the project area at any time year round.

Pile driving noise

The FHWA criteria for injury to fish from pile-driving noise is currently a peak sound-pressure level (peak) of 206 dB and a cumulative sound exposure level (SEL) level of 187 dB for fish 2 grams and heavier. For fish smaller than 2 grams, a cumulative SEL of 183 dB is indicated. The NMFS spreadsheet also employs the concept of “effective quiet”. This assumes that cumulative exposure of fish to pile driving sounds of less than 150 dB SEL does not result in injury. Insufficient data are currently available to support the establishment of a noise threshold for behavioral effects. For consultation purposes, NMFS generally assumes that a

noise level of 150 dB root mean square (RMS) is an appropriate threshold for behavioral effects. (Table 8).

For this project, the values for cumulative SEL for fish greater than and less than 2 grams are the same because the number of strikes per day creates a distance to cumulative SEL that is at the distance to the effective quiet. Therefore, the lesser value for the cumulative SEL (183 dB) is reported for all fish species identified in *Special-Status Fish Species* portion of Section 2.7.2.3. The evaluation methodology is described in detail in the project’s *Natural Environment Study*.

Table 8. Interim Criteria for Assessing the Potential for Injury to Fish from Pile Driving Activities

Interim Criteria	Agreement In Principle
Peak Sound Pressure Level (SPL)	206 dB re: 1µPa (for all sizes of fish)
Cumulative Sound Exposure Level (SEL)	187 dB re: 1µPa2-sec (for fish ≥ 2 grams) 183 dB re: 1µPa2-sec (for fish < 2 grams) 150 dB re: 1µPa2-sec (behavioral effects for all sizes of fish)

Source: Fisheries Hydroacoustic Working Group (2008)

Pile driving noise that exceeds 206 dB peak at 10 meters or 183 dB cumulative SEL great than 10 meters would constitute a significant impact.

The proposed project would involve impact and vibratory pile driving of 60-inch CISS piles/extension, 24-inch diameter steel piles or 15-inch H piles for trestles and falsework, 16- to 20-inch steel piles for falsework, 24-inch piles for the viaduct, and steel sheet piles for temporary cofferdams. In general, the larger the pile, the greater the noise impact. Table 9 summarizes the sound levels for each scenario.

Table 9. Hydroacoustic Sound Levels

Pile Location (Distance from River [meters])	Pile Diameter/Type	Driver	Total Number of piles to be Installed	Land or Water Installation	Piles per Day	Engineer-Estimated Strikes per Pile	Total Strikes per Day	Attenuation (dB)	Underwater Sound Level Assumptions					Cumulative SEL at Reference Distance	Transmission Loss Constant	Distance (m) to Threshold			
									Peak	SEL	RMS	Reference Distance (meters)	Source for Sound Level Assumptions			Onset of Physical Injury			Behavior RMS dB
																Peak dB	Cumulative SEL dB		
																	Fish ≥ 2g	Fish < 2g	
206 dB	187 dB	183 dB	150 dB																
Pier 87, 88, 89	60 in diameter CISS	impact	6	water	1	10,000	10,000	0	210	185	195	10	66 in. CIDH pile driven through temp trestle; driven in 4 m of water along the western portion of the Richmond-San Rafael Bridge	225	15	18	2154	2154	10,000
		impact	6	water	1	10,000	10,000	5	205	180	190	10	accounting for 5dB attenuation	220	15	9	1000	1000	4,642
Pier 90 (6m)	60 in diameter CISS	impact	2	Land	1	10,000	10,000	--	204	175	185	10	72 in. steel pipe Feather River Bridge piles driven on land 10m from the river	215	15	7	464	464	2154
Pier 86 (11m)	60 in diameter CISS	impact	2	Land	1	10,000	10,000	--	204	175	185	10		215	15	7	464	464	2154
Temporary Trestle	24 in diameter	impact	220	water	15	400	6000	0	205	173	188	10	24 in. steel pipe Tongue Point Pier, 4 m of water.	211	15	9	341	341	3415
	24 in diameter	impact	220	water	15	400	6000	5	200	168	183	10	accounting for 5dB attenuation	206	15	4	158	158	1585
	24 in diameter	vibratory with impact proofing	220	water	15	25	375	--	205	173	188	10	24 in. steel pipe Tongue Point Pier 4 m of water. 1 in 5 piles will be impact hammer tested. Each impact hammer tested pile will require 25 strikes.	199	15	9	61	112	3415
Falsework	16 to 20 in diameter	impact	100	water	20	400	8000	0	205	173	188	10	24 in. steel pipe Tongue Point Pier, 4 m of water.	214	15	9	341	341	3415
Temporary Trestle H Pile	15 inch thick vertical	impact	220	water	15	400	6000	0	200	170	183	10	Summary of Near Source Unattenuated Sound Pressure Levels	208	15	<10	215	215	1585
Viaduct Piles (24 m)	24 in diameter CISS	impact	340	land	15	400	6000	0	185	158	169	34	Adjusted 20" Steel Pipe Pile Stockton Wastewater Treatment Plant Pipeline	196	15	<10	116	116	628
Cofferdam Sheet Piles	24 in	vibratory		water					175	162	162		Vibratory pile driving is not known to cause injury to fish and is therefore not evaluated						

Piers 87, 88 and 89 - 60-inch piles in water

Six 60-inch piles will be driven in water for the bridge. This work is expected to produce an unattenuated cumulative SEL of 225 dB at 10 meters from the pile, above the 183 dB cumulative SEL threshold for fish injury. With the use of an attenuation device such as dewatered casings, the cumulative SEL is estimated at 220 dB at 10 meters, also above the injury threshold. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative threshold is approximately 2,154 meters (7,067 feet). With the use of sound attenuation devices, such as dewatered casings, assuming it may provide a minimum 5 dB of reduction, the maximum distance at which the pile driving noise attenuates to 183 dB SEL cumulative threshold is approximately 1,000 meters (3,281 feet). This is a significant impact.

Peak sound pressure level at 10 meters would be 210 dB, which exceeds the 206 dB peak threshold. With attenuation, the peak sound pressure level would be below threshold at 205 dB.

The distance at which pile driving noise can affect behavior (150 dB) is approximately 10,000 meters (32,808 feet) without attenuation, and 4,642 meters (15,229 feet) with attenuation.

Piers 90 and 86 - 60-inch piles on land

A total of four 60-inch piles would be driven on land, using both impact and vibratory hammers. Pier 90 (two piles) would be approximately 20 feet from water's edge and Pier 86 (two piles) would be approximately 37 feet from water's edge. Impact driving of 60-inch diameter CISS piles on land adjacent to the river is estimated to produce an SEL cumulative of 215 dB at 10 meters from the pile, above the threshold for fish injury. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative threshold is approximately 464 meters (1,522 feet). This is a significant impact.

The peak sound pressure level at 10 meters of 204 dB is less than the 206-dB peak injury threshold.

The distance at which pile driving noise can affect behavior (150 dB) is approximately 2,154 meters (7,067 feet).

Temporary Trestle - 24-inch piles in water

The temporary trestles would require 220 24-inch piles driven in water. Impact pile driving of 24-inch steel piles is estimated to produce an unattenuated SEL cumulative of 211 dB at 10 meters from the pile and an attenuated cumulative SEL of 206 dB. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative threshold is approximately 341 meters (1119 feet) and 158 meters (518 feet) respectively. This is a significant impact.

The attenuated peak sound pressure level at 10 meters of 205 dB is less than the 206-dB peak injury threshold.

The distance at which pile driving noise can cause behavioral changes (150 dB) is approximately 3,415 meters (11,204 feet).

The temporary trestle piles may also be driven with a vibratory hammer and then an impact hammer. This type of pile driving is estimated to produce an unattenuated SEL cumulative of 199 dB at 10 meters from the pile. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative threshold is approximately 112 meters (367 feet). This is a significant impact.

The peak sound pressure level at 10 meters of 205 dB is less than the 206-dB peak injury threshold.

The distance at which pile driving noise can cause behavioral changes (150 dB) is approximately 3,415 meters (11,204 feet).

Temporary Trestle - 15-inch piles in water (alternative)

Steel 15-inch H piles may be used in lieu of 24-inch steel piles for the trestle. Impact driving of 220 H piles is estimated to produce an unattenuated SEL cumulative of 208 dB at 10 meters from the pile, above the threshold for fish injury. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative injury threshold is approximately 215 meters (705 feet). This is a significant impact.

The attenuated peak sound pressure level at 10 meters of 200 dB is less than the 206-dB peak injury threshold.

The distance at which behavior changes can occur (150 dB) is approximately 1,585 meters (5200 feet).

Falsework – 16-inch to 20-inch diameter in water

The values for 24-inch diameter piles were also used to represent the noise of 100 16- to 20-inch falsework piles that would be driven in water.

The falsework would require 100 16- to 20-inch piles driven in water. Impact pile driving of the piles is estimated to produce an unattenuated SEL cumulative of 214 dB at 10 meters from the pile. The distance at which the pile driving noise attenuates to the 183 dB SEL cumulative threshold is approximately 341 meters (1119 feet). This is a significant impact.

The attenuated peak sound pressure level at 10 meters of 205 dB is less than the 206-dB peak injury threshold.

The distance at which pile driving noise can cause behavioral changes (150 dB) is approximately 3,415 meters (11,204 feet).

Viaduct - 24-inch piles on land

Building the new viaduct would require driving 340 24-inch diameter CISS piles on land. The distance at which the pile driving noise attenuates to the cumulative 183 dB SEL threshold in the water is approximately 116 meters (381 feet). This is a significant impact.

The peak sound pressure level of 190 dB at 15 meters is less than the 206-dB peak injury threshold.

The distance at which pile driving noise causes behavioral effects (150 dB) is approximately 628 meters (2060 feet).

Temporary Cofferdams - Steel Sheet Piles

Steel sheet piles for proposed temporary cofferdams would be installed using a vibratory hammer and removed using a vibrating extractor. The installation of steel sheet piles may be expected to result in 175dBpeak, 162 dBRMS, and 162 dBSEL, below the thresholds for fish injury.

Hazardous Material and Chemical Spill

Activities associated with project construction potentially could impair water quality if chemicals (e.g., hydrocarbon-based fuels and lubricants) or other construction materials are spilled or enter waterways. Construction-related chemical spills could affect fish by increasing physiological stress, reducing biodiversity, altering primary and secondary production, and possibly causing direct mortality.

Based on the implementation of containment measures and water quality BMPs, the potential for a hazardous material or chemical spill to occur is unlikely. Adherence to predetermined criteria identified during the permitting process is expected to prevent potential effects on fish or habitat. This impact would be less than significant.

Erosion and Mobilization of Sediment

Disturbed sediments during in-water construction could degrade water quality. In addition, dewatering and soil removal from the inside of the cofferdams could result in temporary increases in turbidity and suspended sediments in the river, if water and associated spoils from

within the cofferdams are not properly disposed of or contained and treated before being discharged back to the river. Increased exposure to contaminants and elevated levels of suspended sediments in the water column have the potential to result in physiological, behavioral, and habitat effects. Avoidance and minimization measures will require contractors to monitor and minimize mobilization of sediment and turbidity in the Sacramento River to below a 20% threshold. Water will be treated before discharge to the river to comply with water quality requirements of the Central Valley RWQCB under the project's 401 permit. BMPs will be implemented during removal of temporary piles and cofferdams to minimize turbidity and sediment mobilization. There is still potential for some impact to adult and juvenile fish due to temporary, localized plumes of sediment during pile driving and demolition and removal of piles. These turbidity plumes would be temporary; therefore this impact would be less than significant.

Fish Entrapment in Cofferdams

There is potential for fish to be entrapped in cofferdams and die when the cofferdam is closed and dewatered. The timing of proposed cofferdam installation during the summer low-water period would minimize the chance of migrating fish becoming entrapped. However, the potential would remain for some special-status fish species to become entrapped in the cofferdams. Implementation of avoidance and minimization measures will further reduce the risk of mortality for fish potentially stranded during cofferdam installation. The area of cofferdams will be restricted to the minimum necessary for construction work. Cofferdams will not be left in place over winter, when higher flows could overtop the cofferdam and allow juveniles of listed species into the enclosure. Dewatering pumps will be screened. Dewatering and fish rescue or relocation (if needed) will commence immediately upon closing the cofferdam. With these measures implemented, the impacts would be less than significant.

Critical Habitat

Temporary and Permanent Loss of Special-Status Fish Habitat

The proposed project would include the placement of temporary and permanent fill (bridge piers and RSP) below the OHWM and would result in the temporary and permanent loss of aquatic habitat area and volume, including juvenile migration and rearing habitat and adult migration habitat for all species addressed in this document. Permanent loss of habitat would be a less than significant impact with mitigation.

Table 10. Temporary and Permanent Impacts to the Sacramento River

Impacts to the Sacramento River		
Temporary Structure Impacts		
	sq ft	acre
Temporary Trestles piles	691	0.016
Temporary N. trestle shading	17514	0.402
Temporary S. Trestle shading	21383	0.491
Coffer Dam Minimum Area	700	0.016
Coffer Dam Maximum Area	19,000	0.436
Totals	59289	1.361
Permanent Impacts		
	sq ft	acre
Piles	78.5	0.002
Area of Existing In-Water Structure Removed		
Fenders	18597	0.427
Piers	2196	0.050
Totals	20793	0.477

Butte City Bridge is an area of high mortality to salmonids. Experts believe the fenders provide habitat for predators that catch salmonids as they migrate south to the ocean. Removing 0.5 acre of wooden fenders and wooden piers from the river will increase the amount of aquatic habitat. The removal of the fenders should reduce the amount of fish mortality in the area by reducing predator habitat. This would be a beneficial impact on special-status fish species critical habitat and native fish species habitat.

Temporary and Permanent Loss of SRA Habitat/Streamside Vegetation

Activities associated with stream channel alterations may include the removal of riparian vegetation and large woody debris (LWD). Riparian vegetation is critical to salmonid habitat. Riparian vegetation stabilizes stream banks, creates shade that provides temperature control, and increases the complexity of fish habitat, providing fish refuge and prey habitat. ESA fencing will be specified on project plans and specifications to protect features outside the construction impact area. Riparian vegetation along the banks of the Sacramento River will be avoided or preserved to the extent feasible. Disturbed riparian vegetation will be replanted with native trees and shrubs at a 1:1 ratio. Rapidly sprouting plants, such as willows, will be cut off at ground level and root systems left intact. With these measures, the impact would be less than significant.

Table 11. Impacts to Sacramento River Riparian Habitat

Habitat	Permanent Impact Acres	Temporary Impact Acres
Valley oak woodland	0.034	0.401
Riparian woodland	0.038	0.198
Sandbar willow thicket	--	0.042
Totals	0.072	0.641

Indirect Impacts

Introduction of Aquatic Invasive Species

During construction, the operation of in-water equipment originating from regions or areas outside the project area could result in the introduction and spread of aquatic invasive species. These species can adversely affect native fishes and other ecologically and economically important species through a number of mechanisms, including competition for resources, predation, parasitism, interbreeding, disease transmission, or changes in the physical or chemical attributes of aquatic habitat. Avoidance and minimization measures will be implemented to prevent the introduction or spread of invasive aquatic organisms. This would reduce the impact to a less-than-significant level.

Increase in Overwater Structure

Temporary shading by the temporary trestles, work platforms, and barges during bridge construction and permanent shading from the new bridge potentially could reduce primary productivity of affected habitats. Temporary shading also could increase the number of predatory fishes (e.g., striped bass, largemouth bass) holding in the project area and their ability to prey on juvenile fishes. Because the temporary trestles and work platforms would be present only during construction, effects of trestle and work platforms would be temporary and localized. The impact would be less than significant.

Eleven avoidance and minimization measures for fish will be implemented to reduce or avoid adverse direct and indirect effects. Water-quality and other standard construction BMPs will also serve to protect fish and their habitat. Impacts on special-status fish from water quality, entrapment in cofferdams, pile driving, and temporary and permanent loss of SRA, would be less than significant with mitigation.

Checklist Item: b. Less than Significant with Mitigation Incorporated

Sensitive natural communities within the project area include riparian communities and valley oak woodland.

Table 12. Impacts to Sacramento River Riparian Habitat

Permanent Riparian Impacts	Acres	Temporary Riparian Impacts	Acres
Blue elderberry stand	0.017	Blue elderberry stand	0.026
Valley oak woodland	0.034	Valley oak woodland	0.401
Riparian woodland	0.038	Riparian woodland	0.198
		Sandbar willow thicket	0.042

Disturbance and Loss of Riparian Communities – Less than Significant with Mitigation

Implementation of the project would result in permanent impacts to riparian forest (i.e., riparian woodland), in the amounts shown in Table 13. Riparian trees would be removed prior to the start of bridge construction.

Table 13. Riparian Impact Table

Acres of Riparian Habitat Impacts				
	Native Riparian Vegetation		Blackberry and Introduced Grasses	
Alternative	Perm	Temp	Perm	Temp
A2	0.555	1.953	0.479	2.248
C2	0.511	2.192	0.518	2.328
D	0.303	2.500	0.968	1.858

Operation of equipment under the riparian forest canopy could result in damage to tree trunks because of accidental equipment strikes or damage to tree roots resulting from soil compaction or other ground disturbances beneath the dripline of the tree canopy.

Increased erosion and sedimentation, pollution (from equipment leaks or spills), or dust also could reduce the habitat value of riparian forest in adjacent areas during the 3-year construction period. Project construction also could reduce adjacent habitat value by spreading invasive plants carried on dirty equipment into the project footprint.

Project impacts on riparian forest habitat are potentially significant. Implementation of avoidance and minimization measures and compensatory mitigation (described below) would reduce potentially significant impacts on riparian forest to a less-than-significant level.

Disturbance and Loss of Valley Oak Woodland – Less than Significant with Mitigation

Project implementation would result in permanent and temporary impacts to valley oak woodland. The trees will be removed prior to the start of construction and will not be replanted until after the third year of construction is completed. There will be a temporary loss of habitat for up to 4 years during construction. In addition, with a growth rate of 2 to 3 feet per year, it will take at least 20 years to replace the function and value the existing woodlands currently hold.

Operation of equipment in proximity to oak trees could result in damage to tree trunks because of accidental equipment strikes or damage to tree roots resulting from soil compaction or other ground disturbances beneath the dripline of the tree canopy. No ground disturbances (e.g., trenching) are anticipated to occur in these temporary impact areas. Furthermore, all temporary impact areas would be restored to pre-project conditions.

Construction-related noise, increased erosion and sedimentation, pollution (from equipment leaks or spills), or dust also could reduce the habitat value of oak woodland in adjacent areas during construction. Project construction also could reduce adjacent habitat value by spreading invasive plants carried on dirty equipment into the project footprint.

Impacts were split into riparian and non-riparian habitats, oak woodlands versus individual trees, and mixed riparian versus valley oak-dominated woodlands to reflect different habitat values (Table 14). Impacts were split into the above categories because woodlands hold more habitat value than isolated trees, and mixed riparian habitats support different species than upland valley oak woodlands.

Project impacts on oak woodland habitat are potentially significant. Implementation of avoidance and minimization measures and compensatory mitigation (described below) would reduce potentially significant impacts on oak woodland to a less-than-significant level.

Table 14. Valley Oak Impacts

Valley Oak Impact Table												
Alternative	Valley Oak Woodland (acres)				Isolated Valley Oak Trees (acres)				Mixed Riparian with Valley Oak (acres)		Totals	
	Riparian		Non-Riparian		Riparian		Non-Riparian		Riparian			
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
A2	0.341	0.938	0.471	0.820	0.000	0.000	0.097	0.136	0.158	0.581	1.066	2.474
C2	0.074	0.447	0.000	3.648	0.000	0.000	0.100	0.132	0.352	1.558	0.526	5.785
D	0.045	0.862	0.007	1.975	0.000	0.000	0.027	0.178	0.127	1.340	0.206	4.355

Checklist Item: c. Less than Significant with Mitigation Incorporated

Consistent with the regulations, the determination of permanent and temporary adverse impacts to jurisdictional waters of the United States were based upon “discharges of fill.” (Table 15.) Permanent impacts to waters or wetlands consists of the new piers in the Sacramento River required for the new bridge.

Temporary impacts consist of any fill that would be placed within jurisdictional waters during project activities, including, but not limited to, cofferdams, trestles, and falsework. Additionally, any jurisdictional waters that would be temporarily disturbed by construction activities or by equipment access and operation will be re-contoured to as close to pre-project condition as feasible and stabilized as soon as feasible at the conclusion of construction activities; therefore, these will be considered as temporary impacts.

There will be no permanent fill added in the forested seasonal wetland. Temporary impacts will occur from disturbance by equipment access for construction activities. In these areas, wetland mats can be placed to minimize temporary impacts to soil and plants.

Table 15. Wetland Impacts

Acres of Wetland Impacts		
Alternative	Permanent	Temporary
A2	0	0.107
C2	0	0.101
D	0	0.113

Impact areas for the Sacramento River will be the same for all three alternatives (Table 16). Permanent impacts to the river will occur from the construction of the new bridge piers. A range of temporary impacts to the Sacramento River will occur through the use of cofferdams, sheet piles, and temporary trestle piles. Exact methods that determine the range will be decided by the contractor. In addition, the project would permanently remove 0.477 acre of fenders and existing piers from the river, resulting in a net gain of 0.475 acre of waters in the Sacramento River.

Table 16. Non-Wetland Waters Impact

Sacramento River Waters Impacts	
	Acres
Permanent Impact	0.002
Temporary Impact	0.032–0.452
Permanent Structures Removed From the River	0.477

Project impacts on wetland and non-wetland waters are potentially significant. Implementation of avoidance and minimization measures and compensatory mitigation (described below) would reduce potentially significant impacts on wetlands and non-wetland waters to a less-than-significant level.

Checklist Item: d. Less than Significant

The proposed project would not alter the existing habitat in a way that would create any permanent barriers to wildlife movement. Temporary construction fencing may be utilized during project construction to delineate the work limits; however, this fencing would be removed following the completion of construction activities. Cofferdams would be installed around the existing bridge piers but would not interfere substantially with the movement of fish through the project area. Therefore, the proposed project would not interfere substantially with the movement of fish or wildlife species. The project would result in a less-than-significant impact on the movement of wildlife. No mitigation would be required.

Checklist Item: e. No Impact

The proposed project would not conflict with any local policies or ordinance protecting biological resources. Therefore, there would be no impact.

Checklist Item: f. No Impact

The proposed project would not conflict with an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Therefore, there would be no impact.

2.7.3 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential permanent and temporary impacts on giant garter snake, valley elderberry longhorn beetle, Swainson's hawk, other special-status and non-special-status nesting birds and roosting bats, and special status fish that would occur under the three build alternatives. These measures are incorporated into the proposed project.

2.7.3.1 Protect Giant Garter Snake

Caltrans standard construction BMPs will protect overall water quality and prevent any effects to suitable GGS habitat downstream from the project. Specific protection measures for GGS will include:

- A preconstruction survey along the paved access road, within 200 feet of the oxbow lake to the south, will be conducted by a USFWS-approved biologist. Surveys will occur immediately prior to the initiation of any ground disturbing activities, and will consist of walking transects while conducting visual encounter surveys within areas subject to vegetation clearing, grubbing, grading, cut and fill, or other ground-disturbing activities.
- No construction activities, staging, or stockpiling will occur within suitable upland habitat (within 200 feet of the unnamed oxbow lake). All vehicles and equipment will stay on the paved access road, and staging and stockpiling will only occur east of the valley oak woodlands.
- Wildlife exclusion fencing will be installed to prevent GGS from entering the construction site prior to any construction activities. Exclusion fencing will be placed 200 feet from the potential aquatic habitat during the GGS active season before vegetation removal. Fencing will be made of ERTEC wildlife exclusion fencing or comparable material. Environmentally sensitive area (ESA) signage will be posted describing GGS (with photo), non-admittance, consequences for non-compliance, and acting agency.
- A USFWS-approved biologist will inspect exclusion fencing weekly, and the fencing will be maintained until the end of construction. If GGS are found on-site during construction, activities will stop until the GGS leaves the construction area on its own or until a USFWS-approved biologist moves the snake out of the construction footprint. USFWS will be

notified within 24 hours of any GGS observations. No handling or capture of GGS will occur without authorization from USFWS.

- Pile driving on the viaduct will start in May during the GGS active season. Construction will start on the west end of the bridge, which is closest to potential GGS aquatic and upland habitat. Construction will progress to the east, away from GGS habitat. Construction will be more than 1,000 feet from upland habitat by the time of winter torpor. With pile driving occurring during the active season, sensitive individuals should choose not to enter torpor in areas disturbed by vibrations and noise caused by the pile driving activities.

2.7.3.2 Protect Valley Elderberry Longhorn Beetle and its Habitat

The following avoidance and minimization measures will be implemented prior to and during construction to protect VELB and its habitat in the vicinity of project activities.

- **Fencing.** All areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible. Fencing will be inspected daily by the contract biologist and maintained by construction staff under the biologist's supervision.
- **Worker education.** A USFWS-qualified biologist will provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance.
- **Construction monitoring.** A USFWS-qualified biologist will monitor the work area at appropriate project intervals to assure that all avoidance and minimization measures are implemented.
- **Trimming.** In order to avoid and minimize adverse effects to VELB when trimming, trimming will occur between November and February and will avoid the removal of any branches or stems that are equal to or greater than 1 inch in diameter.
- **Chemical Usage.** Herbicides will not be used within the dripline of the shrub. Insecticides will not be used within 98 feet (30 meters) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method.
- **Erosion Control and Revegetation.** Erosion control will be implemented and the affected area will be revegetated where feasible with appropriate native plants.

2.7.3.3 Avoid Impacts on Nesting Birds

Caltrans will implement the following avoidance and minimization measures to reduce potential impacts on migratory birds protected under the MBTA.

- Tree and shrub removal will be conducted outside of the nesting season, between September 31 and January 31. If tree and shrub removal cannot be performed outside the nesting season, than a pre-construction nesting bird survey will be conducted within the project area and up to 0.5 mile from the project area. Buffer zones will be established for any active nests identified, as described below.

- Tree removal will be completed prior to the start of construction. There will be no potential tree nesting habitat within the construction zone.
- Construction on the viaduct will begin as close to February 1 as possible, to prevent birds from nesting in areas affected by construction noise.
- All temporary impacts will be restored to pre-project conditions.
- Within 0.5 mile of the bridge, bird surveys will be conducted during the breeding season to locate active nests.
- During construction, if an active nest is discovered that is within a physical, visual, or auditory disturbance area, a buffer zone will be established such that nesting and rearing is not disturbed (typically 250 ft. for raptors and 100 ft. for other birds). As necessary, a qualified biologist will coordinate with CDFW when establishing a buffer zone.
- Prior to the demolition of the existing bridge, exclusion devices will be installed to prevent birds from nesting on the bridge. Regular inspections will occur by a qualified biologist to ensure that the exclusion is functioning properly.
- If signs of stress or nest abandonment are observed, CDFW will be consulted.
- If an active bank swallow colony is located within 0.5 mile of project activities, a qualified biologist will monitor the colony during initial pile driving activities. If no disturbance is observed, monitoring will cease. If disturbance is observed, CDFW will be notified.

2.7.3.4 Avoid Impacts on Swainson's Hawk

Species-specific measures will be implemented to avoid and minimize effects on Swainson's hawks:

- **Pre-construction Swainson's Hawk Nesting Surveys.** If project activity is scheduled to occur during the raptor nesting season (February 1–September 31), focused surveys for Swainson's hawk will be conducted in accordance with *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). Surveys for Swainson's hawk nests will be conducted by a qualified biologist before the start of project construction to identify active nests within the project footprint and vicinity. Surveys will be conducted no more than 30 days before the start of construction and will include all accessible areas of suitable nesting habitat located within 0.5 mile of the project footprint. If no active nests are found, no further mitigation will be required.
- **Implement Swainson's Hawk Avoidance Buffers.** If active Swainson's hawk nests are located during pre-construction surveys, Caltrans will maintain a buffer in consultation with CDFW. No project activity will begin in the buffer area until a qualified biologist confirms that the nest is no longer active. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines

that activity within a reduced buffer will not be likely to adversely affect the adults or their young.

2.7.3.5 Avoid and Minimize Impacts on Roosting Bats

Caltrans will implement the following avoidance and minimization measures to reduce potential impacts on roosting bats.

- Exclusion measures will be required for roosting bats prior to the demolition of the existing bridge. Exclusion of bats from roost sites will be done after August 15 and prior to April 15 to avoid impacts to maternity colonies. Exclusion will be accomplished using physical exclusion methods, acoustic exclusion, or a combination of both.
- Acoustic surveys will be conducted for bats in the summer of 2019 to verify the species of bats present and to estimate the size of the population occupying the bridge, so as to establish appropriate work windows and to install appropriate amounts of bat habitat into the new bridge.
- Potential options to mitigate noise impacts to bats include temporary sound walls that do not impact bat flight paths and/or bat exclusion during the length of pile driving activities. If bats are excluded prior to the installation of bat habitat on the new bridge, temporary bat boxes will be installed to provide interim roosting habitat.
- A qualified biologist will monitor during construction as needed.
- Trees will be removed between October 2 and February 14 to prevent impacts to bats during their breeding and maternity season.
- All riparian and oak woodland habitat will be revegetated after construction is complete.
- Bat habitat will be installed into the new bridge to replace habitat lost in the existing bridge

2.7.3.6 Minimize Impacts on Riparian Communities and Oak Woodlands

The following measures will be implemented to avoid and minimize potential impacts to riparian forest and oak woodland communities that will be subject to temporary ground disturbances.

Avoid ground disturbances near riparian and oak woodland habitats. Caltrans will avoid, to the maximum extent feasible, construction-related ground disturbances (including installation of exclusion fencing) beneath the dripline of any tree within identified riparian and oak woodland habitat that is not planned for removal (e.g., within the temporary impact footprint or adjacent to the project footprint) through installation of ESA fencing. If project-related ground disturbances cannot be avoided in these areas, Caltrans will protect individual trees from potential damage from mechanized equipment by affixing wooden slats, or other similarly protective material, as a complete physical barrier around the trunk of potentially affected trees for the duration of equipment use in proximity. For oak trees, Caltrans will determine whether additional measures, including potential oak compensation, would be necessary for trees affected within the dripline.

- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. Where possible, trees will be trimmed instead of removed to gain access to the work sites.
- All temporary impacts within riparian and oak woodland habitat will be restored to pre-project conditions.

Aquatic Sound Attenuation Devices for the In-Water 60-inch Piles

Furnish, install, operate, and maintain an aquatic sound attenuation system to reduce noise generated by driving 60-inch piles in the water.

Approved aquatic sound attenuation systems include:

- Air bubble curtain used with isolation casing (confined air bubble curtain).

With approval from the NMFS, the USFWS, and CDFW, the following aquatic sound attenuation systems may be used:

- De-watered attenuation casing
- De-watered cofferdam

The contractor will be required to submit working drawings and the supplement for sound attenuation system to the Caltrans Engineer, and shall include the following:

- Complete details of the system including mechanical and structural details
- Details of anchorage components, air compressors, supply lines, distribution manifolds, aeration pipes and frames
- Details of proposed means of isolating noise-producing systems on the driving platform
- Details of meters gauges, and recording devices
- Details of the manufacturer's recommendations for the installation of the flow meters in conditions of laminar flow and non-laminar flow.

The supplement to the working drawings shall include the following:

- Documentation of previous successful use of the system to be used for sound attenuation
- Materials list including name of manufacturer and the source, model number, description, and standard of manufacture
- Manufacturer's descriptive data and catalog cuts for all products proposed for the system including air compressors

The engineer will be required to inspect the sound attenuation system for proper operation before each deployment and as necessary during deployment. Proper operation

during deployment will be determined by the gauges in the monitoring system and by other methods determined by the engineer. Air pressure and air flow meters and gauges will be calibrated by a private laboratory approved by the Caltrans engineer prior to use in the air bubble curtain system. The condition of the sound attenuation system will be monitored and daily inspection reports will be prepared during pile installation operations and no less than every other day during periods of no activity.

The approved sound attenuation system must be operating prior to beginning pile driving at any given pile location. If the attenuation system fails, pile driving shall immediately stop and may not resume at that location until it is again operating. A sound attenuation system is not required for pile or casing installation using a vibratory hammer. Pile driving equipment shall be isolated from the platform it is on. The isolation shall be such that noise from the pile driving operation is not transmitted through the platform to the water. The platform supporting the pile driving equipment is not required to be contained within the attenuation system.

In-Water Work Window

The recommended in-water work for avoiding effects to listed salmonids and green sturgeon in the Sacramento River is between June 1 and October 15. Any work occurring below the OHWM of the Sacramento River within the project site, including barge operation, cofferdam installation and removal, and removal and installation of piles and the new fender system, shall occur within this work window of any construction season, unless earlier or later dates for in-channel construction activities are approved by CDFW, USFWS, and NMFS. By requiring contractors to adhere to these dates for in-channel construction, Caltrans will avoid and minimize project effects on sensitive life stages of listed fish species.

Containment Measures/Construction Site Best Management Practices

The Contractor shall implement mitigation measures so as to contain construction related material in manageable locations and prevent debris from entering surface waters during in-water work and for construction operations, outside of receiving waters.

BMPs utilized for erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters receiving waters. Areas where a disturbance of soil has occurred will be stabilized appropriately and approved by the Central Valley RWQCB prior to filing the Notice of Termination. BMP options and the selected mitigation measures deployed which relate to in-water work will be considered, evaluated, and dependent on factors such as field conditions, changes to construction strategies, and regulatory requirements in order to protect the beneficial uses of receiving waters. The project design team may specify BMPs to be utilized during construction in addition to, or in place of, other temporary measures selected by the Contractor.

Compliance with all construction site BMPs specified in the approved Water Pollution Control Program (WPCP) and any other permit conditions is mandatory to minimize the introduction of construction related contaminants and sediment to receiving waters. In

order to achieve this and reduce the potential for discharge, the Contractor shall follow all applicable guidelines and requirements in the Standard Specifications (2015 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water. Project specific BMPs shall address (among other things) soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices and will be based on the best conventional and best available technology. Caltrans staff and the Contractor shall perform routine inspections of the construction area to verify that field BMPs are properly implemented, maintained, and are operating effectively and as designed. BMPs and mitigation measures selected must meet the standards and objectives to minimize water pollution impacts set forth in the 2015 CSS and shall include (but not be limited to) the following:

- Conduct all in-water work within streams that provide habitat for special-status fish species (Sacramento River) between June 1 and October 15.
- Use only equipment in good working order and free of dripping or leaking engine fluids.
- Conduct any necessary equipment washing where water is prevented from flowing into MS4 drainage conveyance systems and receiving waters.
- An “emergency response plan” will be prepared and submitted to NMFS and CDFW for review and approval at least 14 days prior to conducting any construction work. A spill prevention control and countermeasures plan will be onsite and in place to handle any topside spills. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan.
- BMPs for spill containment measures (plastic sheeting, absorbent pads and/or other containment devices) will be utilized during all barge-mounted construction activities. BMPs will be deployed around and beneath all over-water or barge-mounted construction equipment.
- Supplemental equipment will be on-site to collect and remove any spills.
- Prevent discharge of turbid water to the Sacramento River during any construction activities by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration areas, and/or treating the water in a manner to ensure that discharges conform to the water quality requirements of the waste discharge permit issued by the Central Valley RWQCB prior to entering receiving waters.

Minimize Turbidity in the Sacramento River

Caltrans will require the construction contractor to monitor turbidity levels in the Sacramento River during in-water construction activities (e.g., pile driving, extraction of temporary sheet piles used for cofferdams, placement of RSP). Turbidity will be

measured using standard techniques upstream and downstream of the construction area to determine whether changes in ambient turbidity levels exceed 20%, the threshold derived from the Sacramento and San Joaquin Rivers Basin Plan (Central Valley Regional Water Quality Control Board 2011). If it is determined that turbidity levels exceed the 20% threshold, then Caltrans and/or its contractors will adjust work to ensure that turbidity levels do not exceed the 20% threshold.

Protect Water Quality during Dewatering Activities

To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary dewatering activities, water removed from the dewatered areas will be filtered and/or treated in a manner to ensure conformance with the water quality requirements of the approved 401 permit, issued by the Central Valley RWQCB, prior to being discharged into the aforementioned receiving waters.

Implement Pile-Removal Best Management Practices

The following BMPs will control turbidity and sediments re-entering the water column during removal of existing fender timber piles and removal of any temporary sheet pile cofferdams, and prescribe debris capture and disposal of removed piles and debris.

- Vibratory extraction is the preferred method of pile removal.
- The crane operator shall be trained to remove pile slowly. This will minimize turbidity in the water column as well as sediment disturbance.
- The operator shall “Wake up” the pile to break up bond with sediment.
- The operator shall vibrate the pile to break the skin friction bond between the pile and the soil. Bond breaking avoids pulling out a large block of soil – possibly breaking off the pile in the process. Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases material may be attached to the pile tip, in line with the pile.
- Extraction equipment shall be kept out of the water. A creosote release to the environment may occur if equipment (bucket, steel cable, vibratory hammer) pinches a creosoted piling below the water line. Pplings must not be broken off intentionally by twisting, bending or other deformation. This practice has the potential for releasing creosote to the water column.
- The work surface on the barge deck or pier shall include a containment basin for piles and any sediment removed during pulling. Upon removal from the substrate, the pile shall be moved expeditiously from the water into a containment basin. The pile shall not be shaken, hosed off, stripped or scraped off, left hanging to drip, or any other action intended to clean or remove adhering material from the pile.
- The barge or pier work surface and containment basin shall be cleaned by disposing of sediment or other residues along with removed pilings in a manner complying with applicable federal and state regulations.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Before any work occurs in the project area including grading and tree removal, Caltrans will retain a qualified biologist (familiar with the resources to be protected) to conduct a mandatory contractor/worker environmental awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid and minimize effects to sensitive biological resources (e.g., jurisdictional waters, special-status species, roosting bats, nesting birds) adjacent within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements. The biologist will inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the biological opinion.

The environmental training also will cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during project construction. The training also will include identifying the BMPs written into construction specifications for avoiding and minimizing the discharge of construction materials or other contaminants into jurisdictional waters.

Establish Environmentally Sensitive Areas

Additional direct and indirect impacts to special status biological resources, including wetland and terrestrial resources, throughout the project area will be avoided or minimized by designating these features outside of the construction impact area as “Environmentally Sensitive Areas” (ESAs) on project plans and in project specifications.

ESA information will be shown on contract plans and discussed in the Special Provisions. All areas outside of the Butte City Bridge Replacement project area shall be considered as ESAs for biological resources. Contractor encroachment into ESAs will be prohibited (including the staging/operation of heavy equipment or casting of excavated materials). ESA provisions will be implemented as a first order of work and remain in place until all construction activities are complete.

Dewatering Activities – Fish Relocation

A fish relocation plan will be submitted to NMFS for approval prior to the start of in-water work. The plan will include a description of any anticipated fish relocation activities, including the number, frequency, and environmental or construction conditions that may trigger the need for fish relocation actions. A fish rescue and relocation report will be prepared and submitted to CDFW and NMFS within 5 business days following completion of the fish relocation.

After any water diversion structures are in place and before dewatering is initiated, qualified fish biologists who have authorization from NMFS will be on site to capture

and relocate salmonids from areas to be dewatered. During dewatering, water will be incrementally diverted from the cofferdam, with diversion progressively increasing over a four-hour period in the following increments: 50%, 75%, 90%, and 100%. Incremental reduction in flow allows fish that elude initial capture to move to deeper habitats where they can be captured and relocated before affected stream segments are completely dewatered. The biologists will relocate fish to suitable habitat outside of the construction area. The methods of removal and relocation of fish captured during the dewatering of the construction areas will be implemented in close coordination with NMFS and CDFW.

Cofferdam Restrictions

The extent of the cofferdam footprints will be limited to the minimum necessary to support construction activities. Sheet piles used for cofferdams will be installed and removed using a vibratory pile driver. Cofferdams will be installed and removed only during the proposed in-water work window (June-October 15) unless prior approval for this activity is granted by NMFS and CDFW. Cofferdams will not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area. All pumps used during dewatering of cofferdams will be screened according to CDFW and NMFS guidelines for screens. Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure.

Prevention of the spread or introduction of aquatic invasive species

Caltrans or its contractors will coordinate with the CDFW invasive species program to ensure that the appropriate BMPs are implemented to prevent spread or introduction of AIS (aquatic invasive species). Educate construction supervisors and managers about the importance of controlling and preventing the spread of AIS. Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of AIS. To the extent feasible, prior to departure of vessels from their place of origin and before in-water construction equipment is allowed to operate within waters of the Sacramento River, thoroughly inspect and remove and dispose of all dirt, mud, plant matter, and animals from all surfaces that are submerged or may become submerged, or places where water can be held and transferred to the surrounding water.

2.7.3.7 Mitigation Measures

Measure BIO-1: Compensate for the Loss of Valley Elderberry Longhorn Beetle Habitat

Caltrans proposes to compensate for adverse effects on VELB through the purchase of VELB mitigation credits at a USFWS-approved mitigation bank.

Table 17. Elderberry Total Mitigation

Alternatives	Riparian	Credits	Non-Riparian	Credits
A2	2.20	53	8.21	199
C2	4.54	110	23.48	569
D	4.66	113	19.95	483

In total, Caltrans proposes to compensate for 252 credits for Alternative A2, 678 credits for Alternative C2, and 596 credits for Alternative D. Compensation and measures are further discussed in Appendix G, USFWS Biological Opinion.

Measure BIO-2: Compensate for the Temporary and Permanent Loss of Riparian Communities

Caltrans proposes to implement compensatory mitigation for the permanent loss of 0.072 acre of riparian habitat through on-site mitigation and purchasing mitigation credits to ensure no net loss of riparian habitat. Compensation and measures are further discussed in Appendix H, NMFS Biological Opinion.

Measure BIO-3: Compensate for Loss of Oak Woodland Habitat

If compensation is required beyond the on-site restoration and enhancement, Caltrans will develop an Oak Woodland Mitigation Plan to provide compensatory mitigation for the permanent conversion of oak woodland as a result of the project.

Measure BIO-4: Compensate for Loss of Wetlands and Non-Wetland Waters

Caltrans will provide compensatory mitigation for the project-related permanent and temporary loss of wetlands and non-wetland waters. Final compensatory ratios will be determined during the permitting process to ensure no net loss.

Measure BIO-5: Compensate for the Temporary Effects to and Permanent Loss of Stream Habitat (Sacramento River)

CDFW has identified the Butte City Bridge as an above average mortality area for salmonids due to the wooden fenders acting as a refuge for predatory fish species such as largemouth bass. The removal of the fenders and the wood piles from the river should result in a reduction of salmonid predation in this area and will increase the amount of aquatic habitat.

Measure BIO-6: Minimize Affects to Special-Status Fish and Fish Habitat

Caltrans proposes to follow the measures and recommendations discussed in the NMFS Biological Opinion (App. H) to ensure minimization of effects to special-status fish and their habitats.

Measure BIO-7: Compensate for the Effects to Western Yellow-Billed Cuckoo Habitat

Riparian credits will be purchased at a USFWS approved mitigation bank at a USFWS and CDFW approved ratio to compensate for permanent impacts to riparian YBCU foraging habitat

Measure BIO-8: Avoidance and Minimization for the Effects to Migratory Birds, Special-Status and Non-Special-Status Roosting Bats

Caltrans will implement avoidance and minimization measures to reduce potential impacts on migratory birds and roosting bats protected under the MBTA.

Measure BIO-9: Avoidance and Minimization for the Effects to Swainson's Hawk

Species specific measures, such as pre-construction surveys will be implemented to avoid and minimize effects on Swainson's Hawks.

2.8 Cultural and Paleontological Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.8.1 Cultural Resources

2.8.1.1 Regulatory Setting

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 the National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way.

2.8.2 Environmental Setting

The following cultural resource studies were completed for the project:

- Archaeological Survey Report (January 2018)
- Extended Phase I Report (October 2017)
- Historic Property Survey Report (January 2018)

2.8.2.1 Area of Potential Effects/Project Area Limits

The Area of Potential Effects (APE), or Project Area Limits (PAL), was established to encompass the maximum limits of potential ground-disturbing construction activities that would reasonably be expected from the proposed project, including but not limited to all existing and proposed new right-of-way, temporary construction easements, utility relocations, and any mandatory borrow, disposal, and/or equipment staging areas.

2.8.2.2 Study Methods

Identification efforts consisted of a records and literature search, pedestrian field survey, Extended Phase I study, and consultation with local tribes and historical societies. The records and literature search, conducted of files at the Northeast Information Center (NEIC) of the California Historical Resources Information System, revealed that eight previous cultural resource studies were conducted within or adjacent to the APE/PAL. These studies did not identify any archaeological resources in the project APE/PAL. The sacred lands files of the California Native American Heritage Commission (NAHC) does not show any Native American cultural resources within or adjacent to the APE/PAL. Research undertaken for the project also considered built environment resources and determined that the undertaking will not affect any built environment resources that have a potential for historical significance.

The pedestrian survey involved inspection of the ground surface while walking a series of transects parallel to the highway. Whenever possible, the locations of subsurface exposures caused by such factors as rodent activity, water or soil erosion, or vegetation disturbances were examined for artifacts or for indications of buried deposits. Identification efforts included an Extended Phase I investigation to confirm the presence or absence of subsurface archaeological deposits. The investigation consisted of monitoring and documenting three geotechnical cores in and adjacent to the Sacramento River channel. The cores, which were excavated 21.0–25.0 meters (68.9–82.0 feet) below ground surface, did not identify any cultural materials.

Consultation included outreach to members of the Native American Community (based on a list of local contacts from the NAHC) via letters and a series of follow-up phone calls. The Enterprise Rancheria provided a monitor for Extended Phase I investigations. The Colusi County Historical Society (an organization dedicated to the history of Colusa, Glenn, and Tehama counties, which at one time were all part of Colusi County) was also contacted, but no reply was received.

2.8.2.3 Findings

There are no historic properties within the APE/PAL and, pursuant to Section 106 PA Stipulation IX.A and 36 CFR § 800.4(d)(1), a finding of *No Historic Properties Affected* is appropriate for this undertaking. Similarly, there are no resources that meet the criteria of a historical or archaeological resource under Section 15064.5 of the CEQA Guidelines.

Caltrans notified consulting parties cited in Section 106 PA Stipulation IX.A.1 of a *No Historic Properties Affected* finding for the undertaking. This finding is documented and records will be retained in District files in accordance with Section 106 PA Stipulation XVIII. Following satisfactory completion of these steps, no further review (such as consultation with the State Historic Preservation Officer) pursuant to the Section 106 PA is required. The most responsive consulting party was the Enterprise Rancheria of Maidu Indians, who supplied a tribal monitor for Extended Phase I fieldwork. Consultation and coordination with this group continues to date. Local historical societies did not respond to outreach efforts.

2.8.3 Discussion of Environmental Evaluation Questions 2.8a, b, d – Cultural Resources

Checklist Item: a) No Impact

Studies did not identify any historical resources in the project APE/PAL and, therefore, the undertaking will not cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5. Accordingly, there is no impact.

Checklist Item: b) Less than Significant

The archaeological survey and Extended Phase I study did not identify any archaeological resources in the project APE/PAL. However, there is always the possibility that buried archaeological resources may be discovered during ground disturbing activities related to construction. Though this could be a significant impact, Caltrans' standard measure to stop work and assess inadvertent discoveries would ensure that the significance of archaeological resources per Section 15064.5 would not be affected. Therefore, the proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5. Accordingly, this impact would be less than significant.

Checklist Item: d) Less than Significant

There are no known human remains within the APE/PAL. However, there is always the possibility that buried human remains may be discovered during ground disturbing activities related to construction. Though this could be a significant impact, Caltrans' standard measure to stop work and appropriately treat inadvertent discoveries of human remains would ensure that human remains would be appropriately treated in accordance with state law. Therefore, this impact would be less than significant.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures beyond the Caltrans standard measure to stop work described below are necessary.

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, California Health and Safety Code (H&SC) Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the NAHC, who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Caltrans District 3 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.

2.8.5 Paleontological Resources

2.8.5.1 Regulatory Setting

California Public Resources Code

Several sections of the California PRC protect paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

2.8.5.2 Environmental Setting

Geology in Glenn County is dominated by the Stony Creek Fan. The Stony Creek Fan is a coalescing fan comprised primarily of material deposited by Stony Creek, which drains a large area of the Coast Ranges. Two units of the Stony Creek Fan that underlie the project area are the Modesto and Riverbank Formations of Pleistocene age. These units are composed of gravels, sands, silts, and clays derived from the Coast Ranges. The Modesto Formation and Riverbank Formation are considered to have high sensitivity for paleontological resources, as the Pleistocene nonmarine strata have yielded a wealth of stratigraphically important vertebrate fossils.

The University of California Museum of Paleontology (UCMP) paleontological database contains 24 total records of paleontological resources from Glenn County (University of California Museum of Paleontology 2018). Of these, 12 are vertebrates; all were found in Pliocene age sediments in Black Butte Reservoir (University of California Museum of Paleontology 2018).

2.8.5.3 Discussion of Environmental Evaluation Question 2.7c – Paleontological Resources

Checklist Item: c) Less than Significant

Although ground disturbance within the project corridor would be relatively minimal and would occur in areas that are extremely altered in nature due to past road construction and utility installation, geologic units in the project area are sensitive for paleontological resources, and fossils could be present. If fossils are present, they could be damaged during ground-disturbing activities related to construction. Substantial damage to or destruction of significant paleontological resources as defined by the Society of Vertebrate Paleontology (2010) would be a significant impact.

However, compliance with Caltrans BMPs and standard measures and SSPs would protect paleontological resources during ground-disturbing activities in potentially sensitive areas. Section 14-7 "Paleontological Resources" of the 2015 Standard Specifications instructs Caltrans construction contractors regarding actions to take when unanticipated paleontological resources

are encountered during construction of a transportation project. Implementation of the following standard measures would ensure that the impact of ground disturbance on paleontological resources would be less than significant.

2.8.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following standard measures are incorporated into the proposed project.

Educate Construction Personnel in Recognizing Fossil Material

A qualified professional paleontologist experienced in teaching non-specialists will train construction personnel to ensure that they can recognize fossil materials in the event that any are discovered during construction.

Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

Include Resource Stewardship Measures in Standard Specifications for the Project

The following measures will be added to the standard specifications for the project.

- If paleontological resources are discovered at the job site, do not disturb the material and immediately:
 - Stop all work within a 60-foot radius of the discovery
 - Protect the area
 - Notify the Resident Engineer
- The project proponent will investigate and modify the dimensions of the protected area if necessary.
- Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized.
- The project proponent will alert the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments.

2.9 Geology and Soils

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.9.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. Structures are designed using the Department’s Seismic Design

Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.9.2 Environmental Setting

The following setting and analysis are based primarily on the *Supplemental Structures Preliminary Geotechnical Report for Sacramento Bridge* prepared May 5, 2016 (Caltrans) and the *Drilling Plan for the Geotechnical Subsurface Investigation* prepared February 26, 2015 (Caltrans).

The project site lies in the Great Valley Geomorphic Province in northern California. The project site is mapped as Holocene stream channel deposits (Qsc) that were transported under modern hydrologic conditions. Thickness of this material in the project area varies from a few inches to approximately 80 feet. Also mapped near the site is Holocene alluvium (Qa) deposited under present day stream and river systems that drain the Coast Ranges and the Sierra Nevada. This material is described as unweathered gravel, sand, and silt varying in thickness from a few inches to 30 feet. These deposits form levees along the main course of the Sacramento River.

The project site is not located within the Alquist-Priolo Earthquake Fault Zone or within 1,000 feet of an unzoned fault that is Holocene or younger in age.

The nearest active fault to the project site is the Great Valley 01 fault, located southwest of the project site. This fault is referred to as a reverse fault with a 15-degree dip to the west. The maximum moment magnitude (i.e., largest earthquake the fault is capable of generating) is estimated to be 6.7 and the rupture distance is approximately 16 miles southwest of the project site.

Based on the results of Caltrans' seismic design procedures, a maximum considered peak ground acceleration (PGA) of 0.27g is estimated for the project site. This is a relatively low level of ground-shaking hazard for California. As a point of comparison, probabilistic peak horizontal ground acceleration values for the San Francisco Bay Area range from 0.4g to more than 0.8g.

An underwater inspection for scour was performed at the existing bridge site in 2011. Known scour issues were confirmed and previous bent repairs and erosion control methods (e.g., rock slope protection) noted. A Bridge Inspection Report (BIR) has not yet been posted that discusses these findings. According to the most recent available BIR found on Caltrans' Bridge Inspection Records Information System (BIRIS) concerning scour and erosion (2002), an emergency contract was secured in 2005 to mitigate erosion to provide driven sheet piling around Piers 98-107, slurry backfill, tie rods, and placing rock slope protection. While these measures helped, scour erosion is an ongoing issue at this location.

Liquefaction is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The susceptibility of an area to liquefaction is determined largely by the

depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater. Based on the current soil profiles, groundwater elevation, and liquefaction analyses, liquefaction potential exists beneath the full viaduct section of the bridge at elevations ranging from 65 to 50 feet. The thickness of the liquefiable layer varies across the site, ranging from 5 to 15 feet. The top of the liquefiable layer is approximately 15 to 20 feet below ground surface. Beneath the steel bridge section, liquefaction potential exists at elevations ranging from 20 to 15 feet. The thickness of the liquefiable layer is approximately 5 feet thick. The top of the liquefiable layer is approximately 25 feet below the channel bottom of the river.

Based on preliminary results, there is the potential for lateral spreading to occur at the project site, specifically at Abutment 1 of the viaduct structure and the west and east embankments of the Sacramento River, adjacent to the existing bridge. Lateral spreading is the finite, lateral movement of gently to steeply sloping, saturated soil deposits caused by earthquake-induced liquefaction.

2.9.3 Discussion of Environmental Evaluation Questions 2.9 – Geology and Soils

Checklist Item: a) Less than Significant

The project site is not located in an area mapped on the Alquist-Priolo Earthquake Fault Zoning Map. The risk of strong seismic ground shaking in the project area is low. Compliance with the appropriate building regulations will ensure that the bridge foundations, bridge, roadways, and other project features are not damaged as a result of seismic activity. The project would comply with Caltrans' SDC to ensure that earthquake design and construction measures are implemented. Therefore, this impact would be less than significant.

There is a risk of secondary seismic hazards related to slope instability because of the slope of the riverbanks, the potential for river erosion, and the potential for liquefaction. Liquefaction or excessive erosion could cause bridge damage or failure. This would be a significant impact. Site-specific field exploration and laboratory testing, including cone penetration tests and borings, were conducted at the bridge site from September 2015 to March 2016. These subsurface investigations indicated preliminary seismic recommendations and design criteria for bridge foundations and piers accounting for soil conditions and liquefaction potential. Seismic hazards will be evaluated further and addressed during final design. The proposed bridge would be designed using the Caltrans' SDC to meet the minimum seismic requirements for highway bridges designed in California. Therefore, this impact would be less than significant.

Checklist Item: b) Less than Significant

Ground-disturbing earthwork associated with construction at the project site may increase soil erosion rates and/or loss of topsoil. Compliance with the erosion-related requirements applicable to the project will ensure that the construction activities do not result in significant erosion. These requirements are described in the Caltrans' *Construction Site Best Management Practices (BMPs) Manual* and the *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual*.

Issues concerning scour would be evaluated further and addressed during final design. All bridge components would be designed using the Caltrans' SDC to meet the minimum seismic requirements for highway bridges designed in California. Therefore, this impact would be less than significant.

Checklist Item: c) Less than Significant

Because the potential for liquefaction exists at the bridge site, the potential for lateral spreading was evaluated. A potential for lateral spreading to occur at the existing bridge site was identified. Therefore, a lateral spreading analysis would be conducted when the exact location of the future bridge alignment and support locations is known. If lateral spreading is determined to be an issue, pile design would be analyzed to provide additional lateral force protection. Therefore, this impact would be less than significant.

Checklist Items: d, e) No Impacts

The "No Impacts" determination is based on project scope and field reviews. Expansive soil does not appear to be extensive in the project area but could occur locally; the potential impact on project structures would be evaluated during final design. All construction and engineered fills will comply with Caltrans' Standard Specifications and all construction will compact the roadway subgrade in accordance to Caltrans Standard Specifications. Additionally, neither septic tanks nor alternative wastewater disposal systems are part of the proposed project.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.10 Greenhouse Gas Emissions

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Caltrans has used the best available information based to the extent possible on scientific and factual information, to describe, calculate, or estimate the amount of greenhouse gas emissions that may occur related to this project. The analysis included in the climate change section of this this document provides the public and decision-makers as much information about the project as possible. It is Caltrans's determination that in the absence of statewide-adopted thresholds or GHG emissions limits, it is too speculative to make a significance determination regarding an individual project's direct and indirect impacts with respect to global climate change. Caltrans remains committed to implementing measures to reduce the potential effects of the project. These measures are outlined in the following discussion.			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

2.10.1 Discussion of Environmental Evaluation Questions 2.7 – Greenhouse Gas Emissions

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF₆), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) are the primary contributors of GHG emissions. The dominant GHG emitted is CO₂, mostly from fossil fuel combustion.

Greenhouse Gas Mitigation and Adaptation are two terms typically used when discussing the impacts of climate change. *Greenhouse Gas Mitigation* is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. *Adaptation* refers to the effort of planning for

and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).¹

2.10.2 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

2.10.2.1 Federal

To date no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

NEPA (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (U.S. DOT 2017). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— “the triple bottom line of sustainability (U.S. DOT 2017a) Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life. Addressing these factors up front in the planning process would assist in decision-making and improve efficiency at the program level and would inform the analysis and stewardship needs of project-level decision-making. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

The Energy Policy Act of 1992 (EPACT92, 102nd Congress H.R.776.ENR) was passed by Congress and set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 consists of 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993. The primary goal of the Program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020.

¹ http://climatechange.transportation.org/ghg_mitigation/

Energy Policy Act of 2005 (109th Congress H.R.6 (2005–2006) sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Energy Policy and Conservation Act of 1975 and Corporate Average Fuel Standards: The Energy Policy and Conservation Act of 1975 (42 USC Section 6201 [1975]) establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy

(CAFE) program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 74 Federal Register 52117 (October 8, 2009): This federal Executive Order (EO) set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It instituted as policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities.

Executive Order 13693, Planning for Federal Sustainability, 80 Federal Register 15869 (March 2015). This EO reaffirms the policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities. It sets sustainability goals for all agencies to promote energy conservation, efficiency, and management by reducing energy consumption and GHG emissions. It builds on the adaptation and resiliency goals in EO 13693 to ensure agency operations and facilities prepare for impacts of climate change. This EO revokes EO 13514.

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could reasonably be anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions.

U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2016 and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards required these vehicles to meet an average fuel economy of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted the second rule that increases fuel economy for the fleet of passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2017 and beyond to average fuel economy of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 due to statutory obligations and the rules' long timeframe, a mid-term evaluation is included in

the rule. The Mid-Term Evaluation is the overarching process by which NHTSA, EPA, and ARB will decide on CAFE and GHG emissions standard stringency for model years 2022–2025. NHTSA has not formally adopted standards for model years 2022 through 2025. However, the EPA finalized its mid-term review in January 2017, affirming that the target fleet average of at least 54.5 miles per gallon by 2025 was appropriate. In March 2017, President Trump ordered EPA to reopen the review and reconsider the mileage target (National Archives and Records Administration 2017) (NBC News 2017).

NHTSA and EPA issued a Final Rule for “Phase 2” for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO₂ emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

Presidential Executive Order 13783, Promoting Energy Independence and Economic Growth, of March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of carbon, nitrous oxide, and methane.

2.10.2.2 State

With the passage of legislation including State Senate and Assembly bills and executive orders, California has been innovative and proactive in addressing GHG emissions and climate change.

Assembly Bill 1493, Pavley Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order S-3-05 (June 1, 2005): The goal of this executive order (EO) is to reduce California’s GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill 32 in 2006 and SB 32 in 2016.

Assembly Bill 32 (AB 32), Chapter 488, 2006: Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California’s transportation fuels is

to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

Senate Bill 97 (SB 97), Chapter 185, 2007, Greenhouse Gas Emissions: This bill requires the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

Senate Bill 391 (SB 391), Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

Executive Order B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero emission vehicles. It directs these entities to achieve various benchmarks related to zero emission vehicles.

Executive Order B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent (MMTCO_{2e}). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

Senate Bill 32, (SB 32) Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

2.10.3 Environmental Setting

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The Scoping Plan was first approved by ARB in 2008 and must be updated every 5 years. ARB approved the First Update to

the Climate Change Scoping Plan on May 22, 2014. ARB is moving forward with a discussion draft of an updated Scoping Plan that will reflect the 2030 target established in EO B30-15 and SB 32.

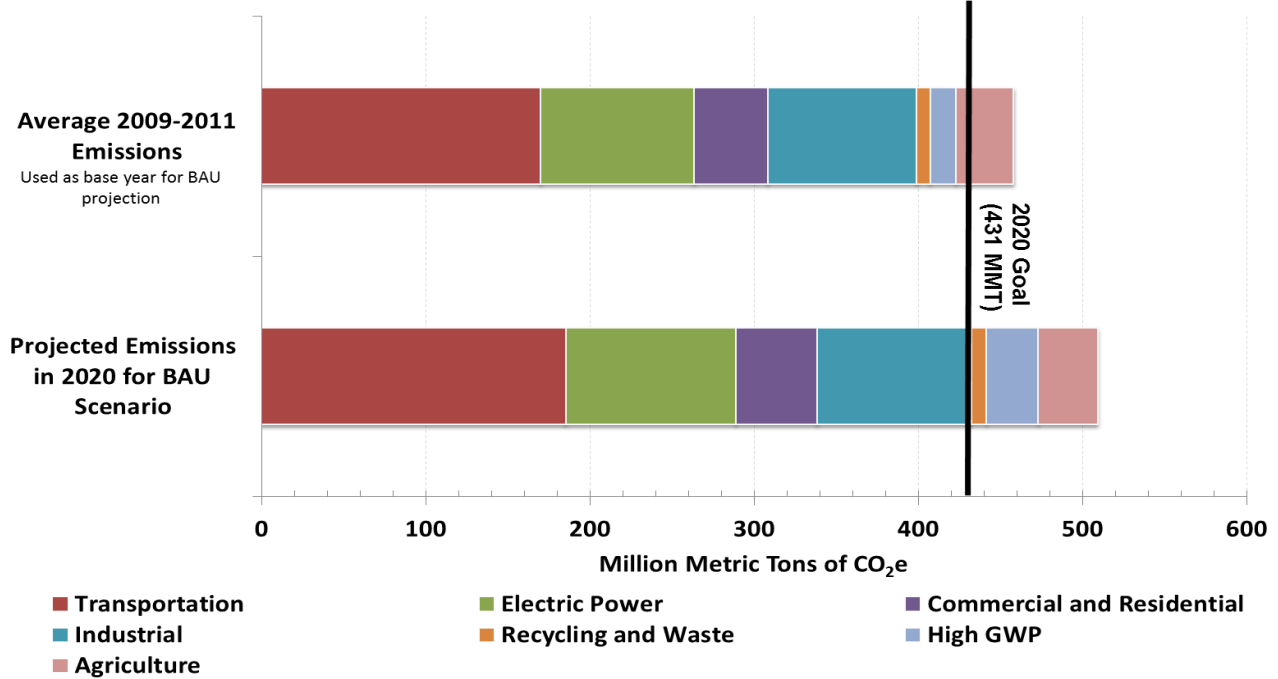
The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (Cal/EPA 2017). ARB is responsible for maintaining and updating California's GHG Inventory per H&SC Section 39607.4. The associated forecast/projection is an estimate of the emissions anticipated to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented.

An emissions projection estimates future emissions based on current emissions, expected regulatory implementation, and other technological, social, economic, and behavioral patterns. The projected 2020 emissions provided in Figure 11 represent a business-as-usual (BAU) scenario assuming none of the Scoping Plan measures are implemented. The 2020 BAU emissions estimate assists ARB in demonstrating progress toward meeting the 2020 goal of 431 MMTCO_{2e}². The 2016 edition of the GHG emissions inventory (released June 2016) found total California emissions of 441.5 MMTCO_{2e}, showing progress towards meeting the AB 32 goals.

The 2020 BAU emissions projection was revisited in support of the First Update to the Scoping Plan (2014). This projection accounts for updates to the economic forecasts of fuel and energy demand as well as other factors. It also accounts for the effects of the 2008 economic recession and the projected recovery. The total emissions expected in the 2020 BAU scenario include reductions anticipated from Pavley I and the Renewable Electricity Standard (30 MMTCO_{2e} total). With these reductions in the baseline, estimated 2020 statewide BAU emissions are 509 MMTCO_{2e}.

² The revised target using Global Warming Potentials (GWP) from the IPCC Forth Assessment Report (AR4).

California Greenhouse Gas 2009 - 2011 Average Emissions, 2020 Emissions Projection for BAU Scenario, and 2020 Goal



Source: <https://www.arb.ca.gov/cc/inventory/data/bau.htm>

Figure 11. 2020 Business as Usual (BAU) Emission Project 2014 Edition

2.10.4 Project Analysis

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations.

2.10.4.1 Operational Emissions

The project would not increase capacity and would not change travel demands or traffic patterns when compared to the no build alternative. Therefore, an increase in operational GHG is not anticipated.

2.10.4.2 Construction Emissions

Construction is expected to begin in 2019 and last approximately 436 working days. The proposed project would result in generation of short-term construction-related GHG emissions. Construction GHG emissions consist of emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays and detours due to construction. These emissions would be generated at different levels throughout the construction phase.

The SMAQMD’s RCEM (8.1.0) was used to estimate CO₂, methane (CH₄), and nitrous oxide (N₂O) emissions from construction activities. Table 18 summarizes estimated GHG emissions generated by onsite equipment for the project. The total CO₂e produced during construction is estimated to be 2,747 metric tons.

Table 18. GHG Emissions Construction Emissions (metric tons)

Project Phase	CO ₂	CH ₄	N ₂ O	CO ₂ e
Grubbing/Land Clearing	73	<1	<1	74
Grading/Excavation	1,295	<1	<1	1,308
Drainage/Utilities/Sub-Grade	1,171	<1	<1	1,182
Paving	182	<1	<1	184
Total Emissions for Construction Project (436 working days)	2,721	<1	<1	2,747

All work is required to be performed in accordance with Caltrans Standard Specification 7-1.02C, Emission Reduction. In accordance with this Caltrans standard specification, the contractor, upon award of the construction contract, acknowledges awareness of the emissions reduction regulations mandated by the ARB and is required to comply with such regulations before commencing the performance of the work and to maintain compliance throughout the duration of this contract.

2.10.5 CEQA Conclusion

While the project would result in a slight increase in GHG emissions during construction, it is anticipated that the project would not result in any increase in operational GHG emissions. While 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 impact and its contribution on the cumulative scale to climate change, Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

2.10.6 Greenhouse Gas Reduction Strategies

2.10.6.1 Statewide Efforts

In an effort to further the vision of California’s GHG reduction targets outlined in AB 32 and SB 32, Governor Brown identified key climate change strategy pillars (concepts) (Figure 12). These pillars highlight the idea that several major areas of the California economy will need to reduce emissions to meet the 2030 GHG emissions target. These pillars are (1) reducing today’s petroleum use in cars and trucks by up to 50 percent, (2) increasing from one-third to 50 percent our electricity derived from renewable sources, (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner, (4) reducing the release of methane, black carbon, and other short-lived climate pollutants, (5) managing farm and rangelands, forests, and wetlands so they can store carbon, and (6) periodically updating the state’s climate adaptation strategy, *Safeguarding California*.



Figure 12. The Governor’s Climate Change Pillars: 2030 Greenhouse Gas

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that we build on our past successes in reducing criteria and toxic air pollutants from transportation and goods movement activities. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled. One of Governor Brown's key pillars sets the ambitious goal of reducing today's petroleum use in cars and trucks by up to 50 percent by 2030.

Governor Brown called for support to manage natural and working lands, including forests, rangelands, farms, wetlands, and soils, so they can store carbon. These lands have the ability to remove CO₂ from the atmosphere through biological processes, and to then sequester carbon in above- and below-ground matter.

2.10.6.2 Caltrans Activities

Caltrans continues to be involved on the Governor’s Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. It serves as an umbrella document for all of the other statewide transportation planning documents.

SB 391 (Assembly Committee on Transportation 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that would help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing vehicle miles traveled per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several funding and technical assistance programs that have GHG reduction benefits. These include the Bicycle Transportation Program, Safe Routes to School, Transportation Enhancement Funds, and Transit Planning Grants. A more extensive description of these programs can be found in Caltrans Activities to Address Climate Change (Caltrans 2013c).

Caltrans Director's Policy 30 (DP-30) (Caltrans 2012) Climate Change (June 22, 2012) is intended to establish a department policy that will ensure coordinated efforts to incorporate climate change into departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

2.10.7 Project-level GHG Reduction Strategies

The following measures would also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

CLIMATE CHANGE-1: According to Caltrans' Standard Specifications, the contractor must comply with all of the Glenn County Air Pollution Control District regulations and local ordinances regarding air quality restrictions.

CLIMATE CHANGE-2: Compliance with Title 13, California Code of Regulations— Adopted by the Air Resources Board on June 15, 2008, this regulation would restrict idling of construction vehicles to no longer than 5 consecutive minutes. The contractor must comply with this regulation in order to reduce harmful emissions from diesel-powered construction vehicles.

CLIMATE CHANGE-3: To the extent that it is feasible for the project, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

CLIMATE CHANGE-4: To the extent that it is feasible for the project, consider energy efficient options when replacing old or adding new highway lighting.

2.10.8 Adaptation Strategies

Adaptation strategies refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage or, put another way, planning and design for resilience. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from 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. These types of impacts to the transportation infrastructure may also have economic and strategic ramifications.

Federal Efforts

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the CEQ, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011 (The White House 2011) outlining the federal government's progress in expanding and strengthening the nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provided an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as fresh water, and providing accessible climate information and tools to help decision-makers manage climate risks.

The federal Department of Transportation (DOT) issued U.S. DOT Policy Statement on Climate Adaptation in June 2011, committing to “integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current And future climate conditions.” (U.S. DOT 2011).

To further the DOT Policy Statement, on December 15, 2014, FHWA issued order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events) (FHWA 2014). This directive established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs to promote preparedness and resilience; safeguard federal investments; and ensure the safety, reliability, and sustainability of the nation's transportation systems.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels (U.S. DOT 2017b).

State Efforts

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea-level rise and directed all state agencies planning to construct projects in areas vulnerable to future sea-level rise to consider a range of sea-level rise scenarios for the years 2050 and 2100, assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. Sea-level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, and storm surge and storm wave data.

Governor Schwarzenegger also requested the National Academy of Sciences to prepare an assessment report to recommend how California should plan for future sea-level rise. The final report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington (Sea-Level Rise Assessment Report)* (National Academy of Science 2012) was released in June 2012 and included relative sea-level rise projections for the three states, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates; and the range of uncertainty in selected sea-level rise projections. It provided 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; and a discussion of future research needs regarding sea-level rise.

In response to EO S-13-08, the California Natural Resources Agency (Resources Agency), in coordination with local, regional, state, federal, and public and private entities, developed *The California Climate Adaptation Strategy* (State of California 2009), which summarized the best available science on climate change impacts to California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across state agencies to promote resiliency. The adaptation strategy was updated and rebranded in 2014 as *Safeguarding California: Reducing Climate Risk (Safeguarding California Plan)* (ARB 2014).

Governor Jerry Brown enhanced the overall adaptation planning effort by signing EO B-30-15 in April 2015, requiring state agencies to factor climate change into all planning and investment decisions. In March 2016, sector-specific Implementation Action Plans that demonstrate how state agencies are implementing EO B-30-15 were added to the Safeguarding California Plan.

This effort represents a multi-agency, cross-sector approach to addressing adaptation to climate change-related events statewide.

EO S-13-08 also gave rise to the State of California Sea-Level Rise Interim Guidance Document (SLR Guidance), produced by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), of which Caltrans is a member. First published in 2010, the document provided “guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California,” specifically, “information and recommendations to enhance consistency across agencies in their development of approaches to SLR.” The March 2013 update finalizes the SLR Guidance by incorporating findings of the National Academy’s 2012 final Sea-Level Rise Assessment Report; the policy recommendations remain the same as those in the 2010 interim SLR Guidance. The guidance will be updated as necessary in the future to reflect the latest scientific understanding of how the climate is changing and how this change may affect the rates of SLR.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation, and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is actively engaged in working towards identifying these risks throughout the state and would work to incorporate this information into all planning and investment decisions as directed in EO B-30-15.

The proposed project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts to transportation facilities due to projected sea-level rise are not expected.

2.11 Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.11.1 Regulatory Setting

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement Resource Conservation and Recovery Act (RCRA) in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires clean-up of wastes that are below hazardous waste

concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and clean up contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

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

2.11.2 Environmental Setting

The following is based on the Updated Initial Site Assessment (Caltrans 2018) for the project. The review for potential hazardous waste impacts included a review of project plans, aerial mapping, and discussions with the design engineer.

2.11.2.1 Hazardous Waste/Materials in Project Area

Aerially-deposited Lead

Aerially deposited lead (ADL) 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 when leaded gasoline was in use (generally prior to 1986). SR 162 has been a traffic-bearing road since at least 1953.

Lead-based Paint and Asbestos-containing Materials

Some structures, such as the existing bridge, could contain lead based paint or asbestos-containing materials. Hazardous building materials such as lead-based paint and asbestos-containing materials were commonly used in structures and components such as those in the project area. Asbestos-containing materials are used in the cement that connects bearing pads to concrete bridge structures, and in some cases is used as a coating on steel structures. Lead-based paint is used in steel bridge structures to protect against corrosion of the metal from exposure to weather elements and anti-icing chemicals.

Traffic Stripes

Caltrans studies have determined that yellow and white thermoplastic striping and painted markings may contain elevated concentrations of lead and chromium, depending on the age of the striping (manufactured before 2005) and painted markings (manufactured before 1997). Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead and/or chromium.

Agricultural Chemicals and Pesticides

For many years the project area consisted of primarily agricultural properties. The project area is surrounded by working agricultural fields and orchards. Historical agricultural practices used

herbicides made with organic compounds containing arsenic. Therefore, it is likely that arsenic would be present in surface soils. Activities conducted on agricultural properties involve the use of agricultural chemicals (including pesticides, insecticides, and herbicides). Runoff from these properties may contain agricultural chemicals, which may have flowed onto the project area and into drainages.

2.11.2.2 Database Search

A search of the DTSC database (Cortese list) for hazardous waste sites was conducted for the study area. Results indicate that none of the proposed project alignments are located on a listed hazardous waste materials site.

2.11.2.3 Nearby Schools and Airports

The school nearest to the study area is located at 438 Norman Road in Princeton, approximately 4 miles southwest of the project area (Princeton Elementary School). River Valley Christian School (8187 County Road 48) is approximately 4.98 miles south of the project area.

The public use airport closest to the study area is Willows-Glenn County Airport, located approximately 11.23 miles northwest of the project site. The nearest private airstrip is Gunnersfield Ranch Airport, which is approximately 8.14 miles south of the project area.

2.11.2.4 Fire Protection

According to the California Department of Forestry and Fire Protection (CAL FIRE), the majority of the project alignment is located in a Local Responsibility Area (2007). Some eastern portions of the project alignment are located in a Moderate Local Responsibility Area fire hazard severity zone (California Department of Forestry and Fire Protection 2007). Regardless, fire protection would be provided by Glenn- Colusa Fire Department, with the closest station located immediately north of the project alignment on SR 162 in Butte City. In the event of a wildland fire, the Glenn-Colusa Fire Department (Butte City Station) would provide initial response fire protection services for the project site. The Glenn-Colusa Fire Protection District has a Mutual Aid Agreement with the Sacramento River Fire Protection District located at 235 Market Street in Colusa (Colusa LAFCO 2011: 23). If needed, Sacramento River Fire Protection District would also provide fire protection services to the project site.

2.11.3 Discussion of Environmental Evaluation Questions 2.11 – Hazards and Hazardous Materials

Checklist Item: a) Less than Significant

Construction of the proposed project would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because Caltrans Standard Specifications and Standard Special Provisions (SSPs) would be included in the construction contract and implemented to reduce or avoid the release of pollutants during construction of the proposed project, this impact would be less than significant. Once

construction is complete, there would be no further use of hazardous materials or potential exposure associated with the project.

Although SR 162 was not a heavily traveled roadway, concentrations of ADL may be encountered in the surface and near-surface soils near where vehicles that used leaded gasoline traveled. Potential exposure of construction workers to contaminated soils could be a significant impact because of the possible threat to human health from handling these materials. Implementation of the standard measure to perform soil testing and properly dispose of soils contaminated with ADL would ensure this impact would be less than significant.

As described above, building materials of the existing bridge could contain lead-based paint or asbestos-containing materials. Construction workers could be exposed to hazardous wastes or materials, including lead-based paint and asbestos-containing materials, during demolition and removal of the bridge components. Potential exposure of construction workers to hazardous materials or wastes could be a significant impact because of the possible threat to human health from handling these materials. Implementation of the Caltrans standard measure to develop a lead and asbestos plan would ensure this impact would be less than significant.

Hazardous levels of lead and chromium are known to exist in the yellow traffic stripes. However, traffic stripes would be removed during cold planing the roadway, which would reduce levels of lead and chromium to a non-hazardous level. The grindings (which consist of the roadway material and the yellow traffic stripes) would be removed and disposed of in accordance with Standard Special Provision 36-4 (Residue Containing High Lead Concentration Paints), which requires a Lead Compliance Plan (LCP). Non-hazardous levels of lead are known to exist in the white traffic striping. These grindings would be removed and disposed of in accordance with the same specification. Implementation of the standard measure to develop an LCP, described below under “Avoidance, Minimization, and/or Mitigation Measures,” would ensure potential impacts would be less than significant.

Checklist Item: b) Less than Significant

The proposed project could create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Small quantities of potentially toxic substances (such as petroleum and other chemicals used to operate and maintain construction equipment) would be used in the project area and transported to and from the area during construction. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard. However, the handling and disposal of these materials would be compliant with Caltrans SSPs and regulations enforced by the Glenn County Certified Unified Program Agency and Cal-OSHA. In addition, standard BMPs under the SWPPP would further reduce the potential of an accidental release. Based on the regulatory requirements, this impact would be less than significant.

Checklist Items: c-f) No Impacts

The “No Impacts” determinations are based on project scope, field reviews, and the Initial Site Assessment completed January 2018. There are no public or private k-12 schools within 0.25

mile of the project area. The project alignment is not located on a site that is included on a list of hazardous materials sites. The project is not in the vicinity of a private airstrip.

Checklist Item: g) Less than Significant

During construction, emergency access to and in the vicinity of the project area potentially could be affected by lane closures, detours, and construction-related traffic. This includes a 35-mile detour that would be in effect for up to 72 hours under Alternative D. Caltrans requires Traffic Management Plans (TMPs) for all major construction activities that are expected to affect traffic on the state highway system. Preparation of a traffic control plan as described in Section 2.14 Public Services would ensure there is no interference with emergency vehicles/services or response/evacuation plans. Therefore, the impact would be less than significant.

Checklist Item: h) Less than Significant

According to the Glenn County Natural Hazard Disclosure (Fire) map (California Department of Forestry and Fire Protection 2007), the majority of the proposed project is not located in a fire hazard region. Although a small area of the project alignment is in an area considered moderate for fire hazards, standard BMPs and SSPs would reduce any potential impacts associated with wildland fires. The impact would be less than significant.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

The following standard measures are incorporated into the proposed project.

Perform Soil Testing and Dispose of Soils Contaminated with ADL Appropriately

Soil testing for ADL contamination will be conducted in the project area along the roadway prior to construction work. Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by the California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting and reusing of soil will also be conducted following Caltrans' standard special provisions.

Develop a Lead Compliance Plan and Asbestos Abatement Plan

A hazardous materials survey will be conducted prior to demolition or significant renovation. If lead or asbestos is found in these structures, an abatement plan will be developed prior to removal or renovation. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare hazardous materials specifications for abatement of the asbestos-containing materials and lead-based paint. This specification should be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. Caltrans will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and lead-based paint deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

Implement a Traffic Management Plan during Construction

As part of construction, the project proponents will prepare and implement a TMP to avoid and minimize potential impacts. The TMP would ensure emergency vehicle and school bus routes are not impeded during construction under Alternatives A2 and C2, and would describe the components of the detour (including signage, flagging, and coordination with emergency service providers) under Alternative D. The TMP would reduce impacts of the proposed project on temporary access and circulation caused by potential traffic delays during construction

2.12 Hydrology and Water Quality

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.12.1 Regulatory Setting

2.12.1.1 Water Quality

2.12.1.2 Federal

Clean Water Act

In 1972, Congress amended the federal Water Pollution Control Act, making the addition of pollutants to waters of the United States from any point source³ unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. The following are important CWA sections.

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

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

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

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Standard Permits. There are two types of Standard Permits: Individual Permits and Letters of Permission. For Standard Permits, the USACE decision to approve is based on compliance with EPA’s Section 404 (b)(1) Guidelines (40 CFR § 230), and whether the permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the

³ A *point source* is any discrete conveyance such as a pipe or a man-made ditch.

United States) only if no practicable alternative exists that would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects to waters of the United States and not cause any other significant adverse environmental consequences.

According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent⁴ standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the United States. In addition, every permit from the USACE, even if not subject to the Guidelines, must meet general requirements. See 33 CFR Part 320.4.

2.12.1.3 State

Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Water Quality Control Act (Porter-Cologne Act), enacted in 1969, provides the legal basis for water quality regulation in California. This act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. The act predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the United States, such as groundwater and surface waters not considered waters of the United States. Additionally, the Porter-Cologne Act 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 Board and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and for regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, the RWQCBs designate beneficial uses for all water body segments and then set the criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the State Water Board identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and that the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

⁴ The EPA defines *effluent* as “wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.”

State Water Resources Control Board and Regional Water Quality Control Boards

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

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires issuance of NPDES permits for five categories of stormwater discharges, including MS4s. An *MS4* is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over stormwater, that is designed or used for collecting or conveying stormwater.” The State Water Board has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans’ MS4 Permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The State Water Board or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

Caltrans’ MS4 Permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1, 2013. The permit has three basic requirements.

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the state to effectively control stormwater and non-stormwater discharges; and
3. Caltrans’ stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures the State Water Board determines necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including selection and implementation of BMPs. Further, in recent years, hydromodification control requirements and measures to encourage low impact development have been included as a component of new development permit requirements. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The Construction General Permit was amended by 2010-0014-DWQ and 2012-0006-DWQ on February 14, 2011 and July 17, 2012, respectively. The permit regulates stormwater discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); 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 and whether the receiving water has been designated by the SWRCB as sediment-sensitive. SWPPP requirements vary according to the risk level. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring and certain BMPs, and in some cases, 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 SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program rather than a SWPPP is necessary for projects with a DSA of less than 1 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 of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering a 401 Certification are CWA Section 404 permits issued by USACE. The 401 Certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a Section 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 WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.12.1.4 Hydrology and Floodplain

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

- To comply, the following must be analyzed:
- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

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

2.12.2 Environmental Setting

Caltrans has prepared a Water Quality Assessment (Caltrans 2018), a Floodplain Hydraulic Study (Caltrans 2017), and a Natural Environment Study (Caltrans 2018) for the proposed project. These documents were used to prepare this section.

The proposed project would take place along SR 162 from Butte City in the east to Codora in the west located in Glenn County, California. The area has a Mediterranean climate with hot, dry summers and cool, wet winters.

The receiving water body for the project is the Sacramento River, which is the largest river in California by flow length and drainage area. According to the Natural Environment Study, the mean sea level (MSL) in the project area is approximately 87 feet above MSL to the west of the river, descends to 67 feet above MSL at the Sacramento River, and then rises to approximately 99 feet above MSL near Butte City.

The project lies in the unidentified Hydrologic Sub Area 520.40. Soils consist of a mosaic of silty clay loam, clay loam, silty loam, and sandy loam.

According to the Water Quality Assessment, the project would not discharge directly to municipal or domestic water supply reservoirs or groundwater percolation facilities.

2.12.2.1 Water Quality

The proposed project is within the jurisdiction of the Central Valley Regional Water Quality Control Board.

According to the Water Quality Assessment, the Sacramento River is a 303(d) listed water body and has total maximum daily load (TMDL) limits for dichlorodiphenyltrichloroethane (DDT), dieldrin, mercury, and polychlorinated biphenyls (PCBs). The sources of these pollutants are not related to Caltrans activities and Caltrans is not responsible for addressing them.

The Sacramento River is within a designated High Risk Receiving Watershed. High Risk Receiving Watersheds are watersheds that drain to water bodies that are either listed on the CWA 303(d) List for sedimentation/siltation or turbidity; have an U.S. EPA-approved TMDL plan for sediment; or have beneficial uses of Cold, Spawn, and Migratory.

2.12.2.2 Hydrology and Floodplain

Floodplains surround the project area and levees occur on both sides of the Sacramento River. Several oxbow lakes occur to the north and south of the project limits. Slopes in the project area range from 0–50%, with the steepest slopes along the Sacramento River banks.

The Flood Insurance Rate Maps (FIRMs) prepared by the Federal Emergency Management Agency (FEMA) were evaluated in the Floodplain Hydraulic Study. The FIRMs indicate the entire project area lies within a Zone A-Special Flood Hazard Area (FIRM panels 06021C0850D and 06021C0875D issued August 5, 2010). Zone A is defined as an area “subject to flooding by the 1%-annual-chance flood, also known as the base flood, no base flood elevations determined.” While significant flooding has occurred on the valley floor, there are no records of bridge over-topping within the project limits.

2.12.3 Discussion of Environmental Evaluation Question 2.12 – Hydrology and Water Quality

Each alternative under consideration would replace the existing bridge with a new reinforced concrete bridge that meets current seismic standards. The existing bridge has narrow curbs and very little shoulder; the new bridge would be wider than the existing bridge (40 feet compared to the existing 31.75 feet) but other structural aspects would be similar. The new bridge would be approximately 4,389 feet long with standard 12-foot-wide lanes and 8-foot-wide shoulders. Additional tasks include improvements to bridge approaches, levee road connections, lighting, striping, and pavement, and sidewalks in Butte City, primarily along SR 162 (see Chapter 1, Project Description for details).

The primary difference between the alternatives is the proposed location of the new bridge. Alternative D would replace the bridge on the existing alignment. Alternative A2 would be on a parallel alignment to the north of the existing bridge, and Alternative C2 would be parallel but south of the existing alignment.

The potential impacts to water quality and hydrology/floodplains would be similar regardless of the build alternative; therefore, the information in this section applies equally to all alternatives.

Checklist Item a) Less than Significant

The proposed project would not violate any water quality standards or waste discharge requirements. The project would comply with all state, regional, and local water quality standards; applicable permit requirements (see Section x1.5, Permits and Approvals Needed; and applicable guidelines and requirements listed in the Standard Specifications (Caltrans 2015) regarding water pollution control and general specifications for preventing, controlling, and abating pollutant discharges into streams, waterways, and other bodies of water.

The proposed project would disturb an estimated 10 acres of soil and would be subject to the Construction General Permit (CGP). The CGP requires that contractors select and deploy BMPs that are economically achievable and that achieve the performance standards of Best Available Technology and Best Conventional Pollutant Control Technology in order to reduce or eliminate stormwater pollution.

The quantity of new impervious area was not available at the time of this evaluation. According to the Water Quality Assessment, sediment and siltation are the primary pollutants of concern during construction. Temporary and permanent construction-site BMPs would be implemented to protect water quality. The contractor would be required to prepare a SWPPP that identifies the project-specific BMPs to be installed to protect water bodies from potential stormwater runoff resulting from construction activities. The SWPPP will reference the Caltrans Construction Site BMP Manual (2017c).

Groundwater may be encountered during construction. Discharge of collected groundwater would be regulated by the RWQCB, either through conditions in the 401 Certification or through a permit or waiver under the State Water Board Water Quality Permit Order No. 2003-0003-DWQ, Low Threat Discharges to Land.

The proposed project is not within any City or County MS4 Phase 1 or Phase 2 permitted area, so no additional requirements apply.

Compliance with regulations and implementation of BMPs would ensure that this impact would be less than significant.

Checklist Item b) Less than Significant

Permanent withdrawals from an aquifer or groundwater table are not anticipated and the project would not substantially deplete groundwater supplies or interfere with groundwater recharge.

Temporary coffer dams may be necessary during construction and groundwater could be encountered during construction of adjacent structures. If dewatering is necessary, a coffer dam dewatering plan would be implemented to decrease sedimentation. Dewatering would result in a very minor impact on groundwater supplies. In addition, consultation with the RWQCB would be required to determine the method of discharging accumulated groundwater and the type of

permit or waiver necessary. Permitting would be based on anticipated groundwater volumes, dewatering duration, and other related operational details and field conditions. This impact would be less than significant.

According to the Water Quality Assessment, the project would not pass through areas where spills from Caltrans activities could discharge directly to municipal or domestic water supply reservoirs or groundwater percolation facilities.

Checklist Item c) Less than Significant

The proposed project would not substantially alter the existing drainage pattern of the site or area and would not alter the course of the Sacramento River. Bridge and drainage design, including new culverts, over-drains, and ditches, will maintain existing drainage patterns.

Erosion and siltation would be minimized through temporary BMPs, including, but not limited to, fiber rolls and/or silt fences, gravel bag berm, or rolled erosion-control product (e.g., netting). Permanent erosion control BMPs would include establishment of vegetation or other stabilization measures on disturbed soil areas and newly constructed slopes. See also response to checklist item a.

The project is required to consider permanent treatment BMPs. The project would aim to maximize the permeability of the site and would deploy biofiltration swales/strips, detention devices, and/or infiltration devices as necessary. The locations and types of permanent treatment BMPs have not yet been determined. With BMPs in place, this impact would be less than significant.

Checklist Item d) Less than Significant

The proposed project would not substantially alter existing drainage patterns and would not alter the course of the Sacramento River. The project will place new culverts and over-drains and construct new ditches to convey flow. The project would not substantially alter the rate or amount of surface runoff in a manner that would result in flooding.

According to the Location Hydraulic Study, the proposed project is a transverse encroachment and will not change the elevation or flow of the Sacramento River. No significant rise of water surface elevation is anticipated from the proposed project. The study indicates that the level of risk associated with the project is low. This impact would be less than significant.

Checklist Item e) Less than Significant

The project would not substantially alter the existing drainage pattern of the site or area, alter the course of the Sacramento River, or increase the rate or amount of surface runoff in a manner that would exceed stormwater drainage system capacity.

Although the new bridge will be wider than the existing structure, the bridge and drainage design include new culverts, over-drains, and ditches to convey any additional flow. Permanent

drainage systems would be sized appropriately to accommodate the project design. Therefore, this impact would be less than significant.

Checklist Item h) Less than Significant

The proposed project would not impede or redirect flood flows. The project would replace an existing bridge in either the same location or at a nearby location parallel to the existing alignment. There are no recorded instances of the bridge over-topping, even during high flow periods. There would be no significant rise in water surface elevation due to the project. The Floodplain Hydraulic Study states that the level of risk associated with the bridge replacement within the floodplain limits is low. The proposed project is a transverse encroachment and the construction of a new bridge will not change the elevation or flow of the Sacramento River. Therefore, this impact would be less than significant.

Checklist Items: f, g, i, j) No Impact

The “No Impact” determinations are based on project scope, field reviews, and the Water Quality Assessment Report completed January 2018. The proposed scope will not substantially degrade water quality, place housing within a 100-year flood hazard area, or cause an inundation by seiche, tsunami, or mudflow.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

All applicable regulations and permit conditions would be followed. The following BMPs are incorporated into the project.

Temporary BMPs to protect water quality will include, at a minimum, the following actions:

- Identify and protect drainage facilities.
- Establish sediment and erosion control measures such as fiber rolls and/or silt fences, gravel bag berm, or rolled erosion-control product (e.g., netting).
- Prevent pollutant discharges into waterways from vehicles and heavy equipment through off-site cleaning, designated access routes, and leak inspection.
- Perform job site management to control potential sources of pollution, including construction materials, concrete waste, and non-stormwater releases.
- Control dust emissions and wind erosion control, including spraying exposed soil with water, street sweeping and vacuuming, covering stockpiles, and establishing a stabilized construction entrance.
- Provide a spill prevention and response plan, including on-site spill kits.
- If and where applicable, stabilize shoulder backing areas with temporary construction site BMPs by the end of each day and prior to the onset of precipitation.
- Implement a coffer dam dewatering plan that will include measures to decrease sedimentation, such as settling tanks, before discharge.

Permanent BMPs to prevent erosion will include stabilizing soil on disturbed soil areas and newly constructed slopes with wattles, hydroseed, or hydraulic mulch.

Permanent BMPs to prevent erosion would include stabilizing soil on disturbed soil areas and newly constructed slopes.

2.13 Land Use and Planning

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.13.1 Discussion of Environmental Evaluation Questions 2.13 – Land Use and Planning

Checklist Items: a-c) No Impact

The “No Impacts” determination is based on project scope and field reviews. The proposed project will not physically divide an established community, conflict with any applicable land use plan, policy, or regulation of an agency, not does it conflict with any applicable habitat conservation plan or natural community conservation plan.

2.13.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.14 Mineral Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.14.1 Discussion of Environmental Evaluation Questions 2.14 – Mineral Resources

Checklist Items a, b) No Impact

The “No Impacts” determination is based on project scope and field reviews. The proposed project will not result in the loss of availability of a known mineral resource or locally important mineral resource recovery site.

2.14.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.15 Noise

Would the project result in:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.15.1 Regulatory Setting

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will result in a noise impact. If a proposed project is determined to cause a significant noise impact under CEQA, mitigation measures must be incorporated into the project unless those measures are not feasible.

Figure 13 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.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night,
	20	Concert Hall (Background)
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Figure 13. Noise Levels of Common Activities

Construction noise is regulated by Caltrans Standard Specifications Section 14-8.02, Noise Control. These requirements state, “Do not exceed 86 dBA L_{max} at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m. Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.”

The information contained in this section is primarily based on the Air Quality and Noise Memorandum prepared for this project on January 9, 2018, which addresses the requirements of 23 CFR 772. This regulation provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I, Type II, or Type III.

FHWA defines a Type I project as a proposed federal or federal-aid project for the construction of a highway on a new location; the physical alteration of an existing highway where there is either substantial horizontal or substantial vertical alteration; the addition of through lane; the addition of auxiliary lanes, except when the auxiliary lane is a turn lane; the addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; restriping existing pavement for the purpose of adding through-traffic lane or an auxiliary lane; or the addition of a new or substantial alteration of a weight station, rest stop, ride-share lot, or toll plaza. A Type II project involves construction of noise abatement on an existing highway with no changes to highway capacity or alignment. A Type III project is a project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

Under 23 CFR 772, a substantial vertical alignment alteration is defined as a project that removes shielding, thereby exposing the line-of-sight between the receptor and the traffic noise source. This is done by altering either the vertical alignment of the highway or the topography between the highway traffic noise source and the receptor. Under 23 CFR 772, a substantial horizontal alignment alteration is defined as a project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition.

This project meets the criteria for a Type III project as defined in 23 CFR 772. The new bridge would be built on a parallel alignment to the existing bridge. The change in alignment would not move the roadway closer to any sensitive receptors. Traffic volumes, composition, and speeds would remain the same in the build and no build condition. Therefore, traffic noise impacts are not anticipated from the proposed project and a detailed Noise Study Report is not required.

2.15.2 Environmental Setting

This project is located in a rural part of Glenn County. The project area is surrounded by a mix of industrial, commercial, agricultural, and residential land uses. Additionally, there are several public parks that are near the Sacramento River Bridge. Numerous residences are located along SR 162 near the eastern project limit in Butte City.

2.15.3 Discussion of Environmental Evaluation Questions 2.15 – Noise

Checklist Items: a) Less than Significant

During construction, noise from construction activities may intermittently dominate the noise environment in the immediate area of project construction. Noise generated by construction activities would be a function of the noise levels generated by individual pieces of construction

equipment, the type and amount of equipment operating at any given time, the timing and duration of construction activities, and the proximity of nearby sensitive receptors. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks. Construction noise levels would vary on a day-to-day basis during each phase of construction depending on the specific task being completed.

The project area is surrounded by a mix of industrial, commercial, agricultural, and residential land uses. Additionally, there are several public parks that are near the Sacramento River Bridge. The nearby residences located along SR 162 near the eastern project limit may be exposed to elevated noise levels during roadway construction operations. Construction equipment is expected to generate noise levels ranging from 70 to 90 dBA 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.

The loudest noise generating construction activity on this project would be pile driving. Pile driving would be required during construction of the new bridge. Pile driving typically occurs during daytime hours over short durations with breaks in between each pile. Pile driving can generate noise levels ranging between 95 and 101 dBA L_{max} at 50 feet. The nearest residence is over 1,000 feet from the closest area where pile driving is expected to occur. At this distance, maximum noise levels during pile driving would be approximately 75 dBA L_{max} or less.

The nature of roadway construction is linear; therefore, construction would not take place in one area for prolonged periods of time. The project would be required to comply with Caltrans Standard Specification 14-8.02, which states noise would be controlled and monitored for work activities and noise should not exceed 86 decibels (maximum) at 50 feet from the job site between the hours of 9:00 p.m. and 6:00 a.m. Sensitive receptors would not be exposed to construction noise for any longer than necessary to complete the project. Because project construction would comply with Caltrans Standard Specification 14-8.02, construction would not result in noise levels in excess of the applicable Caltrans standards.

With regard to operational noise, the project would not change traffic volumes, vehicle fleet mix, or speed on approach roadways or on the bridge. Although the new bridge may be built on a parallel alignment to the existing bridge, the reduced distance between the bridge and the nearest residence (over 1,000 feet away) would not result in a substantial increase in traffic noise. For these reasons, the project would not result in a substantial increase in operational noise, and project operations would not result in the generation of noise in excess of thresholds. This impact would be less than significant.

Checklist Item: b) Less than Significant

The proposed project would likely involve impact pile driving for construction of the bridge. The nearest residence is located over 1,000 feet from the nearest proposed pile driving areas. The closest structure is a warehouse located approximately 325 feet away from potential pile driving locations. Table 19 summarizes typical vibration levels generated by an impact pile driver at a reference distance of 25 feet, and other distances (including 325 and 1,000 feet), as determined using methods specified in the Caltrans vibration guidance manual (Caltrans 2013).

Table 19. Vibration Source Levels for a Pile Driver

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 100 Feet	PPV at 325 Feet	PPV at 1,000 Feet
Pile driver (sonic/vibratory)	0.650	0.303	0.141	0.039	0.011

Source: California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*, 2013.

PPV = peak particle velocity in inches per second.

Tables 20 and 21 below summarize the guidelines developed by Caltrans to assess the damage and annoyance potential from the transient and continuous sources of vibration in terms of the peak particle velocity (PPV) inches per second (in/sec) generated by the equipment. Continuous vibration is usually associated with construction activity (Caltrans 2013).

Table 20. Vibration Damage Potential Threshold Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*, 2013.

Note: Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV (in/sec) = peak particle velocity in inches per second.

Table 21. Vibration Annoyance Potential Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*, 2013.

Note: Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV (in/sec) = peak particle velocity in inches per second.

At the nearest structure, a warehouse located 325 feet away, vibration from pile driving activity would be approximately 0.039 PPV in/sec. At the nearest residence (over 1,000 feet away from pile driving areas), the vibration level from an impact pile driver would be approximately 0.011 PPV in/sec. Both of these vibration levels are below the damage thresholds for all buildings, including “extremely fragile historic buildings, ruins, ancient monuments” (which has a damage threshold of 0.08 PPV in/sec for continuous sources, as shown in Table 20 above). Therefore, pile driving associated with project construction would not be expected to result in vibration-related damage at nearby sensitive receptors.

With regard to vibration-related annoyance at nearby sensitive receptors, the estimated vibration level of 0.011 PPV in/sec at the nearest residence is below the commonly used “distinctly perceptible” threshold for vibration annoyance shown in Table 21 above. Therefore, pile driving associated with project construction would not be expected to result in vibration-related annoyance at nearby sensitive receptors.

Because project-related construction vibration from pile driving (which is the greatest vibration-generating source of all project construction equipment) would not be in excess of the appropriate damage or annoyance thresholds, vibration impacts from the proposed project would be less than significant.

Checklist Item: d) Less than Significant

Project construction would not take place in one area for prolonged periods of time. In addition, the project would be required to comply with Caltrans Standard Specification 14-8.02, which states that noise would be controlled and monitored for work activities and noise should not exceed 86 decibels (maximum) at 50 feet from the job site between the hours of 9:00 p.m. and 6:00 a.m. Because project construction would comply with Caltrans Standard Specification 14-8.02, any temporary increases in noise from project construction would not be considered substantial. This impact would be less than significant.

Checklist Items c, e, f) No Impact

The “No Impacts” determinations are based on project scope and field reviews. The proposed scope would not cause a substantial permanent increase in ambient noise levels and it is not located within airport land use plan or the vicinity of a private airstrip.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

The following standard measures are incorporated into the proposed project.

The project would follow Caltrans Standard Specification 14-8.02, Noise Control, which states the following:

- Control and monitor noise resulting from work activities.
- Do not exceed 86 dBA L_{max} at 50 feet from the of site activities from 9:00 p.m. to 6:00 a.m.

In addition to the Standard Specifications, construction noise can be minimized through the following measures:

- Limiting the operation of pile driver, jackhammer, concrete saw, pneumatic tools and demolition equipment to daytime hours.
- Prohibiting unnecessary idling of internal combustion engines.
- Shielding and locating stationary equipment, such as compressors and generators, as far away from residential and park uses as practical.
- Locating equipment and materials storage sites as far away from residential and park uses as practicable.
- Notifying residents within 100 feet of the project area at least 2 weeks prior to the start of nighttime construction.

2.16 Population and Housing

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.16.1 Discussion of Environmental Evaluation Questions 2.16 – Population and Housing

Checklist Items: a-c) No Impact

The “No Impacts” determinations are based on project scope and field reviews. The proposed project will not induce substantial population growth (directly or indirectly), displace substantial numbers of existing housing, or displace substantial numbers of people necessitating the construction of replacement housing elsewhere.

2.16.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.17 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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.17.1 Discussion of Environmental Evaluation Question 2.17 – Public Services

Checklist Items: a) No Impact

The proposed project would result in the replacement of an existing bridge. It would not add population to the area that would require additional public services which could require the construction of new governmental facilities or public services facilities. Nor would the project directly result in physical impacts to any existing public service facilities. The project would not require new or physically altered governmental facilities. There would be no impact.

2.17.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimizations, or mitigation measures are required.

2.18 Recreation

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.18.1 Discussion of Environmental Evaluation Questions 2.18 – Recreation

Checklist Items: a, b) No Impact

The “No Impacts” determinations are based on project scope and field reviews. The proposed project scope would not increase the use of existing neighborhood and regional parks, or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

2.18.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.19 Transportation/Traffic

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.19.1 Regulatory Setting

There are no federal or state regulations that pertain to traffic and transportation in the project area.

2.19.1.1 Local

The Transportation and Circulation Element of the Glenn County General Plan (1993:6-29) establishes standards that guide development of the transportation system. The Level of Service threshold is described below:

Level of Service C shall be the standard for road segments and signalized intersections within the county. Exceptions to this standard where Level of Service D or E is forecast shall be granted only when it can be demonstrated that topography, environmental

impacts, or other significant factors make mitigation measures impractical. Level of Service F shall be unacceptable under all conditions.

2.19.2 Environmental Setting

This section is based on the Highway Operations Review Memorandum prepared for this project (California Department of Transportation 2017).

The major north-south road in the vicinity is Interstate 5 (I-5), which provides the primary connection between Glenn County and major cities such as Red Bluff and Redding to the north and Sacramento to the south. East of I-5, SR 32 and SR 162 are the major east-west roads. SR 32 provides a connection through Orland to Chico, the closest of the major urban areas of California to Glenn County residents. Approximately 16 miles to the south, SR 162 provides a similar connection to Oroville. The next major east-west road to the south is SR 20 (approximately 23 miles south of SR 162), which provides a connection to the Yuba City-Marysville area.

SR 45 is the only major north-south road east of I-5. It serves adjoining land uses as well as providing a connection between SRs 32, 162, and 20.

SR 162 is the only SR west of I-5. The route originally began at U.S. Highway 101 (US 101) in Mendocino County and continued into Glenn County, but a 70-mile break currently exists (34 miles of which is in Mendocino County and 36 miles is in Glenn County). The intermediate mileage is a seasonal road owned and maintained by the Counties of Mendocino and Glenn. This travel corridor is the only east-west route between I-5 and US 101 between SR 20 and SR 36, a distance of approximately 75 miles.

The jurisdictions responsible for public roads within Glenn County include the County of Glenn, incorporated cities (Orland, Willows), the State of California, and the U.S. Forest Service.

2.19.3 Discussion of Environmental Evaluation Questions 2.19 – Transportation and Traffic

Checklist Item: e) Less than Significant

After completion, the proposed project would not change emergency access. During construction some lane closures would result, and a detour would be in place for 72 hours under Alternative D. Lane closures and detours could affect emergency access and response times. However, a traffic management plan would be prepared and closures would be coordinated with local emergency responders. Therefore, this impact would be less than significant.

Checklist Items: a-d, f) No Impact

The “No Impacts” determinations are based on project scope and field reviews. The proposed project scope will not conflict with an applicable congestion management program, result in a change in air traffic patterns, substantially increase hazards due to a design feature, or conflict

with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are required.

2.20 Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.20.1 Regulatory Setting

2.20.1.1 Assembly Bill 52

AB 52 (Chapter 532, Statutes of 2014) establishes a formal consultation process for California Native American tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts (Public Resources Code [PRC] Section 21084.2). PRC Section 21074 defines tribal cultural resources as follows:

- Sites, features, places, sacred places, and objects with cultural value to descendant communities or cultural landscapes defined in size and scope that are:
 - Included in or eligible for listing in the California Register of Historical Resources (CRHR); or,
 - Included in a local register of historical resources.
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1.

Sacred places can include Native American sanctified cemeteries, places of worship, religious or ceremonial sites, and sacred shrines. In addition, both unique and non-unique archaeological resources, as defined in PRC Section 21083.2, can be tribal cultural resources if they meet the criteria detailed above. The lead agency relies upon substantial evidence to make the

determination that a resource qualifies as a tribal cultural resource when it is not already listed in the CRHR or a local register.

AB 52 defines a “California Native American Tribe” (Tribe) as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission (PRC Section 21073). Under AB 52, formal consultation with Tribes is required prior to determining the level of environmental document if both of the following apply: 1) a Tribe has requested to be informed by the lead agency of proposed projects, and 2) the Tribe, upon receiving notice of the project, accepts the opportunity to consult within 30 days of receipt of the notice.

AB 52 also requires that consultation, if initiated, address project alternatives and mitigation measures for significant effects, if specifically requested by the Tribe. AB 52 consultation is considered concluded when either 1) the parties agree to measures to mitigate or avoid a significant effect to tribal cultural resources, or 2) either the Tribe or the agency concludes that mutual agreement cannot be reached after making a reasonable, good-faith effort. Under AB 52, any mitigation measures recommended by the agency or agreed upon with the Tribe may be included in the final environmental document and in the adopted mitigation monitoring program if they were determined to avoid or lessen a significant impact on a tribal cultural resource. If the recommended measures are not included in the final environmental document, then the lead agency must consider the four mitigation methods described in PRC Section 21084.3 (PRC 21082.3[e]). Any information submitted by a Tribe during the consultation process is considered confidential and is not subject to public review or disclosure. It will be published in a confidential appendix to the environmental document unless the Tribe consents to disclosure of all or some of the information to the public.

2.20.2 Environmental Setting

As described in Section 2.8, Cultural Resources, California Native American tribes were contacted to initiate tribal consultation under AB 52 (based on a list of local contacts from the NAHC) via letters and a series of follow-up phone calls. No tribes responded to the invitation to consult. No tribal resources were identified as a result.

2.20.3 Discussion of Environmental Evaluation Questions 2.20 – Tribal Cultural Resources

Checklist Items: a, b) No Impact

The “No Impacts” determinations are based on project scope and field reviews. There are no listed or eligible for listing historical resources in the California Register of Historical Resources within project limits.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are necessary.

2.21 Utilities and Service Systems

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.21.1 Regulatory Setting

There are no federal, state, or local regulations that pertain to utilities and service systems in the project area.

2.21.2 Environmental Setting

Both underground and aboveground utilities are located in the project area. Electricity and natural gas services in the area are provided by PG&E. Gas transmission pipeline is located on SR 162 at the eastern portion of the project alignment near Four Corners Station (west of the Sacramento River). AT&T facilities, in the form of buried cables, conduit, and aerial transmission lines, are located along SR 162 in the project area and follow the highway east just south of the existing Sacramento River Bridge. Advance notification and coordination with

utility service providers would occur prior to and during construction to avoid or minimize potential service disruptions.

Water supply in the project area is primarily derived from the Western Canal Water District. Water needs for the project would be primarily for dust abatement and erosion control. During construction, water may be drafted from the Sacramento River from the dewatering of the piles and cofferdams.

The Glenn County Solid Waste Department operates the landfill site in the county. The landfill is located at the west end of County Road 33, near Artois.

2.21.3 Discussion of Environmental Evaluation Questions 2.21 – Utilities and Service Systems

Checklist Items: a, b, d, e, g) No Impact

The “No Impact” determinations are based on project scope and field reviews. The proposed scope will not exceed wastewater treatment requirements of the Regional Water Quality Control Board or require the construction of new water or wastewater treatment. Additionally, there are no federal, state, or local regulations that pertain to utilities and service systems in the project area. The proposed project would comply with all federal, state, and local laws and regulations related to the disposal of solid waste and would not produce wastewater requiring treatment at a wastewater provider.

Checklist Item: c) Less than Significant

Increased stormwater runoff resulting from the proposed project would be captured by existing stormwater systems (i.e., drainage ditches). Currently, stormwater drains to roadside ditches of various forms, where it is retained and/or infiltrated into the soil. Runoff drains to existing storm drain systems or sheet flows to the Sacramento River. Drainage would be improved as part of the project and would not substantially alter the existing drainage patterns. As discussed in Section 2.1.2, the proposed project would not substantially alter the existing drainage pattern of the site. Bridge and drainage design, including new culverts, over-drains, and ditches, will maintain existing drainage patterns and is anticipated to be sufficient to capture increased stormwater from the proposed project. Therefore, the impact would be less than significant.

Checklist Item: f) Less than Significant

Construction of the project would result in waste from the removal of the existing bridge and associated components, including embankments. Caltrans standard measures require that waste that is not slated for salvage must be disposed of or recycled at an approved facility. The construction contractor is also required to present evidence to Caltrans that the waste materials have been hauled to an approved disposal site. Disposal of demolition and construction materials would occur in accordance with federal, state, and local regulations. Disposal would occur at permitted landfills with capacity sufficient to accommodate project waste. Operation of the

project would not result in additional solid waste disposal needs. Therefore, the impact would be less than significant.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary.

2.22 Mandatory Findings of Significance

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.22.1 Discussion of Environmental Evaluation Questions 2.22–Mandatory Findings of Significance

Checklist Item: a. Less than Significant

As discussed in Section 2.7, Biological Resources, the proposed project would result in impacts on special-status species and their habitat. However, standard avoidance and minimization measures, BMPs, and standard specifications, which have been incorporated into the proposed project would reduce those impacts to a less-than-significant level. In addition to these efforts, Caltrans proposes compensatory mitigation for habitat for the loss of riparian communities, VELB habitat, oak woodland habitat, and wetlands and non-wetland waters. Therefore, the impact related to biological resources as a whole would be less than significant.

There are no historical or archaeological resources as defined under Section 15064.5 of the CEQA guidelines that would be affected by the project. Therefore, there is no potential for the project to eliminate important examples of major periods of California history or prehistory.

Checklist Item: b. Less than Significant

The proposed project would not result in cumulative considerable impacts as discussed below. The proposed project is located in a rural area and few other projects are planned for the area. The improvements are located within or immediately adjacent to the road corridor.

Checklist Item: c. No Impact

Adverse effects on human beings are not anticipated. Construction activities would be conducted in accordance with standard safety measures and ROW acquisitions would be coordinated with property owners during the ROW process. Once completed, the bridge would be safer than it is under current conditions.

2.22.2 Cumulative Impacts

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this 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 to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR), Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

The proposed project would not result in impacts related to the following resource areas as discussed in Chapter 2. Therefore, the project could not contribute to cumulative impacts on these resources and they will not be discussed further in this cumulative impact analysis.

- Land Use and Planning
- Mineral resources
- Population and housing
- Public Services

- Recreation
- Tribal cultural resources

2.22.2.1 Aesthetics

The proposed project would result in minor impacts on scenic vistas and resources, primarily for highway users. These impacts would result mostly from the removal of mature vegetation associated with construction of the bridge and viaduct, and are expected to last until vegetation grows back, which could be a period of years.

The resources study area of cumulative impacts on aesthetic resources in the viewshed from the highway within the project area. The project vicinity is sparsely developed and the general health of the resource is good, in that the area remains rural with mature vegetation and views of the river. There are no foreseeable projects in the vicinity that are likely to occur within the next few years, and therefore there is no cumulative impact to which the proposed project could contribute.

Impacts related to light and glare are temporary impacts associated with construction. Because no other projects are anticipated in the same area at the same time, there would be no cumulative impact.

2.22.2.2 Agriculture and Forest Resources

The project site contains some farmland, including Prime Farmland and Farmland of Local Importance. ROW acquisitions of up to 22.06 acres would occur under all build alternatives (Table 2 in Section 2.2 Agriculture and Forest Resources). The amount of acquisition is not considered substantial, and there are few projects in the county that would require important farmland acquisitions that would take farmland out of agricultural production. So, while the project could contribute to a cumulative impact on farmland the contribution would not be cumulatively considerable.

No portion of the site contains Farmland of Statewide Importance, Unique Farmland. There are parcels enrolled in Williamson Act contracts to the east of SR 162. Right of way acquisition would be required under each of the alternatives, with the greatest amount of permanent take under Alternative D (2.73 acres). The strips of land to be acquired are immediately adjacent to SR 162 and would not take the parcels out of agricultural production, nor would it cancel the Williamson Act contracts. Therefore, the project would not contribute to cumulative conflicts with existing zoning for Williamson Act contracts.

No forest land or timberland exists in the project area or vicinity. The proposed project would not contribute to the cumulative loss or conversion of forest land to non-forest uses.

2.22.2.3 Air Quality

As discussed in Section 2.3, the resource study area for air quality is the northern Sacramento Valley Air Basin (SVAB) which includes all of Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn,

Butte, Tehama, and Shasta Counties and parts of Solano and Placer Counties. The SVAB extends from south of Sacramento to north of Redding and is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada.

Primary pollutants of concern in the project area are particulate matter (PM10) from soil disturbance and wind erosion (fugitive dust). See Section 2.3, for further discussion on the existing setting related to air quality.

Construction of the proposed project would not result in a significant impact on air quality with the implementation of standard construction control measures. Short-term effects during construction would be minimized through compliance with Caltrans Standard Specifications, rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code § 10231). Other transportation projects in the area would be required to comply with similar regulations. Therefore, impacts of the proposed project on air quality are not expected to be cumulatively considerable.

The project would not change traffic volume, fleet mix, or speed, and would not cause an increase in emissions relative to the no build alternative. Therefore, the project would not cause an increase in operational emissions and operation of any of the build alternatives is not expected to contribute to cumulative impacts on air quality.

2.22.2.4 Biological Resources

As in other areas of California, expansion of past land use practices, such as agriculture, residential and commercial development, has resulted in a net reduction in the extent of oak woodland within the Central Valley. The project area contains a mixture of agricultural activities and low-density residential development that has resulted in a reduction of biological resources, including special status habitats. Future proposed projects in the vicinity of the ESL may result in additional impacts on remaining habitat.

The project would result in both the temporary and permanent loss of oak woodland. However, the project would incorporate minimization measures for oak woodland impacts, consistent with State standards requiring replacement plantings for any conversion of oak woodland that would have a substantial impact on the environment. Because the project would fully compensate for project-related loss of oak woodland, this project would not contribute to cumulative impacts on oak woodlands. In addition, the project is located between two USFWS refuge units that total 1,321 acres of protected native habitat. The loss of oak trees along the bridge and viaduct will not substantially impact the amount of available valley oak habitat present.

The project would result in both the temporary and permanent loss of riparian habitats. However, the project would incorporate restoration and compensation consistent with State standards of no net loss of riparian functions and values. And, as with this project, other projects would similarly be subject to permit requirements from CDFW to compensate for impacts on this habitat type. Therefore, the project would not contribute to cumulative effects on riparian habitats.

The project would result in both the temporary and permanent loss of potentially jurisdictional wetlands and waters of the U.S. and State. However, the project would incorporate restoration

and compensation consistent with USACE and CDFW standards of no net loss of functions and values, However, as with the project. Additionally, as with this project, other projects would be subject to permit requirements from CDFW and/or USACE to compensate for impacts on this habitat type. Therefore, the project would not contribute to cumulative effects on wetlands and waters. In addition with the removal of the bridge fenders from the river the project would result in a net gain of waters of the U.S.

Due to avoidance measures and distance to appropriate habitat there are no anticipated impacts to GGS or their habitat and thus no cumulative effects. There will be no cumulative effects on VELB because adjacent habitat is owned and protected by the USFWS refuge and shrubs will be allowed to reestablish after construction is completed. The project will not result in cumulative impacts to the continued existence of VELB, GGS, or any bat species or their habitat.

Birds

Past and present projects in the vicinity of the project area have likely contributed to a net loss in suitable nesting habitat for a variety of bird species protected by the MBTA and Fish and Game Codes 3503 and 3503.5 , including several species discussed previously. Future projects in the vicinity of the project area would be subject to the MBTA requirements to avoid impacts on active nests. The project area is surrounded by USFWS Sacramento River refuge property and thus protected from further development. In addition the adjacent orchards are protected from development by the Williamson Act.

The project is expected to have a negligible impact on bird species protected by MBTA and CDFGCs because suitable foraging and nesting habitat in the region would not be substantially reduced by the project. Active nests of MBTA-protected species would be avoided during construction. Therefore, the project would not contribute to cumulative impacts on nesting bird species.

Additional protections will be enforced for listed bird species for this project and other projects. CESA protected species like the YBCU and the bald eagle require an ITP from CDFW if there is potential take and onsite replacement or mitigation for impacted habitat.

Roosting Bats

Past and present projects in the vicinity of the project have likely contributed to a net loss in suitable roosting/foraging habitat for a variety of bat species protected by fish and game codes mentioned in Section 2.7. Future projects in the vicinity of the project area would be subject to the Fish and Game Code requirements to avoid impacts on active roosts. The project area is surrounded by USFWS Sacramento River refuge property and thus protected from further development. In addition the adjacent orchards are protected from development by the Williamson Act. All temporary impacts to riparian and valley oak woodland habitats will be replaced onsite after the completion of construction.

The project is expected to have a negligible impact on bats because suitable foraging and roosting habitat in the region would not be substantially reduced by the project. Bat roosting

habitat will be incorporated into the new bridge design. Active roosts would be avoided during construction. Therefore, the project would not contribute to cumulative impacts on roosting bats.

Fish

Cumulative effects include the effects of future state, local or private actions that are reasonably certain to occur in the action area of this project. Glenn County is primarily rural, with a relatively small population. From 2010 to 2014 the population decreased by 0.6 % (USCB 2015). No cumulative effects from urbanization are expected.

Because the adjacent land is primarily SRNWR and State Parks land; and the overall rating of water quality in the Sacramento River is good (USGS 2000), cumulative effects from agricultural runoff are expected to be insignificant.

Future construction projects in Glenn County and Butte County were researched through county planning office websites. None of the proposed projects are in the immediate vicinity of the project area, and all were inland from the Sacramento River. Projects occurring on the Sacramento River and tributaries were all federally funded bridge replacement or retrofit projects. These projects will require separate consultation under section seven of the FESA, therefore they will not be evaluated in this report.

2.22.2.5 Cultural Resources

The geographic scope of potential cumulative effects with respect to cultural resources is usually limited to areas within the physical footprint of a proposed project. With the implementation of Caltrans' standard measures to stop work and assess the find, described in Section 2.5.4, Cultural Resources, the project would have a less-than-significant impact on historic resources, archaeological resources, and human remains.

Simultaneous construction of other transportation projects in the project area and other development and infrastructure projects in the project vicinity could potentially result in significant impacts on historic resources, archaeological resources, and human remains, should they be present within the project site or the vicinity of the project site. Other projects would be required to adhere to state and local regulations concerning cultural resources as well as State Health and Safety Code Section 7050.5 for the discovery of human remains. Also, compliance with CEQA, including Caltrans' standard measures for cultural resources, would result in a less-than-significant impact on cultural resources and avoidance of adverse cumulative effects.

Two of the soil units (Riverbank Formation and Modesto Formation) in the project area are considered highly sensitive for paleontological resources. Cumulative impacts on paleontology could result from construction of other transportation and general development projects in Glenn County within these soil units. The project would result in grading and excavation of portions of the site, thereby creating the potential to contribute to the cumulative damage or destruction of important paleontological resources in the region. Therefore, combined with other past, present, and probable future projects and programs in the region, construction associated with the project could result in a cumulative impact on paleontological resources. However, compliance with Caltrans BMPs and Standard Special Provisions would protect paleontological resources during

ground-disturbing activities in potentially sensitive areas and would ensure that the project's contribution to the cumulative impacts on paleontological resources would not be considerable.

2.22.2.6 Geology and Soils

The study area for evaluating cumulative impacts on geology, soils, seismicity, and topography is the community of Butte City, adjacent communities (e.g., Codora and Glenn) and nearby unincorporated areas of Glenn County.

Seismic impacts are localized in nature and therefore no cumulative seismic impact exists. Final geotechnical studies for this project and other projects would be necessary to minimize risks related to soil type and topography. Therefore, no cumulative impact is anticipated related to these issues.

Site-specific soil erosion for this and other projects would be reduced to a less-than-significant level by development and implementation of a SWPPP and erosion-reducing BMPs. Therefore, though a cumulative impact may exist related to soil erosion, the proposed project's incremental contribution would not be cumulatively considerable.

2.22.2.7 Greenhouse Gas Emissions

Climate change is the result of cumulative contributions by actions occurring worldwide. While the project would result in a slight increase in GHG emissions during construction, it is anticipated that the project would not result in any increase in operational GHG emissions. While 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 impact and its contribution on the cumulative scale to climate change, Caltrans is firmly committed to implementing measures to help reduce GHG emissions.

2.22.2.8 Hazards and Hazardous Materials

The study area for evaluating cumulative impacts related to hazardous materials is the project footprint (encompassing both build alternatives) and lands within a 0.5-mile radius. There are no Cortese List sites in the area, and potential contamination in the area is related primarily to agricultural and transportation uses that are widespread in California.

Construction of transportation and development projects requires use of heavy construction equipment, the operation and maintenance of which would involve the use and handling of hazardous materials, including diesel fuel, gasoline, lubricants, and solvents. Simultaneous construction of the proposed project and other projects in the vicinity could potentially result in significant hazards to the public through the routine transport, use, or disposal of hazardous materials, or the release of hazardous materials into the environment. Lead and asbestos surveys would be conducted for to evaluate the presence of these materials in the existing bridge and traffic stripes, minimizing the risk of exposure of hazardous materials to construction workers. However, compliance with BMPs and federal, state, and county regulations regarding hazardous materials would minimize the potential for an accidental release of hazardous materials during

construction or operation. Though a cumulative impact may exist, with the implementation of standard safety measures, the project's incremental contribution to impacts on hazards and hazardous materials would not be cumulatively considerable.

2.22.2.9 Hydrology and Water Quality

The proposed project would not substantially alter existing drainage patterns and would not substantially alter the rate or amount of surface runoff in a manner that would result in flooding. Nor is a significant rise of water surface elevation anticipated as a result of the project. Hydraulic control measures would reduce any threats of flooding as a result of runoff from the project. There is not a significant amount of development in the area that would contribute to flooding potential and other projects would be required to implement similar flood control measures. Therefore, because the proposed project and other projects would comply with existing regulations and implement BMPs, no cumulative impact related to hydrology or floodplains is anticipated.

Potential impacts of the proposed project on existing water quality conditions in the Sacramento River would consist of short-term discharges of sediments, oil, grease, and chemical pollutants into nearby storm drains or the Sacramento River generated during construction. Project design would address water quality and stormwater runoff using low impact development concepts that promote infiltration and protect water quality, and implement post-construction stormwater runoff best management practices (BMPs). Other projects would be required to implement water quality BMPs including implementation of the SWPPP, Caltrans BMPs (for highway transportation projects), and stormwater guidance measures. As a result, cumulative impacts on water quality are not anticipated.

2.22.2.10 Noise

Temporary increases in noise would likely occur during construction activities. However, implementation of Caltrans Standard Specification 14-8.02 and compliance with applicable local noise standards to minimize the temporary noise effects of construction would ensure that noise impacts caused by construction would be short term and not adverse. Pile driving (which is the greatest vibration-generating source of all project construction equipment) would occur during construction. The closest sensitive receptor is over 1,000 feet away. Vibration from pile driving would be temporary and not exceed any damage or annoyance thresholds.

Other projects are required to adopt similar noise-reduction measures either as directed by Caltrans or as a result of local noise ordinances. Also, construction of more than one project is not anticipated to take place at the same time or in the same location. Consequently, the proposed project is not expected to contribute to a cumulative impact related to construction noise.

With regard to operational noise, the project would not change traffic volumes, vehicle fleet mix, speed, or any other factors along the roadway that could result in an increase in noise from vehicle traffic relative to the no-build condition. Therefore, the project could not contribute to a cumulative impact.

2.22.2.11 Transportation/Traffic

The proposed project would not result in impacts related to conflict with plans, congestion, air traffic, or public transit, bicycle, or pedestrian facilities, but a temporary impact related to emergency access is anticipated. Lane closures and a traffic detour under Alternative D are anticipated. A traffic management plan would be implemented and closures would be coordinated with emergency service providers. This impact would be temporary in nature. It is not anticipated that other projects would be under construction in the vicinity of the project area at the same time. Therefore, no cumulative impact is anticipated.

2.22.2.12 Utilities and Service Systems

The proposed project would not result in impacts on water, wastewater water facilities and would therefore not contribute to cumulative impacts. Most of the solid waste produced by the project would result from the removal of the bridge as a temporary impact. Existing and proposed stormwater facilities are anticipated to be sufficient to capture increased stormwater from the project. Other projects in the area would be required to obtain a Construction General Permit and would comply with the SWPPP and BMPs. Also, the majority of transportation projects would not adversely affect area landfills and would comply with regulations and design standards to contain, treat, and manage stormwater flows. The proposed project, in addition to existing similar projects and other cumulative projects, is not anticipated to result in a cumulative impact on utilities or service systems.

Chapter 3 **Coordination and Comments**

The following agencies, organizations, and individuals were consulted in the preparation of this environmental document.

3.1 Coordination with Resource Agencies

Coordination with USFWS, Glenn County, and State Parks, the agencies with jurisdiction, have been initiated and Caltrans will inform USFWS, Glenn County, and State Parks of the impacts of the proposed project described in this memorandum, discuss the measures to minimize impacts, and Caltrans' intention to adopt a *de minimis* determination. Written concurrence from the USFWS, Glenn County, and State Parks that the proposed project would have *de minimis* impacts on the SRNWR and Park Property will be sought after the public comment period and will be included in the final environmental document.

3.2 Coordination with the Public and Property Owners

There have been four open houses to date to share the project alternatives with the community and to receive public input and comments. The following meetings have taken place:

- February 15, 2016: Public open house at Princeton High School. Approximately 120 attendees.
- July 14, 2017: Meeting with Mr. Giesbract, a local community leader in Butte City, regarding new alternatives.
- July 22, 2017: Stakeholders meeting that included local government officials, first responders, and community leaders at Princeton Elementary School to discuss new alternatives. Approximately 30 attendees.
- September 7, 2017: Community meeting at Princeton High School. Approximately 60 attendees.

3.3 Circulation

This draft IS/MND will be available for public review between **[date]** at the Caltrans District 3 office in Marysville and the Princeton Public Library. A public meeting will be held on **[date]** at Princeton High School. Public comments will be accepted at the public meeting and until **[date]**, in writing at the Caltrans District 3 office at the address below and via e-mail at Rajpreet.Bihala@dot.ca.gov.

Please send comments via postal mail to:

California Department of Transportation
Attention: Rajpreet Bihala, Environmental Planner
District 3
703 B Street
Marysville, CA 95901

All comments received will be reviewed by the Caltrans and considered prior to project approval or abandonment.

Chapter 4 List of Preparers

4.1 California Department of Transportation, District 3

4.2 Caltrans Staff

The following Caltrans staff and consultants contributed to the preparation of this IS/MND.

- Rajpreet Bihala. Environmental Planner. Contribution: Environmental Coordination, Document Preparer
- Kristen Stubblefield, Associate Environmental Planner. Contribution: Task order manager and environmental coordination.
- Kelly McNally. District Environmental Branch Chief. Contribution: Environmental document oversight.
- Hannah Harrell, Associate Environmental Planner–Natural Resources. Contribution: Prepared Natural Environment Study.

4.3 ICF

Shahira Ashkar, Project Manager. M.A, Anthropology (Archaeology), University of Arizona; B.A., Anthropology (Archaeology), California State University, Sacramento; 21 years of environmental consulting experience. Contribution: General review.

Lindsay Christensen, NEPA/CEQA Generalist. B.S., Community and Regional Development, University of California, Davis; 13 years of environmental consulting experience. Contribution: Agriculture, Land use and planning, population and housing, public services, and recreation.

Jessica Hughes, Editor/Technical Writer. M.S., Botany and Plant Pathology, Michigan State University; B.S., Biology, Central Michigan University; 10 years technical writing experience as a botanist; 2.5 years technical editing of environmental compliance documents. Contribution: Editing.

Tiffany Michou, CEQA/NEPA Planner. Ph.D. Candidate in International Climate Policy, Loyola Law School, Los Angeles associated with Aix-Marseille University, France; LL.M., Loyola Law School, Los Angeles; 1 year experience preparing and reviewing CEQA/NEPA documents. Contribution: Air Quality, Noise, Transportation/Traffic.

Elizabeth Scott, Noise Technical Specialist. M.A., Environmental Studies, University of Southern California; B.A., Environmental Studies, University of Southern California; 8 years of Environmental experience. 6 years of Noise Technical Experience. Contribution: Noise and review.

Tina Sorvari, NEPA/CEQA Generalist. B.A., California State University, Sacramento; 17 years of environmental consulting experience. Contribution: Aesthetics, hazardous materials, utilities and service systems, and coordination.

Darrin Trageser, Air Quality and Climate Change Analyst. M.S., Atmospheric Sciences, University of California Davis; B.S., Atmospheric Sciences, University of Washington Seattle. 3 years experience as air quality and climate change specialist. Contribution: Air Quality, Climate Change.

Barbara Wolf, Technical Editor. M.A., Anthropology, University of Arizona; B.A., Geography and Anthropology, University of Southern Maine. 6 years technical editing of environmental compliance documents; 1 year experience as consultant environmental planner (generalist), Caltrans District 10; 1 year as consultant assisting climate change advisor at Caltrans Headquarters. Contribution: Editing.

4.4 WRECO

Analette Ochoa, P.E., QSD/P, ToR. Senior Associate. 23 years of experience in the fields of stormwater management and hydraulics. Contribution: Hydrology and Water Quality.

Chapter 5 References

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Appendix A List of Technical Studies Bound Separately

Caltrans

- Visual Assessment of the Butte City Bridge Replacement Project (January 8, 2018)
- Air Quality and Noise Analysis for the Sacramento River Bridge Replacement Project (January 9, 2018)
- Natural Environment Study (February 2018)
- Extended Phase I Report (October 2017)
- Archaeological Survey Report (January 2018)
- Historic Property Survey Report (January 2018)
- Drilling Plan for the Geotechnical Subsurface Investigation (February 26, 2015)
- Supplemental Structures Preliminary Geotechnical Report for Sacramento Bridge (May 5, 2016)
- Updated Initial Site Assessment (January 8, 2018)
- Floodplain Hydraulic Study for Glenn County State Route 162 – Bridge Replacement (October 20, 2017)
- Water Quality Assessment (January 8, 2018)
- Highway Operations Review (July 24, 2017)

ICF

- Section 4(f) Analysis (January 2018)
- Community Impact Assessment (January 2018)

Appendix B Section 4(f) Documentation



Section 4(f) Analysis

Butte City Bridge Project

Glenn County

03-GLE-162/PM 76.3 – 78.6

Federal Project No.: EA 03-3F060/E-FIS 0312000052

January 2018

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List of Abbreviated Terms

Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
FHWA	Federal Highway Administration
Park Property	Butte City Project Park Property
State Parks	California State Parks
SR	State Route
SRNWR	Sacramento River National Wildlife Refuge
TCE	Temporary construction easement
USC	United States Code
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service

Section 4(f) Analysis

Introduction

The California Department of Transportation (Caltrans), proposes to fully replace the Sacramento River Bridge (Bridge No. 11-0017) on State Route (SR) 162 in Glenn County with a new bridge constructed on a parallel alignment on either the north side (Alternative A2) or on the south side (Alternative C2) of the existing bridge, or on the existing alignment (Alternative D). The new bridge would be of reinforced concrete and approximately 4,389 feet long, providing two 12-foot-wide lanes and two 8-foot-wide shoulders. The approaches to the bridge will provide two 12-foot-wide lanes and two 8-foot-wide shoulders. In addition to replacing the Sacramento River Bridge and approaches, other work involves placing new traffic signage and striping, constructing new ditches, extending/placing new culverts and over-drains, placing new bridge approach guard rail, and reconstructing driveways and levee road connections. Possible work in Butte City may include curb and gutter work, striping for a bike lane, and construction of a sidewalk on one side of SR 162, along with curb ramps and new driveways. The existing highway lighting through Butte City will also be replaced in kind. The proposed project starts where SR 162 diverges east from SR 45 (Figure 1). Construction is anticipated to take up to a total of 500 days over three construction seasons. In-water work would occur during the dry season (June 1 to October 15) and work above the ordinary high water mark would occur outside that period.

A wildlife refuge, park property, and boat launch facility were identified within 0.5 mile of the proposed project, as shown on Figure 1. No other parks, recreational facilities, historic properties or wildlife or waterfowl refuges were identified within the 0.5-mile area.

Description of Section 4(f) Properties

Sacramento River National Wildlife Refuge

The Sacramento River National Wildlife Refuge (SRNWR) was established in 1989 by the U.S. Fish and Wildlife Service (USFWS) for the protection and restoration of riparian habitat along the river from Colusa north to Red Bluff. It is one of five NWRs and three wildlife management areas that make up the Sacramento National Wildlife Complex, owned and managed by the USFWS in California. There are 30 units within the SRNWR, with a total of 10,353 acres along 80 miles of the Sacramento River. The refuge consists of riparian habitat, wetlands, and uplands as well as walnut orchards. Twenty-four units in the SRNWR are open to the public for hunting, fishing, hiking, biking, wildlife observation, environmental education, and interpretation. There are no recreation fees and the refuge is available for day use only, opening 2 hours before sunrise and closing 1.5 hours after sunset (U.S. Fish and Wildlife Service 2017).

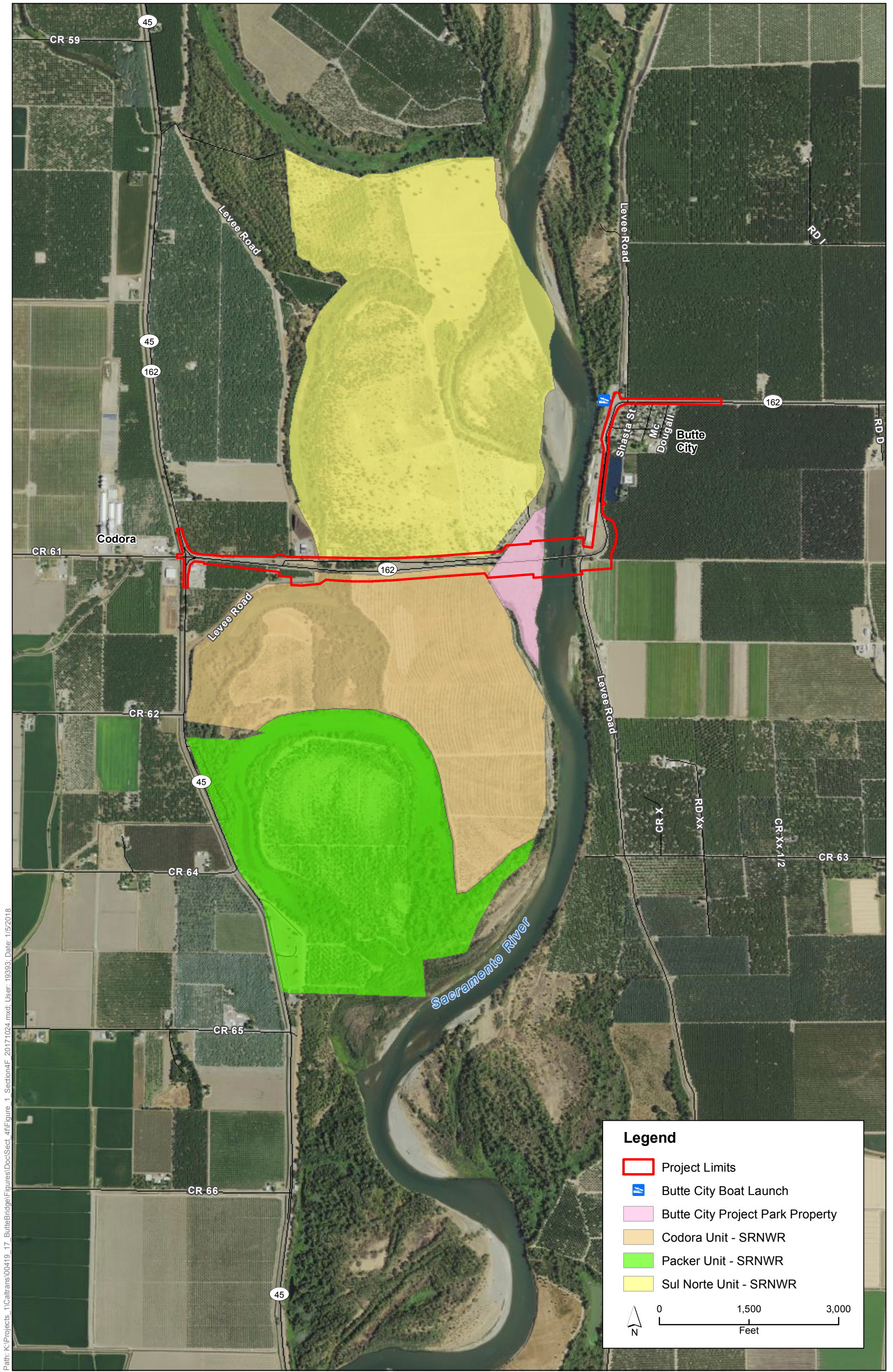
The bridge begins approximately 2,000 feet east of SR 45 and extends approximately 4,389 feet to the east bank of the Sacramento River. Two units of the SRNWR are adjacent to SR 162 in the project area: the Sul Norte Unit on the north and the Codora Unit on the south, as shown on Figure 1 and described below.

- The Sul Norte Unit comprises 590 acres and is accessed from SR 162 via an entrance road (formerly County Road 61), approximately 1,600 feet east of SR 45. The entrance road parallels SR 162 on the north and ends at the Sacramento River levee, the western boundary of the Sul Norte Unit. The entrance road continues east from the levee to the gravel parking area approximately 130 feet north of the west end of the bridge on SR 162. Figure 2 shows the public uses allowed on the unit and location of facilities. Facilities include the parking area, restrooms, picnic areas, and information kiosk. The entrance road is paved and gated at the parking area, but continues as a field road parallel to SR 162 and part of the trail system leading to the river. There are two trails in this unit, the North Loop (4 miles) and the South Loop (2.5 miles). The South loop is an accessible trail with a hunting blind reserved for disabled hunters. Trail users can cross under the bridge in two locations from the field road to access the Codora Unit, south of SR 162. The Sul Norte Unit can also be accessed by boat from the eastern bank of the river. Hunting is allowed in designated areas August 15 to May 31, and biking is allowed May 15 to August 15 (U.S. Fish and Wildlife Service 2015).
- The Codora Unit is 405 acres in size and accessed from the Sul Norte Unit parking area via the field road under the bridge. Activities allowed on this unit are shown on Figure 3 and are the same as those allowed on the Sul Norte Unit, except for hunting. Hunting in the Codora unit is limited to weekend junior hunts only (in designated areas from August 15 to May 31) and is closed to waterfowl hunting. The Sacramento River levee is also the western boundary of this unit and the adjacent area east of the levee is a “Safety Zone” closed to hunting. The Codora Unit is bound on the south by the Packer Unit and Packer Lake. Trails in the Codora Unit include the approximately 4.5-mile long Codora Loop. This unit can also be accessed by boat from the eastern bank of the river (U.S. Fish and Wildlife Service 2015).

Caltrans has an existing easement with USFWS for access to the existing rights-of-way for bridge maintenance as does California State Parks (State Parks) for access to the Butte City Project Park Property (Park Property). State Parks also has an easement with USFWS for access to parklands.

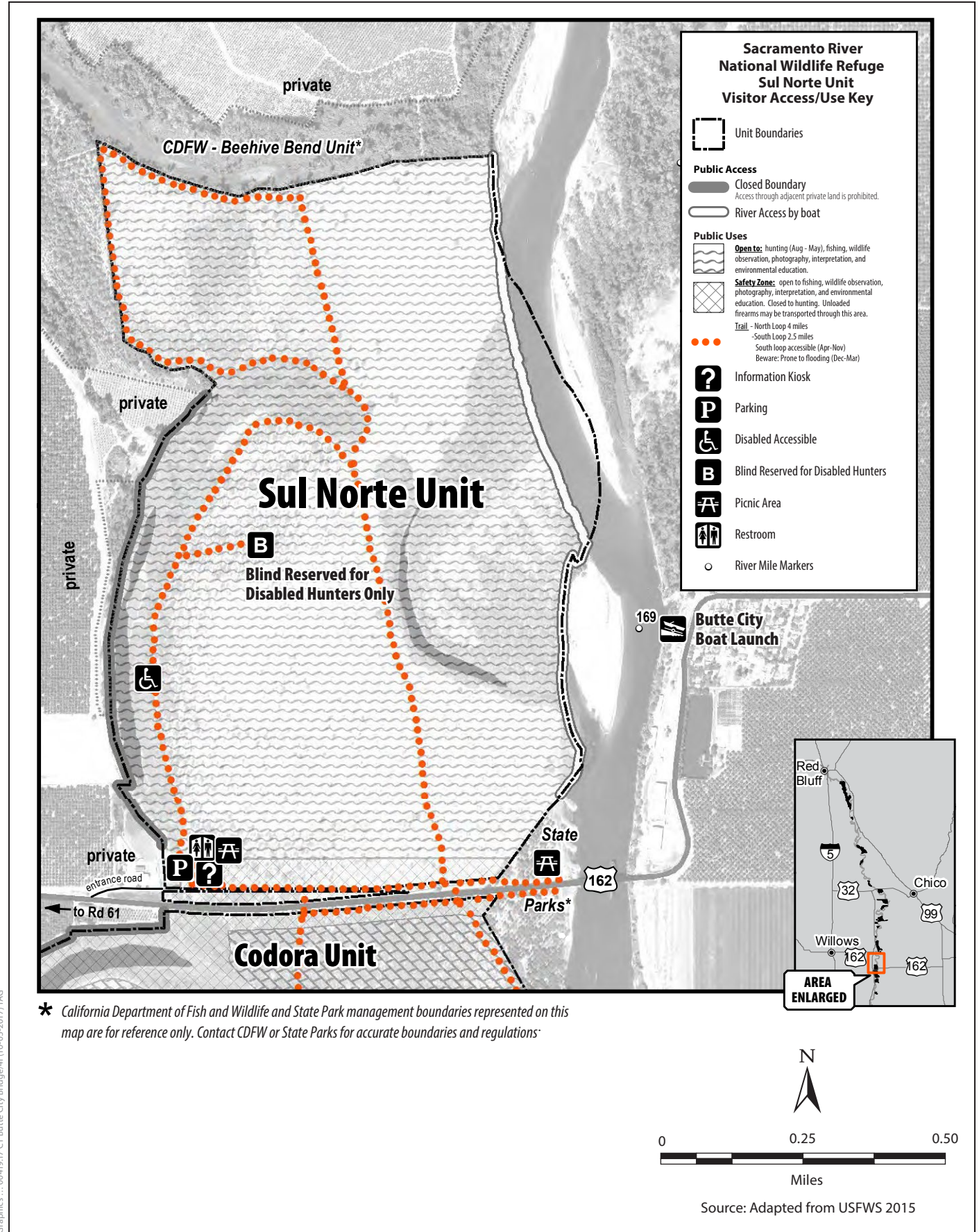
Butte City Project Park Property

The Park Property is a triangle-shaped area of approximately 37 acres located on both sides of SR 162 on the west bank of the Sacramento River (Figure 1). The Park Property is owned and managed by State Parks to provide public access to the river. At this time, the property is undeveloped but is available for fishing and undeveloped use (California State Parks 2017). State Parks’ plans for the property include developing up to 10 picnic sites, trails, interpretive services, and fishing facilities (California State Parks 2009). Currently, the property is accessible by boat from the river or by foot from the existing trails originating in the Sul Norte and Codora Units,



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Figure 1
Section 4(f) Resources - Butte City Bridge Project



* California Department of Fish and Wildlife and State Park management boundaries represented on this map are for reference only. Contact CDFW or State Parks for accurate boundaries and regulations.

Figure 2
Sul Norte Unit, Sacramento River National Wildlife Refuge

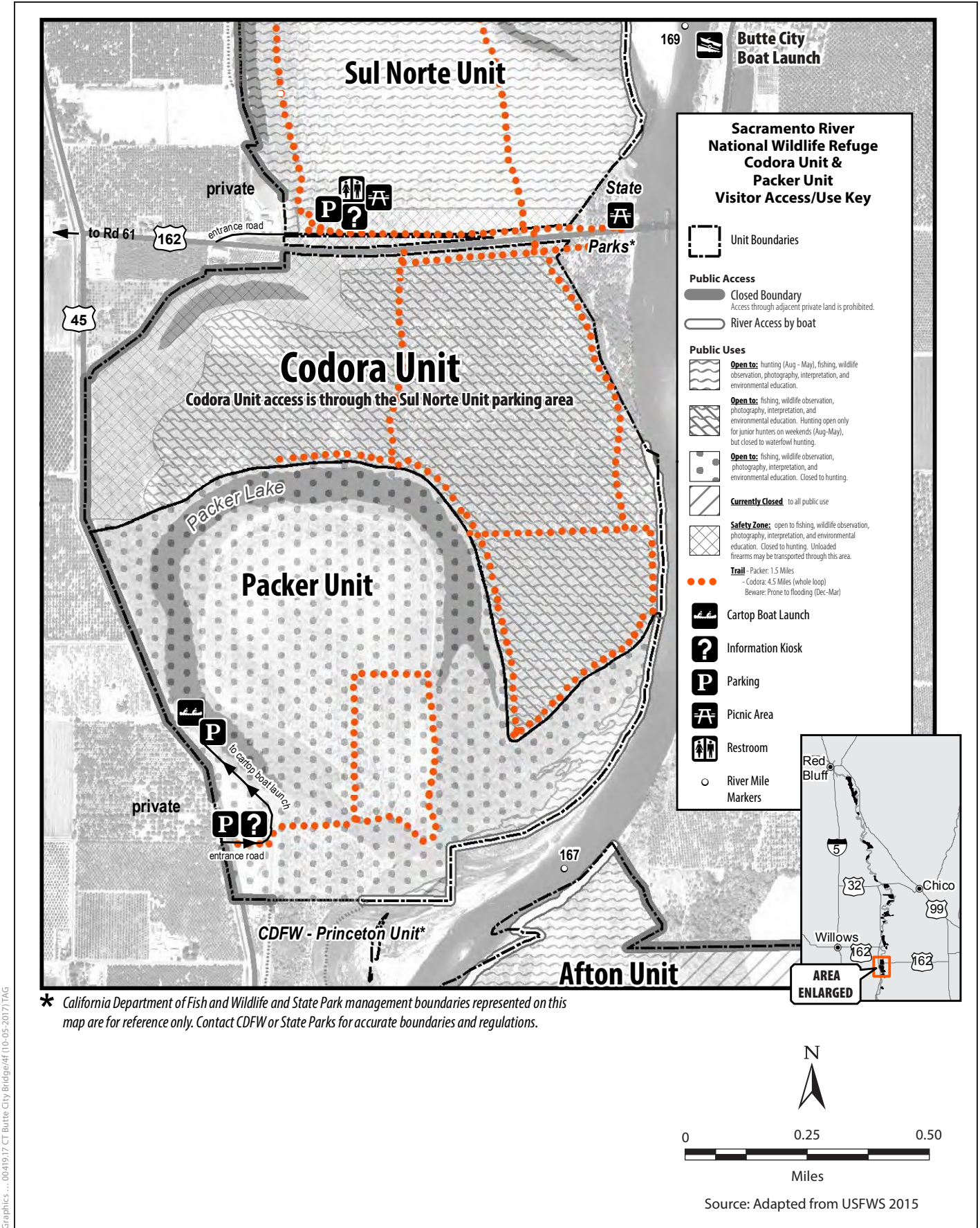


Figure 3
Codora Unit, Sacramento River National Wildlife Refuge

adjacent to and west of the park property. The only vehicle access to the Park Property is from the SRNWR entrance and the field road under an easement with USFWS. Caltrans also has an existing easement with State Parks for access to the existing rights-of-way for bridge maintenance.

Section 4(f) *De Minimis* Determination

This section of the document discusses *de minimis* impact determinations under Section 4(f). Section 6009(a) of SAFETEA-LU amended Section 4(f) legislation at 23 United States Code (USC) 138 and 49 USC 303 to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This amendment provides that once the U.S. Department of Transportation (USDOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. The Federal Highway Administration's (FHWA's) final rule on Section 4(f) *de minimis* findings is codified in 23 Code of Federal Regulations (CFR) 774.3 and CFR 774.17.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including *de minimis* impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

Three proposed build alternatives are being considered to replace the existing bridge. Each alternative would widen the roadway to provide two 12-foot-wide lanes, two 8-foot-wide shoulders, and improve the approaches on both ends of the bridge to conform to the new bridge alignment. All alternatives may include improvements in Butte City.

- Alternative A2 proposes to replace the bridge on a parallel alignment to the north of the existing bridge.
- Alternative C2 proposes to replace the bridge on a parallel alignment to the south of the existing bridge.
- Alternative D proposes to replace the bridge on the existing alignment.

The bridge begins approximately 2,000 feet east of SR 45 and extends approximately 4,389 feet to the east bank of the Sacramento River. As noted in the Introduction, improvements in Butte City may include replacing highway lighting in kind, and replacing curb, gutter, striping for a bike lane, a sidewalk on one side of SR 162, along with curb ramps and new driveways. Traffic would use the existing bridge while the new one is under construction.

Sacramento River National Wildlife Refuge

De Minimis Use

The SRNWR is a publicly owned wildlife refuge, open to the public, making it eligible for protection under Section 4(f). As shown on Figure 2, the entrance road provides access to the public parking area from SR 162. The only developed facilities are located at the parking area within the Sul Norte Unit, where the trails begin and end. The entrance road is gated at the parking area but continues as a field road parallel to SR 162 to the west bank of the Sacramento River. The field road is closed to public vehicle access but is open for pedestrian and bicycle use as part of the trail system. The field road is also used by USFWS to access areas within the units, Caltrans for access to the existing state rights-of-way, and State Parks for access to the Park Property. The Codora Unit (Figure 3) is accessed via the field road/trail from the Sul Norte Unit that crosses under the SR 162 bridge in two locations. The first is over 1,000 feet east of the parking area and the second is an additional 1,300 feet to the east.

Table 1 shows the acres of land acquisitions from the SRNWR necessary to replace the existing Sacramento River Bridge, by unit, including the area of temporary construction easement (TCE). Figure 4 shows the areas affected by right-of-way acquisition and TCE by alternative. The area permanently acquired from SRNWR would be permanently incorporated into the right-of-way of SR 162, which is a use under Section 4(f).

Table 1. Acres of Permanent Fee Acquisition and Temporary Construction Easement, Sacramento River National Wildlife Refuge*

	Sul Norte Unit	Codora Unit	Total
Permanent Fee Acquisition			
Alternative A2	5.69	0.00	5.69
Alternative C2	0.12	4.69	4.81
Alternative D	1.66	1.72	3.83
Temporary Construction Easement			
Alternative A2	3.33	4.80	8.13
Alternative C2	6.02	3.34	9.36
Alternative D	6.52	6.31	12.83

Source: California Department of Transportation 2017
 *All acreages are preliminary and will be refined during final design.

As shown in Table 1, all alternatives would require permanent acquisition of land from the SRNWR as well as a TCE. Permanent fee acquisition would range from 3.83 to 5.69 acres of land and 8.13 to 12.83 acres of TCE, depending on the alternative. Shifting the bridge alignments to the north or south would leave approximately 5.87 to 3.96 acres of existing right-of-way south or north of the new alignment, respectively. Portions of the excess right-of-way would be available for exchange with USFWS as part of the acquisition process. Alternative D replaces the bridge on its existing alignment requiring widening on either side of the road right-of-way without any excess right-of-way for exchange adjacent to refuge lands.

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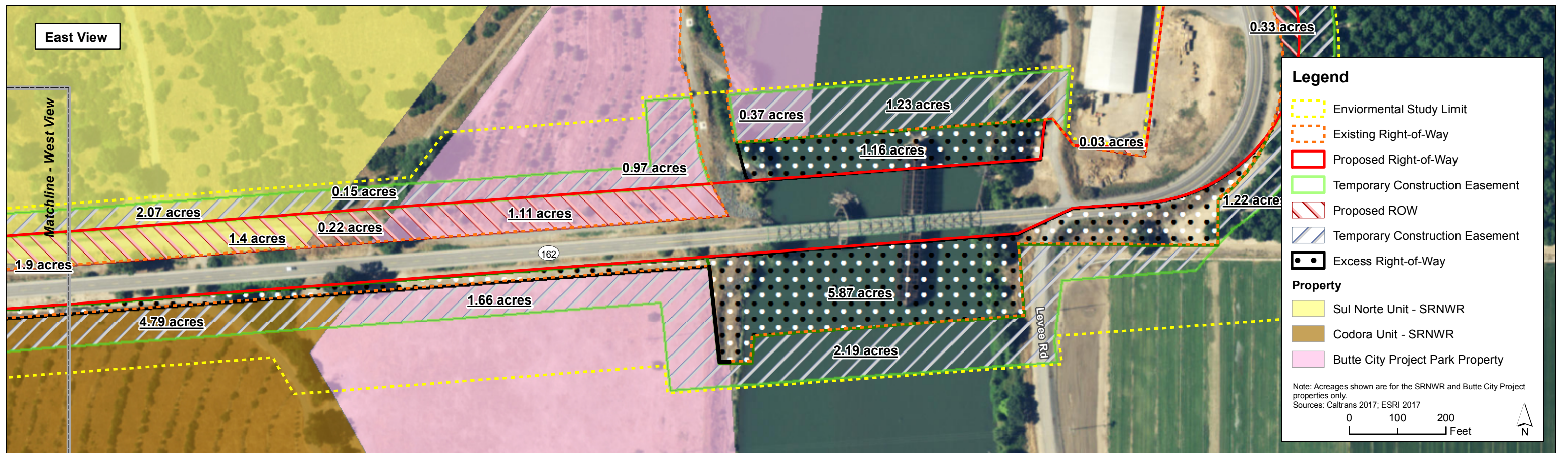
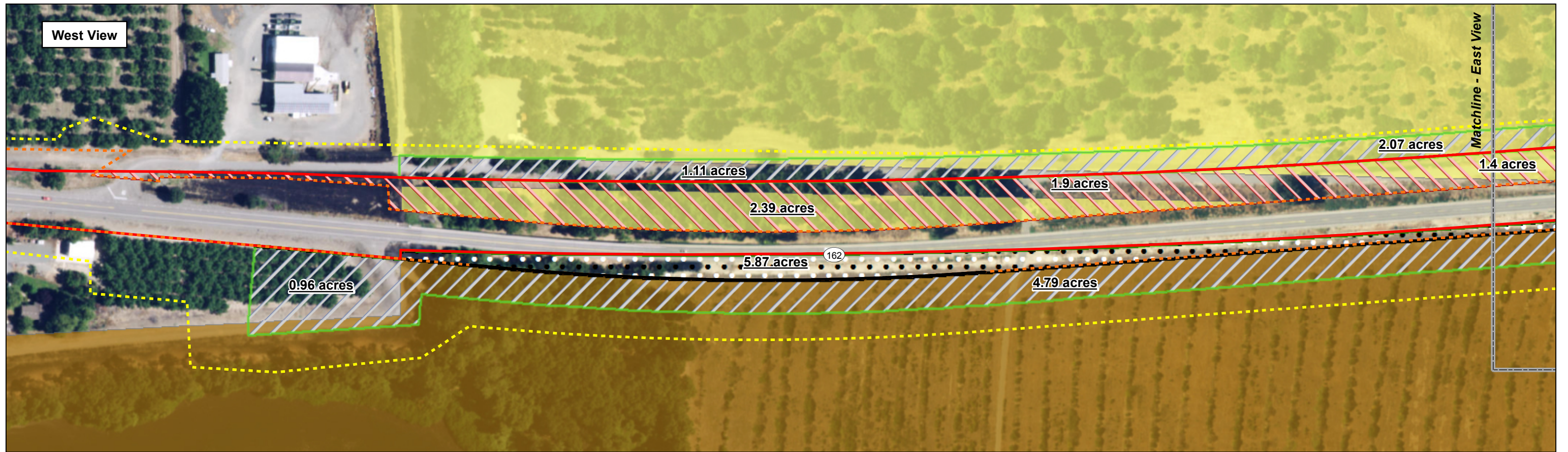


Figure 4a
Alternative A2 - Section 4(f) Use and Temporary Construction Easement

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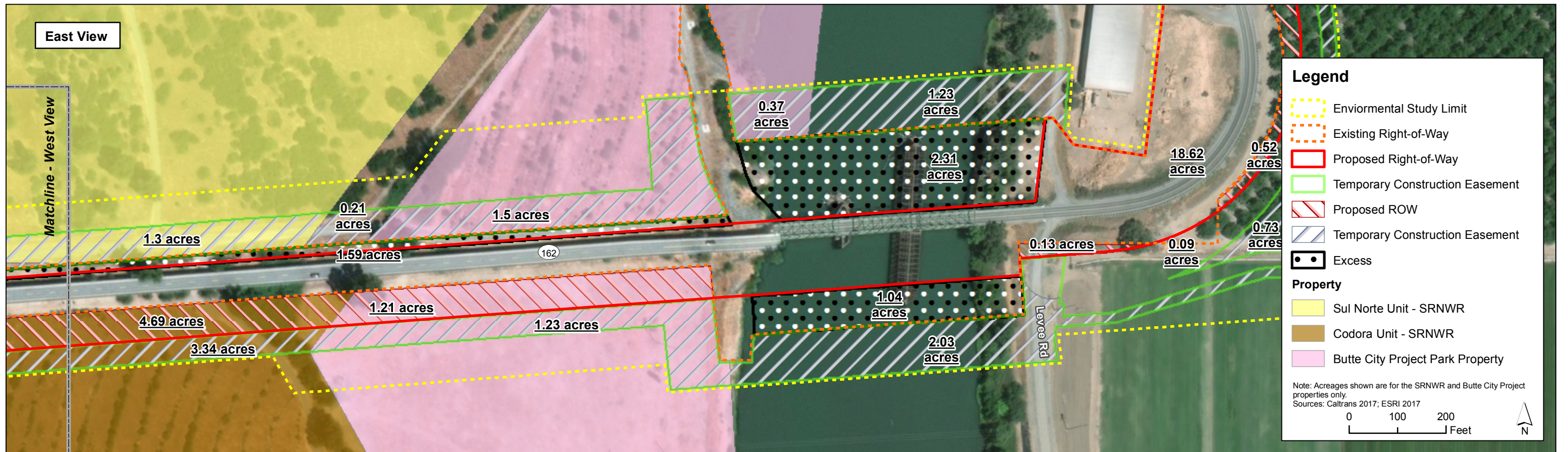
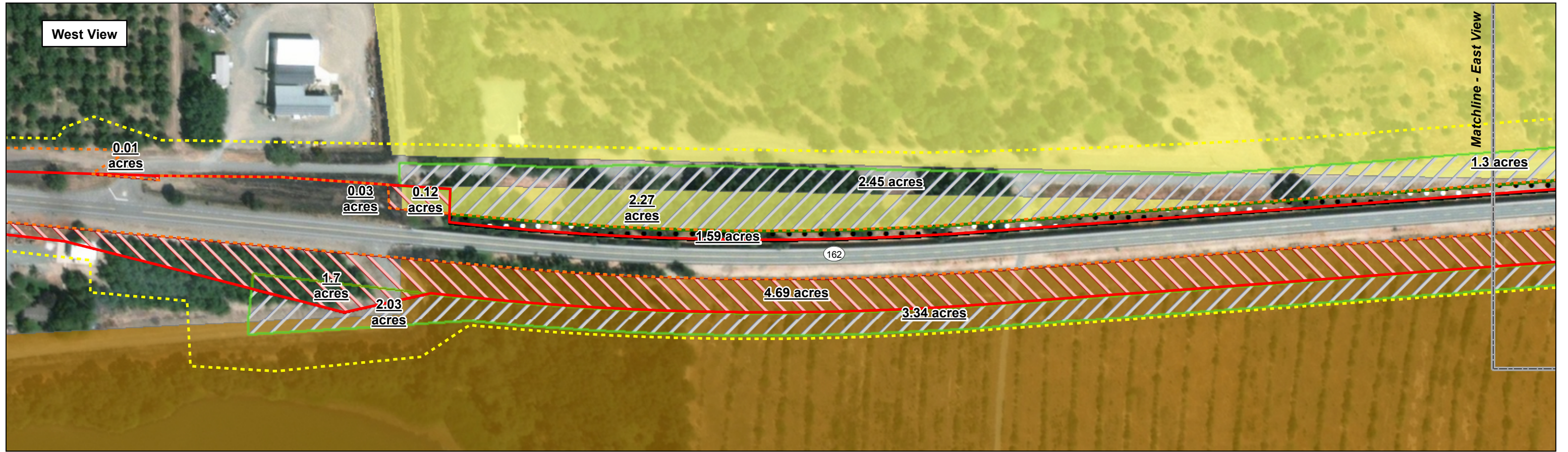


Figure 4b
Alternative C2 - Section 4(f) Use and Temporary Construction Easement

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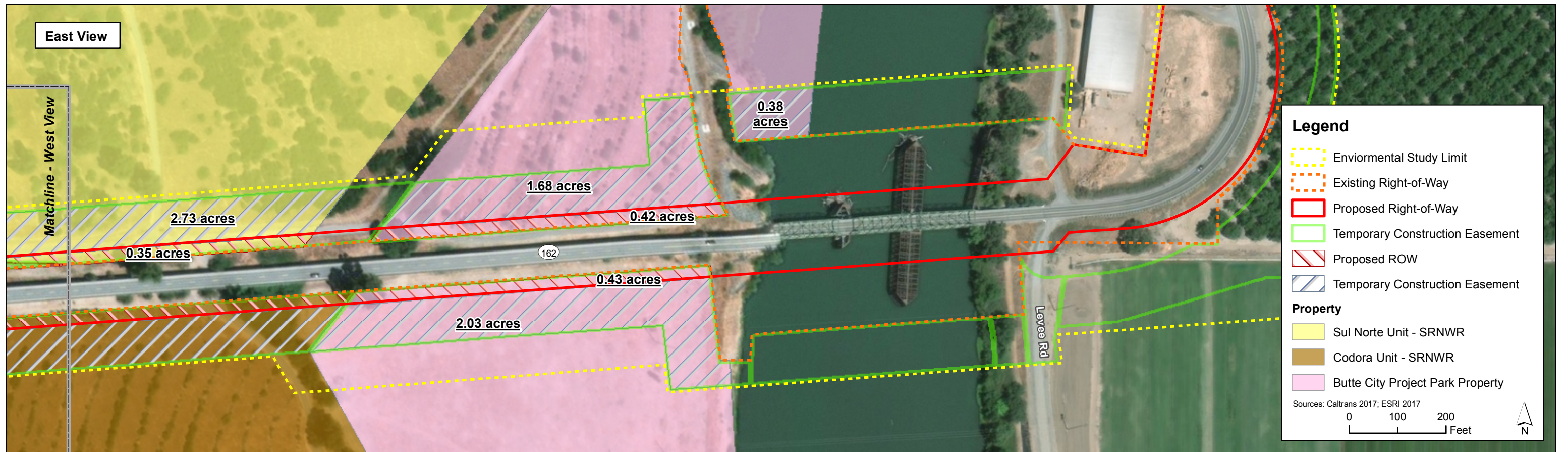
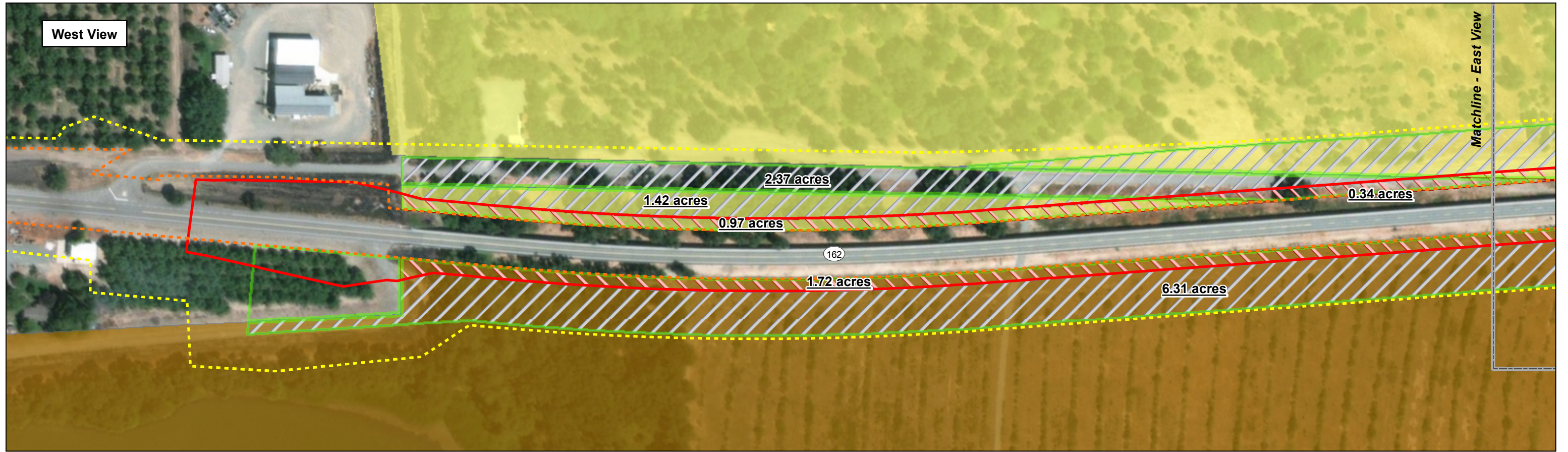


Figure 4c
Alternative D - Section 4(f) Use and Temporary Construction Easement

The TCE area may be used as a construction zone on either side of the bridge and for access to the existing right-of-way below the bridge using the existing field road. Access to the parking area and both units would be maintained for visitors at all times during the construction period. No land would be acquired from the parking area or affect the facilities in this area and the TCE does not encompass the parking area.

Under Alternatives A2 and C2, the entrance road intersection with SR 162 would be modified to conform to the increased shoulder and width, but would not require closure of the entrance road and access would be maintained at all times. The existing levee road connection south of SR 162 would be relocated to the west (outside the SRNWR) under all alternatives. A dirt road is located along the base of the levee on SRNWR lands and used by USFWS for refuge maintenance or other activities. Relocating the levee road connection would not require placing fill on USFWS land or affect the dirt road along the base of the levee.

The existing entrance to the SRNWR would be the main point of entry to the construction zone for workers and equipment to access the bridge and west bank of the river. The existing gate would be used to gain access and kept closed to prevent entry of unauthorized vehicles. Construction fencing would be installed around the TCE on both sides of the bridge to ensure the exclusion and safety of refuge visitors. Continued access for refuge visitors to the existing trail system within and between each unit would be maintained for the duration of construction under all alternatives.

Once bridge replacement is completed, the temporary construction fencing would be removed and the area restored and revegetated in coordination with USFWS.

Butte City Project Park Property

De Minimis Use

The Park Property is publicly owned and open to the public, making it eligible for protection under Section 4(f). The only existing access to the property is via the field road or trails in the SRNWR or by boat from the river. There is no direct access from SR 162. A dirt-surfaced road traverses the property boundaries north of SR 162. There are no roads in the property south of the bridge. The Park Property is undeveloped but is available for fishing and access to the river.

Table 2 shows the acres of land acquisitions from the Park Property necessary to replace the Sacramento River Bridge, including the area of TCEs. Figure 4 shows the area affected by right-of-way acquisition and TCE for each alternative. All three alternatives require acquisition of right-of-way from the property.

Table 2. Acres of Permanent Fee Acquisition and Temporary Construction Easement, Butte City Project Park Property*

Alternative	Permanent Fee Acquisition	Temporary Construction Easement
Alternative A2	1.11	3.01
Alternative C2	1.21	3.10
Alternative D	0.85	4.09

Source: California Department of Transportation 2017
 *All acreages are preliminary and will be refined during final design.

Similar to the discussion for the SRNWR, right-of-way would be required to replace the bridge on parallel or existing alignments. All three alternatives require acquisition of approximately one acre or slightly less, as shown in Table 2. Excess right-of-way would also be available for exchange with State Parks including under Alternative D, the acres available for exchange would vary by alternative.

The TCE areas would allow for the construction zone on either side of the bridge as well as access to the bridge, including pier locations, and provide direct access to the river for construction of the trestle and falsework. The TCE may also be used as a contractor staging area and would encompass a total of approximately 3 to 4 acres. The TCE would be fenced and access would be maintained at all times, as described for the SRNWR. Pedestrian access between the northern and southern portions of the property would be from the established access point in the SRNWR. Passage beneath the bridge for boaters on the river would also be maintained while construction activities are underway.

Once bridge replacement is completed, the temporary construction fencing would be removed and the area restored and revegetated in coordination with State Parks.

Conclusions

Given the analysis of the proposed project, a *de minimis* impact finding is proposed for the SRNWR and Park Property. Under all alternatives, the Section 4(f) use of the area adjacent to SR 162 and the existing Sacramento River Bridge for the new right-of-way would not adversely affect the activities, features, or attributes of the overall SRNWR or the Park Property.

The Section 4(f) use would temporarily affect portions of land north or south of SR 162 during construction, and would permanently incorporate 3.83 to 5.69 acres of SRNWR land and 0.85 to 1.21 acres of the Park Property into the SR 162 right-of-way (Table 3). Compared to the overall size of the two units in the SRNWR (approximately 995 acres), 3.83 to 5.69 acres is a small percentage of land (0.38 to 0.57 percent, respectively) that would be used by the project. Exchanging acres of existing right-of-way for acres of new right-of-way would further reduce the amount of land used for the project. For the Park Property, 1.21 acre or less is a small percentage of land that would be used by the project.

Table 3. Acres of Permanent Fee Acquisition and Temporary Construction Easement*

Property/Alternative	Permanent Acquisition	Temporary Construction Easement
Sacramento River National Wildlife Refuge		
Alternative A2	4.21	8.18
Alternative C2	5.00	9.31
Alternative D	3.83	12.83
Butte City Project Park Property		
Alternative A2	1.11	3.01
Alternative C2	1.21	3.10
Alternative D	0.85	4.09

*All acreages are preliminary and will be refined during final design.

Bridge replacement would not interfere with SRNWR's function for the preservation and restoration of riparian habitat along the river, and would be coordinated with USFWS. The bridge replacement would not affect future development of the Park Property or prevent access to the property or river.

Therefore, together with the minimization measures listed below, Caltrans has determined implementation of the project as proposed would only have *de minimis* impacts on the Section 4(f) properties, SRNWR and Park Property.

Minimization Measures

The following measures are proposed to minimize harm to the SRNWR and Park Property.

- Access to the SRNWR from SR 162 will be maintained at all times. If access is interrupted to accommodate construction, the contractor will be required to provide alternative vehicular access around the construction area. In the event temporary interruptions to access are necessary, Caltrans will coordinate in advance with USFWS and State Parks.
- At least one of the existing crossings under the bridge will be maintained to allow access to the Codora Unit and Park Property south of SR 162. If both existing crossings must be closed, a temporary crossing will be established in coordination with USFWS and State Parks will be notified.
- The gate on the field road will be kept closed at times when workers and equipment do not need to enter or exit. If it is necessary to leave the gate open, such as for material or equipment deliveries, the contractor will station a worker at the gate to control access through the area.

- Workers and equipment will not travel on SRNWR or Park Property lands outside the TCEs. In the event there is any damage to the field road as a result of construction vehicles and equipment traveling to the construction area, the damage will be repaired.
- In the event that any inadvertent damage occurs to the SRNWR lands or facilities, or to the Park Property, the disturbed or damaged area will be restored to the condition that existed prior to the construction activities or better.

Public Review Process

Before making a *de minimis* determination, the public and agencies must have the opportunity to review and comment on the proposed *de minimis* impacts, either through review of the environmental document or participation in the public hearing on the environmental document as required under the regulations at 23 CFR 774.5(b)(2). The documentation in this report will be made available for public review in the draft initial study/environmental assessment, satisfying the public review requirements for the proposed *de minimis* determination. After public review and before the determination can be finalized, written concurrence is needed from USFWS and State Parks that the Section 4(f) use of the SRNWR and Park Property will not adversely affect the activities, features, or attributes that make the areas eligible for protection under Section 4(f). The final determination and concurrence letter will be included in the final initial study/environmental assessment document.

Coordination with Agencies Having Jurisdiction

Coordination with USFWS and State Parks, the agencies with jurisdiction, have been initiated and Caltrans will inform USFWS, Glenn County, and State Parks of the impacts of the proposed project described in this memorandum, discuss the measures to minimize impacts, and Caltrans' intention to adopt a *de minimis* determination. Written concurrence from the USFWS, Glenn County, and State Parks that the proposed project would have *de minimis* impacts on the SRNWR and Park Property will be sought after the public comment period and will be included in the final environmental document.

Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determination

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or next to the project area that do not trigger Section 4(f) protection because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not

eligible historic properties, or 4) the project does not permanently use the property and does not hinder the preservation of the property.

Butte City Boat Launch

The Butte City Boat Launch is located north of SR 162 on the east bank of the Sacramento River in Butte City. The boat launch is owned and maintained by Glenn County and eligible for protection under Section 4(f). The boat launch property is approximately 1.2 acres in size. There is a \$5 fee per launch/retrieval or a \$50 annual permit that provides for unlimited use (Glenn County 2017). Facilities include restrooms, a paved parking lot that accommodates boat trailers, a boat ramp, and picnic tables (Sacramento River Recreation and Access Guide 2017). The boat launch is located on the riverside of the levee and accessed via a paved entrance road off SR 162 that also provides access to the eastern levee, approximately 0.5 mile north of the Sacramento River Bridge. The entrance road is higher than the existing roadway elevation as it crosses over the levee.

All three build alternatives include construction of improvements through Butte City, that may include curb, gutter, striping for a bike lane, and a sidewalk along the east side of SR 162. Other improvements include repairing failed pavement areas within lanes and shoulders, and repaving SR 162 with new asphalt concrete. A TCE would be required at the entrance to the boat launch off SR 162 to allow for the transition between the new pavement and change in elevation at the entrance. The TCE would include approximately 6,860 square feet of Glenn County property and acquisition of 579 square feet to accommodate the increased shoulder and lane width. The boat launch area is outside the TCE on the opposite side of the levee and would not be affected.

Construction activities necessary at the entrance road are anticipated to be needed for the duration of construction activities on SR 162 east of the bridge. Access to the boat launch would be maintained at all times and there would be no change in access to the boat launch.

Direct views from the boat launch to the construction activities at the bridge are limited by vegetation along the riverbank. Boaters on the river and anglers on the riverbank could have direct views of activities at the bridge, but given the distance of 0.5 mile, the views would not detract from boating or fishing. Boaters or anglers traveling to the boat launch on SR 162 would have direct views of construction activities as they travel through the construction zones along the roadway. Boaters and anglers could also experience temporary construction-related noise effects, primarily related to improvements on SR 162 through Butte City. The boat launch, riverbank, and river are separated from the construction activities on SR 162 by the levee and existing vegetation. The temporary construction-related effects would not interfere with use of the facilities at the boat launch or the recreational experience of boating, fishing, or other river-related activities.

Conclusion

The proposed project would not cause a constructive use (identified in 23 CFR 774.15) of the Butte City Boat Launch because the proximity impacts will not substantially impair the protected activities, features, or attributes of the boat launch.

The Butte City Boat Launch is a Section 4(f) property, but no “use” will occur. Therefore, the provisions of Section 4(f) do not apply.

Section 6(f) Consideration

State and local governments often obtain grants through the Land and Water Conservation Fund Act (16 USC 4601-8[f] and 36 CFR 59.1) to acquire or make improvements to parks and recreation areas. Section 6(f) of the act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the U.S. Department of the Interior’s National Park Service. Section 6(f) directs the Department of the Interior to ensure that replacement lands of comparable value and function, location, and usefulness are provided as conditions to such conversions.

The California State Parks Land and Water Conservation Fund grants list was reviewed for Glenn County (California State Parks 2013). No recreational facilities in the project vicinity were found to have been developed or improved with grants from the Land and Water Conservation Fund Act.

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Appendix C Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION

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May 2017

**NON-DISCRIMINATION
POLICY STATEMENT**

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures *"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."*

Related federal statutes and state law further those protections to include sex, disability, religion, sexual orientation, and age.

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To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, 1823 14th Street, MS-79, Sacramento, CA 95811. Telephone (916) 324-8379, TTY 711, email Title.VI@dot.ca.gov, or visit the website www.dot.ca.gov.

A handwritten signature in blue ink, appearing to read "Malcolm Dougherty".

MALCOLM DOUGHERTY
Director

*"Provide a safe, sustainable, integrated and efficient transportation system
to enhance California's economy and livability"*

Appendix D Avoidance Minimization, and/or Mitigation Summary

Appendix D Avoidance Minimization, and/or Mitigation Summary

D.1 Aesthetics

Where appropriate and to the degree possible, implementation of the following minimization measures are incorporated into the project and would diminish any possible visual impacts that may occur as a result of the project.

- Nearby bridges should be examined for their aesthetic characteristics. Materials, texture, and colors have already been established at those locations and should be continued and included on the bridge for this project.
- Choose railing that complements the surrounding area and allows views of the river and nearby landscape from the bridge.

Complete streets throughout the town will include sidewalks with curb and gutter. Work in and near Butte City would be limited to daytime whenever feasible, to reduce nighttime construction lighting impact on nearby residences. All lights will be screened and directed downward toward work activities and away from the night sky, particularly residential areas, to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible.

- All disturbed areas will receive soil stabilization measures that may include erosion control (hydroseed), bonded fiber matrix, compost, and rolled erosion control product (netting/blanket). Materials and locations will be determined during the PS&E phase.
- Areas that will require ground disturbance by removing vegetation will be restored before completion of the construction project. The trees and vegetation should be protected, where feasible. Vegetation removal will be limited to only that necessary to construct the project.
- Any vegetation that is removed will be replaced with appropriate vegetation that is indigenous to the area.
- Special care will need to be given to any work that is done near the river, and any vegetation that is removed will need to be replaced with appropriate vegetation that is indigenous to the area.
- All disturbed areas, including access roads, will be re-graded to their pre-construction profiles and contours.
- Drainage work for culvert extensions and ditch relocation may require some channel restoration work. This will require BMPs and soil stabilization. This work will be conducted under the guidance of the District's Landscape Architect.
- Vegetation control under new guardrail systems should be considered where repetitive maintenance activity to control vegetation would otherwise be required. The need for, and

types of, vegetation control must be determined on a location-by-location basis with input from local Maintenance staff as well as the Landscape Architecture unit.

- If the project requires equipment/staging areas, Caltrans Special Provision, Section 5.1 indicates that the contractor will be responsible for securing locations for staging and storage. At the end of construction all areas used for staging, access, or other construction activities will be repaired pursuant to Section 5-1.36 “Property and Facility Preservation.”

D.2 Air Quality

The following avoidance and minimization measures are implemented as part of Caltrans’ standard procedures.

- The construction contractor must comply with the 2015 Caltrans Standard Specifications in Section 14. Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including the Glenn County Air Pollution Control District regulations and local ordinances. Section 14-11.04 is directed at controlling dust.
- Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.
- A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.
- Environmentally sensitive areas will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.
- Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.
- All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.
- Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

D.3 Biological Resources

D.3.1 Protect Giant Garter Snake

Caltrans standard construction BMPs will protect overall water quality and prevent any effects to suitable GGS habitat downstream from the project. Specific protection measures for GGS will include:

- A preconstruction survey along the paved access road, within 200 feet of the oxbow lake to the south, will be conducted by a USFWS-approved biologist. Surveys will occur immediately prior to the initiation of any ground disturbing activities, and will consist of walking transects while conducting visual encounter surveys within areas subject to vegetation clearing, grubbing, grading, cut and fill, or other ground-disturbing activities.
- No construction activities, staging, or stockpiling will occur within suitable upland habitat (within 200 feet of the unnamed oxbow lake). All vehicles and equipment will stay on the paved access road, and staging and stockpiling will only occur east of the valley oak woodlands.
- Wildlife exclusion fencing will be installed to prevent GGS from entering the construction site prior to any construction activities. Exclusion fencing will be placed 200 feet from the potential aquatic habitat during the GGS active season before vegetation removal. Fencing will be made of ERTEC wildlife exclusion fencing or comparable material. Environmentally sensitive area (ESA) signage will be posted describing GGS (with photo), non-admittance, consequences for non-compliance, and acting agency.
- A USFWS-approved biologist will inspect exclusion fencing weekly, and the fencing will be maintained until the end of construction. If GGS are found on-site during construction, activities will stop until the GGS leaves the construction area on its own or until a USFWS-approved biologist moves the snake out of the construction footprint. USFWS will be notified within 24 hours of any GGS observations. No handling or capture of GGS will occur without authorization from USFWS.
- Pile driving on the viaduct will start in May during the GGS active season. Construction will start on the west end of the bridge, which is closest to potential GGS aquatic and upland habitat. Construction will progress to the east, away from GGS habitat. Construction will be more than 1,000 feet from upland habitat by the time of winter torpor. With pile driving occurring during the active season, sensitive individuals should choose not to enter torpor in areas disturbed by vibrations and noise caused by the pile driving activities.

D.3.2 Protect Valley Elderberry Longhorn Beetle and its Habitat

The following avoidance and minimization measures will be implemented prior to and during construction to protect VELB and its habitat in the vicinity of project activities.

- **Fencing.** All areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible. Fencing will be inspected daily by the contract biologist and maintained by construction staff under the biologist's supervision.
- **Worker education.** A USFWS-qualified biologist will provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance.
- **Construction monitoring.** A USFWS-qualified biologist will monitor the work area at appropriate project intervals to assure that all avoidance and minimization measures are implemented.
- **Trimming.** In order to avoid and minimize adverse effects to VELB when trimming, trimming will occur between November and February and will avoid the removal of any branches or stems that are equal to or greater than 1 inch in diameter.
- **Chemical Usage.** Herbicides will not be used within the dripline of the shrub. Insecticides will not be used within 98 feet (30 meters) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method.
- **Erosion Control and Revegetation.** Erosion control will be implemented and the affected area will be revegetated where feasible with appropriate native plants.
- **Transplanting.** All elderberry shrubs with stems greater than 1 inch in diameter will be transplanted following the most current version of the ANSI A300 guidelines for transplanting.

D.3.3 Avoid Impacts on Nesting Birds

Caltrans will implement the following avoidance and minimization measures to reduce potential impacts on migratory birds protected under the MBTA.

- Tree and shrub removal will be conducted outside of the nesting season, between September 31 and January 31. If tree and shrub removal cannot be performed outside the nesting season, than a pre-construction nesting bird survey will be conducted within the project area and up to 0.5 mile from the project area. Buffer zones will be established for any active nests identified, as described below.
- Tree removal will be completed prior to the start of construction. There will be no potential tree nesting habitat within the construction zone.
- Construction on the viaduct will begin as close to February 1 as possible, to prevent birds from nesting in areas affected by construction noise.
- All temporary impacts will be restored to pre-project conditions.
- Within 0.5 mile of the bridge, bird surveys will be conducted during the breeding season to locate active nests.

- During construction, if an active nest is discovered that is within a physical, visual, or auditory disturbance area, a buffer zone will be established such that nesting and rearing is not disturbed (typically 250 ft. for raptors and 100 ft. for other birds). As necessary, a qualified biologist will coordinate with CDFW when establishing a buffer zone.
- Prior to the demolition of the existing bridge, exclusion devices will be installed to prevent birds from nesting on the bridge. Regular inspections will occur by a qualified biologist to ensure that the exclusion is functioning properly.
- If signs of stress or nest abandonment are observed, CDFW will be consulted.
- If an active bank swallow colony is located within 0.5 mile of project activities, a qualified biologist will monitor the colony during initial pile driving activities. If no disturbance is observed, monitoring will cease. If disturbance is observed, CDFW will be notified.

D.3.4 Avoid Impacts on Swainson's Hawk

Species-specific measures will be implemented to avoid and minimize effects on Swainson's hawks:

- **Pre-construction Swainson's Hawk Nesting Surveys.** If project activity is scheduled to occur during the raptor nesting season (February 1–September 31), focused surveys for Swainson's hawk will be conducted in accordance with *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). Surveys for Swainson's hawk nests will be conducted by a qualified biologist before the start of project construction to identify active nests within the project footprint and vicinity. Surveys will be conducted no more than 30 days before the start of construction and will include all accessible areas of suitable nesting habitat located within 0.5 mile of the project footprint. If no active nests are found, no further mitigation will be required.
- **Implement Swainson's Hawk Avoidance Buffers.** If active Swainson's hawk nests are located during pre-construction surveys, Caltrans will maintain a buffer in consultation with CDFW. No project activity will begin in the buffer area until a qualified biologist confirms that the nest is no longer active. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer will not be likely to adversely affect the adults or their young.

D.3.5 Avoid and Minimize Impacts on Roosting Bats

Caltrans will implement the following avoidance and minimization measures to reduce potential impacts on roosting bats.

- Exclusion measures will be required for roosting bats prior to the demolition of the existing bridge. Exclusion of bats from roost sites will be done after August 15 and prior to April 15 to avoid impacts to maternity colonies. Exclusion will be accomplished using physical exclusion methods, acoustic exclusion, or a combination of both.

- Acoustic surveys will be conducted for bats in the summer of 2019 to verify the species of bats present and to estimate the size of the population occupying the bridge, so as to establish appropriate work windows and to install appropriate amounts of bat habitat into the new bridge.
- Potential options to mitigate noise impacts to bats include temporary sound walls that do not impact bat flight paths and/or bat exclusion during the length of
- pile driving activities. If bats are excluded prior to the installation of bat habitat on the new bridge, temporary bat boxes will be installed to provide interim roosting habitat.
- A qualified biologist will monitor during construction as needed.
- Trees will be removed between October 2 and February 14 to prevent impacts to bats during their breeding and maternity season.
- All riparian and oak woodland habitat will be revegetated after construction is complete.
- Bat habitat will be installed into the new bridge to replace habitat lost in the existing bridge

D.3.6 Minimize Impacts on Riparian Communities and Oak Woodlands

The following measures will be implemented to avoid and minimize potential impacts to riparian forest and oak woodland communities that will be subject to temporary ground disturbances.

Avoid ground disturbances near riparian and oak woodland habitats. Caltrans will avoid, to the maximum extent feasible, construction-related ground disturbances (including installation of exclusion fencing) beneath the dripline of any tree within identified riparian and oak woodland habitat that is not planned for removal (e.g., within the temporary impact footprint or adjacent to the project footprint) through installation of ESA fencing. If project-related ground disturbances cannot be avoided in these areas, Caltrans will protect individual trees from potential damage from mechanized equipment by affixing wooden slats, or other similarly protective material, as a complete physical barrier around the trunk of potentially affected trees for the duration of equipment use in proximity. For oak trees, Caltrans will consult with Glenn County to determine whether additional measures, including potential oak compensation, would be necessary for trees affected within the dripline.

- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. Where possible, trees will be trimmed instead of removed to gain access to the work sites.
- All temporary impacts within riparian and oak woodland habitat will be restored to pre-project conditions.

D.3.7 Aquatic Sound Attenuation Devices for the In-Water 60-inch Piles

Furnish, install, operate, and maintain an aquatic sound attenuation system to reduce noise generated by driving 60-inch piles in the water.

Approved aquatic sound attenuation systems include:

- Air bubble curtain used with isolation casing (confined air bubble curtain).

With approval from the NMFS, the USFWS, and CDFW, the following aquatic sound attenuation systems may be used:

- De-watered attenuation casing
- De-watered cofferdam

The contractor will be required to submit working drawings and the supplement for sound attenuation system to the Caltrans Engineer, and shall include the following:

- Complete details of the system including mechanical and structural details
- Details of anchorage components, air compressors, supply lines, distribution manifolds, aeration pipes and frames
- Details of proposed means of isolating noise-producing systems on the driving platform
- Details of meters gauges, and recording devices
- Details of the manufacturer's recommendations for the installation of the flow meters in conditions of laminar flow and non-laminar flow.

The supplement to the working drawings shall include the following:

- Documentation of previous successful use of the system to be used for sound attenuation
- Materials list including name of manufacturer and the source, model number, description, and standard of manufacture
- Manufacturer's descriptive data and catalog cuts for all products proposed for the system including air compressors

The engineer will be required to inspect the sound attenuation system for proper operation before each deployment and as necessary during deployment. Proper operation during deployment will be determined by the gauges in the monitoring system and by other methods determined by the engineer. Air pressure and air flow meters and gauges will be calibrated by a private laboratory approved by the Caltrans engineer prior to use in the air bubble curtain system. The condition of the sound attenuation system will be monitored and daily inspection reports will be prepared during pile installation operations and no less than every other day during periods of no activity.

The approved sound attenuation system must be operating prior to beginning pile driving at any given pile location. If the attenuation system fails, pile driving shall immediately stop and may not resume at that location until it is again operating. A sound attenuation system is not required for pile or casing installation using a vibratory hammer. Pile driving equipment shall be isolated from the platform it is on. The isolation shall be such that noise from the pile driving operation is not transmitted through the platform to the water. The platform supporting the pile driving equipment is not required to be contained within the attenuation system.

D.3.8 In-Water Work Window

The recommended in-water work for avoiding effects to listed salmonids and green sturgeon in the Sacramento River is between June 1 and October 15. Any work occurring below the OHWM of the Sacramento River within the project site, including barge operation, cofferdam installation and removal, and removal and installation of piles and the new fender system, shall occur within this work window of any construction season, unless earlier or later dates for in-channel construction activities are approved by CDFW, USFWS, and NMFS. By requiring contractors to adhere to these dates for in-channel construction, Caltrans will avoid and minimize project effects on sensitive life stages of listed fish species.

D.3.9 Containment Measures/Construction Site Best Management Practices

The Contractor shall implement mitigation measures so as to contain construction related material in manageable locations and prevent debris from entering surface waters during in-water work and for construction operations, outside of receiving waters.

BMPs utilized for erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters receiving waters. Areas where a disturbance of soil has occurred will be stabilized appropriately and approved by the Central Valley RWQCB prior to filing the Notice of Termination. BMP options and the selected mitigation measures deployed which relate to in-water work will be considered, evaluated, and dependent on factors such as field conditions, changes to construction strategies, and regulatory requirements in order to protect the beneficial uses of receiving waters. The project design team may specify BMPs to be utilized during construction in addition to, or in place of, other temporary measures selected by the Contractor.

Compliance with all construction site BMPs specified in the approved Water Pollution Control Program (WPCP) and any other permit conditions is mandatory to minimize the introduction of construction related contaminants and sediment to receiving waters. In order to achieve this and reduce the potential for discharge, the Contractor shall follow all applicable guidelines and requirements in the Standard Specifications (2015 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water. Project specific BMPs shall address (among other things) soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices and will be based on the best conventional and best available technology. Caltrans staff and the Contractor shall perform routine inspections of the construction area to verify that field BMPs are properly implemented, maintained, and are operating effectively and as designed. BMPs and mitigation measures selected must meet the standards and objectives to minimize water pollution impacts set forth in the 2015 CSS and shall include (but not be limited to) the following:

- Conduct all in-water work within streams that provide habitat for special-status fish species (Sacramento River) between June 1 and October 15.

- Use only equipment in good working order and free of dripping or leaking engine fluids.
- Conduct any necessary equipment washing where water is prevented from flowing into MS4 drainage conveyance systems and receiving waters.
- An “emergency response plan” will be prepared and submitted to NMFS and CDFW for review and approval at least 14 days prior to conducting any construction work. A spill prevention control and countermeasures plan will be onsite and in place to handle any topside spills. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan.
- BMPs for spill containment measures (plastic sheeting, absorbent pads and/or other containment devices) will be utilized during all barge-mounted construction activities. BMPs will be deployed around and beneath all over-water or barge-mounted construction equipment.
- Supplemental equipment will be on-site to collect and remove any spills.
- Prevent discharge of turbid water to the Sacramento River during any construction activities by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration areas, and/or treating the water in a manner to ensure that discharges conform to the water quality requirements of the waste discharge permit issued by the Central Valley RWQCB prior to entering receiving waters.

D.3.10 Minimize Turbidity in the Sacramento River

Caltrans will require the construction contractor to monitor turbidity levels in the Sacramento River during in-water construction activities (e.g., pile driving, extraction of temporary sheet piles used for cofferdams, placement of RSP). Turbidity will be measured using standard techniques upstream and downstream of the construction area to determine whether changes in ambient turbidity levels exceed 20%, the threshold derived from the Sacramento and San Joaquin Rivers Basin Plan (Central Valley Regional Water Quality Control Board 2011). If it is determined that turbidity levels exceed the 20% threshold, then Caltrans and/or its contractors will adjust work to ensure that turbidity levels do not exceed the 20% threshold.

D.3.11 Protect Water Quality during Dewatering Activities

To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary dewatering activities, water removed from the dewatered areas will be filtered and/or treated in a manner to ensure conformance with the water quality requirements of the approved

401 permit, issued by the Central Valley RWQCB, prior to being discharged into the aforementioned receiving waters.

Implement Pile-Removal Best Management Practices

The following BMPs will control turbidity and sediments re-entering the water column during removal of existing fender timber piles and removal of any temporary sheet pile cofferdams, and prescribe debris capture and disposal of removed piles and debris.

- Vibratory extraction is the preferred method of pile removal.
- The crane operator shall be trained to remove pile slowly. This will minimize turbidity in the water column as well as sediment disturbance.
- The operator shall “Wake up” the pile to break up bond with sediment.
- The operator shall vibrate the pile to break the skin friction bond between the pile and the soil. Bond breaking avoids pulling out a large block of soil – possibly breaking off the pile in the process. Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases material may be attached to the pile tip, in line with the pile.
- Extraction equipment shall be kept out of the water. A creosote release to the environment may occur if equipment (bucket, steel cable, vibratory hammer) pinches a creosoted piling below the water line. Pilings must not be broken off intentionally by twisting, bending or other deformation. This practice has the potential for releasing creosote to the water column.
- The work surface on the barge deck or pier shall include a containment basin for piles and any sediment removed during pulling. Upon removal from the substrate, the pile shall be moved expeditiously from the water into a containment basin. The pile shall not be shaken, hosed off, stripped or scraped off, left hanging to drip, or any other action intended to clean or remove adhering material from the pile.
- The barge or pier work surface and containment basin shall be cleaned by disposing of sediment or other residues along with removed pilings in a manner complying with applicable federal and state regulations.

D.3.12 Conduct Mandatory Environmental Awareness Training for Construction Personnel

Before any work occurs in the project area including grading and tree removal, Caltrans will retain a qualified biologist (familiar with the resources to be protected) to conduct a mandatory contractor/worker environmental awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid and minimize effects to sensitive biological resources (e.g., jurisdictional waters, special-status species, roosting bats, nesting birds) adjacent within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements. The biologist will inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the biological opinion.

The environmental training also will cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during project construction. The training also will include identifying the BMPs written into construction specifications for avoiding and minimizing the discharge of construction materials or other contaminants into jurisdictional waters.

D.3.13 Establish Environmentally Sensitive Areas

Additional direct and indirect impacts to special status biological resources, including wetland and terrestrial resources, throughout the project area will be avoided or minimized by designating these features outside of the construction impact area as “Environmentally Sensitive Areas” (ESAs) on project plans and in project specifications.

ESA information will be shown on contract plans and discussed in the Special Provisions. All areas outside of the Butte City Bridge Replacement project area shall be considered as ESAs for biological resources. Contractor encroachment into ESAs will be prohibited (including the staging/operation of heavy equipment or casting of excavated materials). ESA provisions will be implemented as a first order of work and remain in place until all construction activities are complete.

D.3.14 Dewatering Activities – Fish Relocation

A fish relocation plan will be submitted to NMFS for approval prior to the start of in-water work. The plan will include a description of any anticipated fish relocation activities, including the number, frequency, and environmental or construction conditions that may trigger the need for fish relocation actions. A fish rescue and relocation report will be prepared and submitted to CDFW and NMFS within 5 business days following completion of the fish relocation.

After any water diversion structures are in place and before dewatering is initiated, qualified fish biologists who have authorization from NMFS will be on site to capture and relocate salmonids from areas to be dewatered. During dewatering, water will be incrementally diverted from the cofferdam, with diversion progressively increasing over a four-hour period in the following increments: 50%, 75%, 90%, and 100%. Incremental reduction in flow allows fish that elude initial capture to move to deeper habitats where they can be captured and relocated before affected stream segments are completely dewatered. The biologists will relocate fish to suitable habitat outside of the construction area. The methods of removal and relocation of fish captured during the dewatering of the construction areas will be implemented in close coordination with NMFS and CDFW.

D.3.15 Cofferdam Restrictions

The extent of the cofferdam footprints will be limited to the minimum necessary to support construction activities. Sheet piles used for cofferdams will be installed and removed using a vibratory pile driver. Cofferdams will be installed and removed only during the proposed in-

water work window (June-October 15) unless prior approval for this activity is granted by NMFS and CDFW. Cofferdams will not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area. All pumps used during dewatering of cofferdams will be screened according to CDFW and NMFS guidelines for screens. Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure.

D.3.16 Prevention of the spread or introduction of aquatic invasive species

Caltrans or its contractors will coordinate with the CDFW invasive species program to ensure that the appropriate BMPs are implemented to prevent spread or introduction of AIS (aquatic invasive species). Educate construction supervisors and managers about the importance of controlling and preventing the spread of AIS. Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of AIS. To the extent feasible, prior to departure of vessels from their place of origin and before in-water construction equipment is allowed to operate within waters of the Sacramento River, thoroughly inspect and remove and dispose of all dirt, mud, plant matter, and animals from all surfaces that are submerged or may become submerged, or places where water can be held and transferred to the surrounding water.

Measure BIO-1: Compensate for the Loss of Valley Elderberry Longhorn Beetle Habitat

Caltrans proposes to compensate for adverse effects on VELB through the purchase of VELB mitigation credits at a USFWS-approved mitigation bank.

Caltrans proposes to compensate for permanent losses using habitat level compensation. Permanent riparian impacts will be compensated at a 3:1 acreage ratio. Permanent non-riparian impacts will be mitigated at a 1:1 acreage ratio. No mitigation is required for removal of elderberry plants when all stems measure less than 1 inch in diameter at ground level.

Table 17. Elderberry Total Mitigation

Alternatives	Riparian	Credits	Non-Riparian	Credits
A2	2.21	93	8.21	280
C2	4.54	110	23.48	569
D	4.66	113	19.95	483

In total, Caltrans proposes to compensate for 252 credits for Alternative A2, 574 credits for Alternative C2, and 596 credits for Alternative D.

A review of mitigation banks with VELB units include; the River Ranch VELB Conservation Bank, Wildlands Mitigation Bank, Nicolaus Ranch VELB Conservation Bank, and French Camp Conservation Bank.

Measure BIO-2: Compensate for Loss of Riparian Communities

Caltrans will implement compensatory mitigation for the permanent loss of riparian forest as a result of the project by implementing the following measure.

As part of a CDFW streambed alteration agreement that will be obtained under Section 1602 of the CFGC, Caltrans will prepare a riparian habitat mitigation plan resulting in no net loss of riparian functions and values to compensate for loss of riparian vegetation along any stream (as defined by CDFW) that supports wildlife, fish, or other aquatic life and that is affected by the project. Compensation will be provided at a minimum ratio of 1:1 (1 acre mitigation provided for every 1 acre permanently affected). Mitigation may be accomplished through replacement, enhancement of degraded habitat, or off-site mitigation at an established mitigation bank. Any conditions of issuance of the streambed alteration agreement will be implemented as part of project compliance.

Measure BIO-3: Compensate for Loss of Oak Woodland Habitat

If compensation is required beyond the on-site restoration and enhancement, Caltrans will develop an Oak Woodland Mitigation Plan to provide compensatory mitigation for the permanent conversion of oak woodland as a result of the project. The plan will include the following.

- A minimum ratio of 1:1 will be required for preservation/restoration of oak woodland of equal or greater functional value (e.g., age, species composition, level of disturbance) to that permanently affected by the project. Mitigation will be consistent with the requirements of SB 1334, and will include one or more of the following options:
 - Conserving oak woodland through conservation easements.
 - Contributing funds to Oak Woodlands Conservation Fund to purchase conservation easements.
 - Replanting trees, including maintaining plantings for a minimum of 7 years after planting. (Note: Replanting will not fulfill more than 50% of the project mitigation requirement.)
 - Implementing other appropriate mitigation actions, as developed and/or approved by Glenn County.

Measure BIO-4: Compensate for Loss of Wetlands and Non-Wetland Waters

Caltrans will provide compensatory mitigation for the project-related permanent and temporary loss of wetlands and non-wetland waters by implementing the following measures.

- **Fulfill Conditions of USACE CWA Section 404 Permit.** A wetland delineation report for the project will be submitted to USACE for verification. If project activities would result in the placement of dredged or fill material into waters of the U.S., Caltrans will avoid or reduce such impacts to the maximum extent possible and will obtain a USACE permit before conducting those activities that will result in impacts on jurisdictional features. Caltrans will mitigate the loss of wetlands as a result of the project by complying with the USACE “no net loss” policy (e.g., purchasing mitigation credits for created wetlands at a USACE- approved wetland mitigation bank at no less than a 1:1 ratio).
- **Fulfill Conditions of Central Valley RWQCB Section 401 Permit.** A wetland delineation report for the project will be submitted to Central Valley RWQCB with the 401 application. If project activities would result in the placement of dredged or fill material into waters of the U.S or waters of the State, Caltrans will avoid or reduce such impacts to the maximum extent possible and will obtain a Central Valley RWQCB permit before conducting those activities that will result in impacts on jurisdictional features. Caltrans will mitigate the loss of wetlands as a result of the project (e.g., purchasing mitigation credits for created wetlands at a Central Valley RWQCB-approved wetland mitigation bank at no less than a 1:1 ratio).
- **Fulfill Conditions of CDFW Streambed Alteration Agreement.** A CDFW streambed alteration agreement will be obtained under Section 1602 of the CFGC for work on the bed and bank of waterways that provide potential habitat for fish or wildlife. A habitat mitigation plan resulting in no net loss of functions and values to wetlands and waters of the State will be prepared to compensate for loss of habitat along any waterway or drainage (as defined by CDFW) or other jurisdictional feature that supports wildlife, fish, or other aquatic life and that is affected by the project. Mitigation may be accomplished through replacement, enhancement of degraded habitat, or off-site mitigation at an established mitigation bank. Any conditions of issuance of the streambed alteration agreement will be implemented as part of project implementation.

D.4 Cultural Resources

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

If human remains are discovered, California Health and Safety Code (H&SC) Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the NAHC, who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the

remains will contact Caltrans District 3 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.

D.5 Paleontological Resources

D.5.1 Educate Construction Personnel in Recognizing Fossil Material

A qualified professional paleontologist experienced in teaching non-specialists will train construction personnel to ensure that they can recognize fossil materials in the event that any are discovered during construction.

D.5.2 Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

D.5.3 Include Resource Stewardship Measures in Standard Specifications for the Project

The following measures will be added to the standard specifications for the project.

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

- Stop all work within a 60-foot radius of the discovery
- Protect the area
- Notify the Resident Engineer
- The project proponent will investigate and modify the dimensions of the protected area if necessary.
- Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized.

- The project proponent will alert the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments.

D.6 Hazardous Materials

D.6.1 Perform Soil Testing and Dispose of Soils Contaminated with ADL Appropriately

Soil testing for ADL contamination will be conducted in the project area along the roadway prior to construction work. Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by the California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting and reusing of soil will also be conducted following Caltrans' standard special provisions.

D.6.2 Develop a Lead Compliance Plan and Asbestos Abatement Plan

A hazardous materials survey will be conducted prior to demolition or significant renovation. If lead or asbestos is found in these structures, an abatement plan will be developed prior to removal or renovation. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare hazardous materials specifications for abatement of the asbestos-containing materials and lead-based paint. This specification should be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. Caltrans will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and lead-based paint deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

D.6.3 Implement a Traffic Management Plan during Construction

As part of construction, the project proponents will prepare and implement a TMP to avoid and minimize potential impacts. The TMP would ensure emergency vehicle and school bus routes are not impeded during construction under Alternatives A2 and C2, and would describe the components of the detour (including signage, flagging, and coordination with emergency service providers) under Alternative D. The TMP would reduce impacts of the proposed project on temporary access and circulation caused by potential traffic delays during construction.

D.7 Hydrology and Water Quality

All applicable regulations and permit conditions would be followed. The following BMPs are incorporated into the project.

Temporary BMPs to protect water quality will include, at a minimum, the following actions:

- Identify and protect drainage facilities.
- Establish sediment and erosion control measures such as fiber rolls and/or silt fences, gravel bag berm, or rolled erosion-control product (e.g., netting).
- Prevent pollutant discharges into waterways from vehicles and heavy equipment through off-site cleaning, designated access routes, and leak inspection.
- Perform job site management to control potential sources of pollution, including construction materials, concrete waste, and non-stormwater releases.
- Control dust emissions and wind erosion control, including spraying exposed soil with water, street sweeping and vacuuming, covering stockpiles, and establishing a stabilized construction entrance.
- Provide a spill prevention and response plan, including on-site spill kits.
- If and where applicable, stabilize shoulder backing areas with temporary construction site BMPs by the end of each day and prior to the onset of precipitation.
- Implement a coffer dam dewatering plan that will include measures to decrease sedimentation, such as settling tanks, before discharge.

Permanent BMPs to prevent erosion will include stabilizing soil on disturbed soil areas and newly constructed slopes with wattles, hydroseed, or hydraulic mulch.

Permanent BMPs to prevent erosion would include stabilizing soil on disturbed soil areas and newly constructed slopes.

D.8 Noise

The project would follow Caltrans Standard Specification 14-8.02, Noise Control, which states the following:

- Control and monitor noise resulting from work activities.
- Do not exceed 86 dBA L_{max} at 50 feet from the of site activities from 9:00 p.m. to 6:00 a.m.

In addition to the Standard Specifications, construction noise can be minimized through the following measures:

- Limiting the operation of pile driver, jackhammer, concrete saw, pneumatic tools and demolition equipment to daytime hours.

- Prohibiting unnecessary idling of internal combustion engines.
- Shielding and locating stationary equipment, such as compressors and generators, as far away from residential and park uses as practical.
- Locating equipment and materials storage sites as far away from residential and park uses as practicable.
- Notifying residents within 100 feet of the project area at least 2 weeks prior to the start of nighttime construction.

Appendix E Summary of Relocation Benefits

Appendix E: Summary of Relocation Benefits

DECLARATION OF POLICY

“The purpose of this title is to establish a uniform policy for fair and equitable treatment of persons displaced as a result of federal and federally assisted programs in order that such persons shall not suffer disproportionate injuries as a result of programs designed for the benefit of the public as a whole.”

The Fifth Amendment to the U.S. Constitution states, “No Person shall...be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use without just compensation.” The Uniform Act sets forth in statute the due process that must be followed in Real Property acquisitions involving federal funds. Supplementing the Uniform Act is the government-wide single rule for all agencies to follow, set forth in 49 Code of Federal Regulations (CFR) Part 24. Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and payments, as discussed below.

FAIR HOUSING

The Fair Housing Law (Title VIII of the Civil Rights Act of 1968) sets forth the policy of the United States to provide, within constitutional limitations, for fair housing. This act, and as amended, makes discriminatory practices in the purchase and rental of most residential units illegal. Whenever possible, minority persons shall be given reasonable opportunities to relocate to any available housing regardless of neighborhood, as long as the replacement dwellings are decent, safe, and sanitary and are 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.

Any persons to be displaced will be assigned to a relocation advisor, who will work closely with each displacee in order to see that all payments and benefits are fully utilized and that all regulations are observed, thereby avoiding the possibility of displacees jeopardizing or forfeiting any of their benefits or payments. At the time of the initiation of negotiations (usually the first written offer to purchase), owner-occupants are given a detailed explanation of the state’s relocation services. Tenant occupants of properties to be acquired are contacted soon after the initiation of negotiations and also are given a detailed explanation of the Caltrans Relocation Assistance Program. To avoid loss of possible benefits, no individual, family, business, farm, or nonprofit organization should commit to purchase or rent a replacement property without first contacting a Caltrans relocation advisor.

RELOCATION ASSISTANCE ADVISORY SERVICES

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, Caltrans will provide relocation advisory assistance to any person, business, farm or nonprofit organization displaced as a result of the acquisition of real property for public use, so long as they are legally present in the United States. Caltrans will assist eligible displacees in obtaining comparable replacement housing by providing current and continuing information on the availability and prices of both houses for sale and rental units that are “decent, safe and sanitary.” Nonresidential displacees will receive information on comparable properties for lease or purchase (for business, farm and nonprofit organization relocation services, see below).

Residential replacement dwellings will be in a location generally not less desirable than the displacement neighborhood at prices or rents within the financial ability of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings will be offered to displacees that are open to all persons regardless of race, color, religion, sex, national origin, and consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance will also include the supplying of information concerning federal and state assisted housing programs and any other known services being offered by public and private agencies in the area.

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 first being given at least 90 days written notice. Residential occupants eligible for relocation payment(s) will not be required to move unless at least one comparable “decent, safe and sanitary” replacement dwelling, available on the market, is offered to them by Caltrans.

RESIDENTIAL RELOCATION PAYMENTS

The Relocation Assistance Program will help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of a replacement dwelling and actual reasonable moving expenses to a new location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Assistance Program can be summarized as follows:

MOVING COSTS

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles, or a fixed payment based on a fixed moving cost schedule. Lawful occupants who move into the displacement property after the initiation of negotiations must wait until the Department obtains control of the property in order to be eligible for relocation payments.

PURCHASE DIFFERENTIAL

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 90 days or more prior to the date of the initiation of negotiations (usually the first written offer to purchase the property), may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum combination of these three supplemental payments that the owner-occupant can receive is \$31,000. If the total entitlement (without the moving payments) is in excess of \$31,000, the Last Resort Housing Program will be used (see the explanation of the Last Resort Housing Program below).

RENT DIFFERENTIAL

Tenants and certain owner-occupants (based on length of ownership) who have occupied the property to be acquired by Caltrans prior to the date of the initiation of negotiations may qualify to receive a rent differential payment. This payment is made when Caltrans determines that the cost to rent a comparable “decent, safe and sanitary” replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property and the payment of certain costs incidental to the purchase, subject to certain limitations noted under the Down Payment section below. The maximum amount payable to any eligible tenant and any owner-occupant of less than 90 days, in addition to moving expenses, is \$7,200. If the total entitlement for rent supplement exceeds \$7,200, the Last Resort Housing Program will be used.

To receive any relocation benefits, the displaced person must buy or rent and occupy a “decent, safe and sanitary” replacement dwelling within one year from the date the Department takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

DOWN PAYMENT

The down payment option has been designed to aid owner-occupants of less than 90 days and tenants in legal occupancy prior to Caltrans’ initiation of negotiations. The down payment and incidental expenses cannot exceed the maximum payment of \$7,200. The one-year eligibility period in which to purchase and occupy a “decent, safe and sanitary” replacement dwelling will apply.

LAST RESORT HOUSING

Federal regulations (49 CFR 24) contain the policy and procedure for implementing the Last Resort Housing Program on federal-aid projects. Last Resort Housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocation as explained above. Last Resort Housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing, or when the anticipated replacement housing payments exceed the \$31,000 and \$7,200 limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid circumstances.

After the initiation of negotiations, Caltrans will within a reasonable length of time, personally contact the displacees to gather important information, including the following:

- Number of people to be displaced.
- Specific arrangements needed to accommodate any family member(s) with special needs.
- Financial ability to relocate into comparable replacement dwelling which will adequately house all members of the family.
- Preferences in area of relocation.
- Location of employment or school.

NONRESIDENTIAL RELOCATION ASSISTANCE

The Nonresidential Relocation Assistance Program provides assistance to businesses, farms and nonprofit organizations in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program will provide current lists of properties offered for sale or rent, suitable for a particular business's specific relocation needs. The types of payments available to eligible businesses, farms and nonprofit organizations are: searching and moving expenses, and possibly reestablishment expenses; or a fixed in lieu payment instead of any moving, searching and reestablishment expenses. The payment types can be summarized as follows:

MOVING EXPENSES

Moving expenses may include the following actual, reasonable costs:

- The moving of inventory, machinery, equipment and similar business-related property, including: dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property. Items acquired in the right-of-way contract may not be moved under the Relocation Assistance Program. If the displacee buys an Item Pertaining to the Realty back at salvage value, the cost to move that item is borne by the displacee.
 - Loss of tangible personal property provides payment for actual, direct loss of personal property that the owner is permitted not to move.
 - Expenses related to searching for a new business site, up to \$2,500, for reasonable expenses actually incurred.

REESTABLISHMENT EXPENSES

Reestablishment expenses related to the operation of the business at the new location, up to \$25,000 for reasonable expenses actually incurred.

FIXED IN LIEU PAYMENT

A fixed payment in lieu of moving, searching, and reestablishment payments may be available to businesses that meet certain eligibility requirements. This payment is an amount equal to half the average annual net earnings for the last two taxable years prior to the relocation and may not be less than \$1,000 nor more than \$40,000.

ADDITIONAL INFORMATION

Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, or any other law, except for any federal law providing local "Section 8" Housing Programs.

Any person, business, farm or nonprofit organization that has been refused a relocation payment by the Caltrans relocation advisor or believes that the payment(s) offered by the agency are inadequate may appeal for a special hearing of the complaint. No legal assistance is required. Information about the appeal procedure is available from the relocation advisor.

California law allows for the payment for lost goodwill that arises from the displacement for a public project. A list of ineligible expenses can be obtained from Caltrans Right-of-Way. California's law and the federal regulations covering relocation assistance provide that no payment shall be duplicated by other payments being made by the displacing agency.

Appendix F USFWS/NMFS Species Lists

Harrell, Hanna@DOT

From: Harrell, Hanna@DOT
Sent: Thursday, June 08, 2017 6:56 AM
To: 'nmfswcrca.specieslist@noaa.gov'
Subject: 03-3H210 Butte 162 15.8/18.0 Pavement Rehab

Federal agency: Federal Highway Administration - California Division
Federal agency address: 650 Capitol Mall, Suite 4-100, Sacramento, CA 95814-4708
Non-federal agency representative (if any): California Department of Transportation
Non-federal agency representative (if any) address: 703 B Street, Marysville, CA 95901
Project title: Butte 162 15.8/18.0 Pavement Rehab
Point-of-Contact: Hanna Harrell, Hanna.Harrell@dot.ca.gov (530)741-4516
Search Results:

Quad Name **Oroville**
Quad Number **39121-E5**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -

- SC Steelhead Critical Habitat -
- CCV Steelhead Critical Habitat - **X**
- Eulachon Critical Habitat -
- sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

- Range Black Abalone (E) -
- Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

- East Pacific Green Sea Turtle (T) -
- Olive Ridley Sea Turtle (T/E) -
- Leatherback Sea Turtle (E) -
- North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

- Blue Whale (E) -
- Fin Whale (E) -
- Humpback Whale (E) -
- Southern Resident Killer Whale (E) -
- North Pacific Right Whale (E) -
- Sei Whale (E) -
- Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

- Coho EFH -
- Chinook Salmon EFH - **X**
- Groundfish EFH -
- Coastal Pelagics EFH -
- Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis

monica.deangelis@noaa.gov

562-980-3232

MMPA Cetaceans -

MMPA Pinnipeds -

Quad Name **Palermo**

Quad Number **39121-D5**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -

CC Chinook Salmon ESU (T) -

CVSR Chinook Salmon ESU (T) - **X**

SRWR Chinook Salmon ESU (E) -

NC Steelhead DPS (T) -

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) -

CCV Steelhead DPS (T) - **X**

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -

CC Chinook Salmon Critical Habitat -

CVSR Chinook Salmon Critical Habitat - **X**

SRWR Chinook Salmon Critical Habitat -

NC Steelhead Critical Habitat -

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat - **X**

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -

Olive Ridley Sea Turtle (T/E) -

Leatherback Sea Turtle (E) -

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -

Fin Whale (E) -

Humpback Whale (E) -

Southern Resident Killer Whale (E) -

North Pacific Right Whale (E) -

Sei Whale (E) -

Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Coho EFH -

Chinook Salmon EFH -



Groundfish EFH -

Coastal Pelagics EFH -

Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis

monica.deangelis@noaa.gov

562-980-3232

MMPA Cetaceans -

MMPA Pinnipeds -

Hanna Harrell
Environmental Planner Natural Sciences
Caltrans District 3
703 B Street
Marysville, California 95901
(530) 741-4516



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office

FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605

SACRAMENTO, CA 95825

PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2015-SLI-0531

May 15, 2015

Event Code: 08ESMF00-2015-E-02104

Project Name: Butte City Bridge seismic retrofit

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead. Please visit our office's website (<http://www.fws.gov/sacramento>) to view a map of office jurisdictions.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO

El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO

San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO

Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
	Shasta Trinity National Forest		

Tehama	except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO
*Office Leads:			
AFWO=Arcata Fish and Wildlife Office			
BDFWO=Bay Delta Fish and Wildlife Office			
KFWO=Klamath Falls Fish and Wildlife Office			
RFWO=Reno Fish and Wildlife Office			
YFWO=Yreka Fish and Wildlife Office			

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: Butte City Bridge seismic retrofit

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Consultation Code: 08ESMF00-2015-SLI-0531

Event Code: 08ESMF00-2015-E-02104

Project Type: TRANSPORTATION

Project Name: Butte City Bridge seismic retrofit

Project Description: This project includes widening the Butte City Bridge and viaduct

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: Butte City Bridge seismic retrofit

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-122.00928409451178 39.456602728024855, -122.00938254374432 39.456639223925464, -122.00942635136546 39.45673464454421, -122.00938985546485 39.45683309377676, -122.0092944348461 39.456876901397884, -121.9934801304943 39.45747333128531, -121.99338168126177 39.4574368353847, -121.99333787364063 39.45734141476595, -121.99337436954124 39.4572429655334, -121.99346979015999 39.45719915791228, -122.00928409451178 39.456602728024855)))

Project Counties: Glenn, CA



United States Department of Interior
Fish and Wildlife Service

Project name: Butte City Bridge seismic retrofit

Endangered Species Act Species List

There are a total of 11 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog (<i>Rana draytonii</i>) Population: Entire	Threatened	Final designated	
California tiger Salamander (<i>Ambystoma californiense</i>) Population: U.S.A. (CA - Sonoma County)	Endangered	Final designated	
Birds			
Northern Spotted owl (<i>Strix occidentalis caurina</i>) Population: Entire	Threatened	Final designated	
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Threatened	Proposed	
Crustaceans			
Conservancy fairy shrimp (<i>Branchinecta conservatio</i>) Population: Entire	Endangered	Final designated	
Vernal Pool fairy shrimp	Threatened	Final designated	



United States Department of Interior
Fish and Wildlife Service

Project name: Butte City Bridge seismic retrofit

(<i>Branchinecta lynchi</i>) Population: Entire			
Vernal Pool tadpole shrimp (<i>Lepidurus packardi</i>) Population: Entire	Endangered	Final designated	
Fishes			
Delta smelt (<i>Hypomesus transpacificus</i>) Population: Entire	Threatened	Final designated	
steelhead (<i>Oncorhynchus (=salmo) mykiss</i>) Population: Northern California DPS	Threatened	Final designated	
Insects			
Valley Elderberry Longhorn beetle (<i>Desmocerus californicus dimorphus</i>) Population: Entire	Threatened	Final designated	
Reptiles			
Giant Garter snake (<i>Thamnophis gigas</i>) Population: Entire	Threatened		



United States Department of Interior
Fish and Wildlife Service

Project name: Butte City Bridge seismic retrofit

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Birds	Critical Habitat Type
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Proposed



Selected Elements by Common Name
California Department of Fish and Wildlife
California Natural Diversity Database



Query Criteria: Quad IS (Butte City (3912148) OR Princeton (3912241))



Selected Elements by Common Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger <i>Taxidea taxus</i>	AMAJF04010	None	None	G5	S3	SSC
bank swallow <i>Riparia riparia</i>	ABPAU08010	None	Threatened	G5	S2	
Coastal and Valley Freshwater Marsh <i>Coastal and Valley Freshwater Marsh</i>	CTT52410CA	None	None	G3	S2.1	
Colusa grass <i>Neostapfia colusana</i>	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Ferris' milk-vetch <i>Astragalus tener var. ferrisiae</i>	PDFAB0F8R3	None	None	G2T1	S1	1B.1
giant gartersnake <i>Thamnophis gigas</i>	ARADB36150	Threatened	Threatened	G2	S2	
Great Valley Cottonwood Riparian Forest <i>Great Valley Cottonwood Riparian Forest</i>	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest <i>Great Valley Mixed Riparian Forest</i>	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest <i>Great Valley Valley Oak Riparian Forest</i>	CTT61430CA	None	None	G1	S1.1	
Great Valley Willow Scrub <i>Great Valley Willow Scrub</i>	CTT63410CA	None	None	G3	S3.2	
hoary bat <i>Lasiurus cinereus</i>	AMACC05030	None	None	G5	S4	
North American porcupine <i>Erethizon dorsatum</i>	AMAFJ01010	None	None	G5	S3	
osprey <i>Pandion haliaetus</i>	ABNKC01010	None	None	G5	S4	WL
steelhead - Central Valley DPS <i>Oncorhynchus mykiss irideus pop. 11</i>	AFCHA0209K	Threatened	None	G5T2Q	S2	
Swainson's hawk <i>Buteo swainsoni</i>	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	IICOL48011	Threatened	None	G3T2	S2	
western red bat <i>Lasiurus blossevillii</i>	AMACC05060	None	None	G5	S3	SSC
western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
woolly rose-mallow <i>Hibiscus lasiocarpus var. occidentalis</i>	PDMAL0H0R3	None	None	G5T3	S3	1B.2

Record Count: 20

Plant List



Inventory of Rare and Endangered Plants

5 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quads 3912241 and 3912148;

[Modify Search Criteria](#)
[Export to Excel](#)
[Modify Columns](#)
[Modify Sort](#)
[Remove Photos](#)

Scientific Name	Common Name	Blooming Period	CA Rare Plant Rank	Photo	State Listing Status	Federal Listing Status	Habitats	Lowest Elevation	Highest Elevation
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Apr-May	1B.1	no photo available			<ul style="list-style-type: none"> Meadows and seeps (vernally mesic) Valley and foothill grassland (subalkaline flats) 	2 m	75 m
Azolla microphylla	Mexican mosquito fern	Aug	4.2	no photo available			<ul style="list-style-type: none"> Marshes and swamps (ponds, slow water) 	30 m	100 m
Centromadia parryi ssp. rudis	Parry's rough tarplant	May-Oct	4.2				<ul style="list-style-type: none"> Valley and foothill grassland Vernal pools 	0 m	100 m
				2003 George W. Hartwell					
Hibiscus lasiocarpus var. occidentalis	woolly rose-mallow	Jun-Sep	1B.2				<ul style="list-style-type: none"> Marshes and swamps (freshwater) 	0 m	120 m
				2012 Steven Perry					
Neostapfia colusana	Colusa grass	May-Aug	1B.1		CE	FT	<ul style="list-style-type: none"> Vernal pools (adobe, large) 	5 m	200 m



2009 Doug Wirtz

Suggested Citation

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Harrell, Hanna@DOT

From: Harrell, Hanna@DOT
Sent: Thursday, June 08, 2017 6:56 AM
To: 'nmfswcrca.specieslist@noaa.gov'
Subject: 03-3H210 Butte 162 15.8/18.0 Pavement Rehab

Federal agency: Federal Highway Administration - California Division
Federal agency address: 650 Capitol Mall, Suite 4-100, Sacramento, CA 95814-4708
Non-federal agency representative (if any): California Department of Transportation
Non-federal agency representative (if any) address: 703 B Street, Marysville, CA 95901
Project title: Butte 162 15.8/18.0 Pavement Rehab
Point-of-Contact: Hanna Harrell, Hanna.Harrell@dot.ca.gov (530)741-4516
Search Results:

Quad Name **Oroville**
Quad Number **39121-E5**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -

- SC Steelhead Critical Habitat -
- CCV Steelhead Critical Habitat - **X**
- Eulachon Critical Habitat -
- sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

- Range Black Abalone (E) -
- Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

- East Pacific Green Sea Turtle (T) -
- Olive Ridley Sea Turtle (T/E) -
- Leatherback Sea Turtle (E) -
- North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

- Blue Whale (E) -
- Fin Whale (E) -
- Humpback Whale (E) -
- Southern Resident Killer Whale (E) -
- North Pacific Right Whale (E) -
- Sei Whale (E) -
- Sperm Whale (E) -

ESA Pinnipeds

- Guadalupe Fur Seal (T) -

Essential Fish Habitat

- Coho EFH -
- Chinook Salmon EFH - **X**
- Groundfish EFH -
- Coastal Pelagics EFH -
- Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis

monica.deangelis@noaa.gov

562-980-3232

MMPA Cetaceans -

MMPA Pinnipeds -

Quad Name **Palermo**

Quad Number **39121-D5**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -

CC Chinook Salmon ESU (T) -

CVSR Chinook Salmon ESU (T) - **X**

SRWR Chinook Salmon ESU (E) -

NC Steelhead DPS (T) -

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) -

CCV Steelhead DPS (T) - **X**

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -

CC Chinook Salmon Critical Habitat -

CVSR Chinook Salmon Critical Habitat - **X**

SRWR Chinook Salmon Critical Habitat -

NC Steelhead Critical Habitat -

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat - **X**

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -

Olive Ridley Sea Turtle (T/E) -

Leatherback Sea Turtle (E) -

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -

Fin Whale (E) -

Humpback Whale (E) -

Southern Resident Killer Whale (E) -

North Pacific Right Whale (E) -

Sei Whale (E) -

Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Coho EFH -

Chinook Salmon EFH -



Groundfish EFH -

Coastal Pelagics EFH -

Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis

monica.deangelis@noaa.gov

562-980-3232

MMPA Cetaceans -

MMPA Pinnipeds -

Hanna Harrell
Environmental Planner Natural Sciences
Caltrans District 3
703 B Street
Marysville, California 95901
(530) 741-4516

Appendix G USFWS Biological Opinion



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2017-F-1037-2

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

JUN 21 2018

Ms. Kelly McNally
Chief, District Environmental Branch
California Department of Transportation, District 3
703 B Street
Marysville, California 95901-0911

Subject: Formal Consultation on the Proposed Sacramento River Butte City Bridge
Replacement Project, Glenn County, California (Caltrans Fed. ID# 03-3F060)

Dear Ms. McNally:

This letter is in response to the California Department of Transportation's (Caltrans) December 18, 2017, request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Sacramento River Butte City Bridge Replacement Project (proposed project) in Glenn County, California. Your initial request was received by the Service on December 26, 2017; however, all of the information necessary to begin consultation was not received until April 12, 2018. At issue are the proposed project's effects on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle), the giant garter snake (*Thamnophis gigas*) (snake), the western distinct population segment (DPS) of the yellow-billed cuckoo (*Coccyzus americanus*) (cuckoo), and proposed critical habitat for the cuckoo. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the replacement of the Sacramento River Butte City Bridge (bridge) and connecting viaduct to a new northern alignment. The proposed project is receiving federal funding through the Federal Highway Administration (FHWA). Caltrans has assumed FHWA's responsibilities as the lead agency under the Act for this consultation in accordance with Section 1313, Surface Transportation Project Delivery Program, of the Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012. The MAP-21 is described in the National Environmental Policy Act assignment Memorandum of Understanding between FHWA and Caltrans (effective March 30, 2017) and codified in 23 U.S.C 327.

Pursuant to 50 CFR 402.12(j), you submitted a biological assessment for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the beetle. The findings also include that the proposed project may affect, but is not likely to adversely affect the snake and the cuckoo. The proposed project is within designated proposed critical habitat unit CA-2 for the cuckoo.

In considering your request, we based our evaluation on the following: 1) your December 18, 2017, letter requesting initiation of formal consultation and the attached *Sacramento River Bridge at Butte City Biological Assessment* (biological assessment) prepared by Caltrans; (2) your April 4, 2018, revised letter requesting initiation of formal consultation; (3) the September 26, 2017, site visit with the Service, Caltrans, and the Sacramento National Wildlife Refuge (SNWR); (4) email and telephone correspondence between the Service, Caltrans, California Department of Fish and Wildlife (CDFW), and SNWR; and (5) other information available to the Service.

Snake

No suitable aquatic snake habitat occurs within the action area. The closest likely suitable aquatic snake habitat is an unnamed oxbow of the Sacramento River, approximately 80 feet south of the action area. Since the southern boundary of the action area is within 80 feet of the unnamed oxbow, there is potential suitable upland snake habitat within the proposed project. The unnamed oxbow ends with a thin strip of riparian that opens up to a dirt road and levee. There is a gravel road on top of the levee. On the other side of the levee is a walnut orchard. Ground squirrel burrows were observed during surveys within the western portion of the action area, and are within 820 feet from the southern end of the unnamed oxbow. The snake may use these ground squirrel burrows for over wintering or thermal refugia. Vegetation removal on the south side of the bridge will be restricted to the walnut orchard on the dry side of the levee and will occur during the snake's inactive season (October – April).

There is one known occurrence from 1974 within the action area (California Natural Diversity Database [CNDDB] 2018) and was recorded on the east side of the Sacramento River. All other occurrences within 5 miles of the action area are also located on the east side of the Sacramento River, more than 4 miles from the action area. Construction activities on the east side of the Sacramento River are restricted to shoulder widening, driveway work, sidewalks, lighting, and storm water culvert replacements. The storm water drainage conveys road storm water during rain events and is dry the rest of the year; therefore, it is not considered suitable snake habitat.

The following avoidance and minimization measures in order to minimize disturbance to the snake and its habitat have been proposed by Caltrans:

1. A preconstruction survey along the paved access road, within 200 feet from the unnamed oxbow to the south, will be conducted by a Service-approved biologist. Surveys will occur immediately prior to the initiation of any ground disturbing activities, and will consist of walking transects while conducting visual encounter surveys within areas subject to vegetation clearing, grubbing, grading, cut and fill, or other ground disturbance activities.
2. No construction activities, staging, or stockpiling will occur within suitable upland snake habitat (within 200 feet of the unnamed oxbow). All vehicles and equipment will stay on the paved access road, staging and stockpiling will only occur east of the valley oak woodland riparian area.
3. Wildlife exclusion fencing will be installed to prevent the snake from entering the construction site prior to any construction activities. Exclusion fencing will be placed 200 feet from the potential aquatic snake habitat during their active season before vegetation removal. Signage will be posted describing the snake, non-admittance, consequences for non-compliance, and Service information.

4. A Service-approved biologist will inspect exclusion fencing weekly, and the fencing will be maintained until the end of construction. If a snake is found onsite during construction, activities will stop until the snake leaves the construction area on its own or until a Service-approved biologist moves the snake out of the construction footprint. The Service will be notified within 24 hours of any snake observations. No handling or capture of a snake will occur without authorization from the Service.
5. Pile driving on the viaduct will start in May during the snake's active season. Construction will start on the west end of the bridge, which is close to potential suitable aquatic and upland snake habitat. Construction will progress to the east, away from suitable snake habitat. Construction will be more than 1,000 feet from suitable upland snake habitat by the time of over wintering.

The Service concurs with your determination that the proposed project may affect but is not likely to adversely affect the snake. The proposed project reached the 'may affect' level, and the subsequent requirement for a biological assessment, due to the fact that the proposed project occurs within the known range of the snake. There is low potential for the snake to occur with the action area due to the fact that no aquatic snake habitat occurs within the action area and only marginal riparian upland snake habitat occurs. Due to the lack of essential suitable habitat for the snake, and the avoidance and minimization measures stated in the biological assessment, the Service believes that any potential adverse effects to the snake from the proposed project are extremely unlikely to occur, and are therefore discountable for purposes of this consultation.

Cuckoo

The action area falls within the cuckoo's proposed critical habitat unit CA-2 Sacramento River. This unit follows the Sacramento River for 69 miles from Colusa to just south of Red Bluff and covers 35,418 acres. In the proposed rule, the Service describes the primary constituent elements (PCE) as essential physical and biological habitat requirements for the cuckoo (Service 2014). The three PCEs identified include: 1) riparian woodlands (patch size greater than 200 acres and wider than 325 feet) with willow-cottonwood or mesquite (*Prosopis* sp.) species; a dense canopy cover and dense under story, for nesting, foraging, and cover from predators; 2) adequate prey base requiring high insect availability, associated with higher foliage volume; and 3) moist riparian habitat with higher humidity in flat open riverine valleys, which includes wide floodplains. The hydrology must be sufficient to support such areas without prolonged inundation. There are several CNDDDB observations of the cuckoo in recent years within 5 miles of the action area (CNDDDB 2018).

The proposed project will result in 6.92 acres of temporary impacts and 1.91 acres of permanent impacts to low quality foraging habitat for the cuckoo. The vegetation associated with the temporary impacts will be removed in 2021 and will be replaced in 2024, resulting in 3 years of temporal loss of marginal foraging habitat during construction. The habitat under the new bridge, which will be removed due to construction activities, is considered permanently impacted. Ninety-six percent of the temporary impacts and 98% of the permanent impacts are in valley oak, blackberry, elderberry, and open areas dominated by coyote-bush shrub habitat. These potential foraging habitats are less preferred due to exposure to predators and reduced prey availability. The oxbow riparian habitat to the south of the viaduct will be protected during construction activities. The impacted riparian habitat occurs in the narrow strip of willows and cottonwoods along the Sacramento River (river). The cuckoo may forage in the narrow strips of willows along the river temporarily, during migration, or before they establish territories. Formal protocol level surveys lead

by a 10(a)1(A) recovery permit holder were conducted in 2017. No cuckoos were detected during any of the survey visits.

The following avoidance and minimization measures in order to minimize disturbance to the cuckoo and its proposed critical habitat have been proposed by Caltrans:

1. All trees will be removed outside of the migratory bird nesting season (October 1 – January 29), when cuckoos are not present in California.
2. Construction will begin May 1, prior to cuckoo migration to California, to prevent birds from nesting in areas affected by construction noise.
3. A Service-approved biological monitor will be present during the duration of the cuckoo's nesting season (June 1 – August 31).
4. If a cuckoo is detected within the action area, the Service will be notified.

We concur with your determination that the proposed project is not likely to adversely affect the cuckoo or the proposed critical habitat for the cuckoo. The proposed project reached the 'may affect' level, and the subsequent requirement for a biological assessment, due to the fact that the proposed project occurs within the known range of the cuckoo and proposed critical habitat for the cuckoo is present in the action area. The impacts to the proposed critical habitat for the cuckoo will be minor due to the fact that none of the PCEs will be permanently impacted by the proposed project. Since construction activities will commence prior to cuckoos potentially arriving in the action area, the minor vegetation removal within the proposed project area, and that all temporary impacted areas will be restored to pre-project conditions, the Service believes that any potential adverse effects to the cuckoo from the proposed project are extremely unlikely to occur, and are therefore discountable for purposes of this consultation.

The remainder of this document provides our biological opinion on the effects of the proposed project on the beetle.

Consultation History

- Feb – Aug 2017:* Multiple e-mail exchanges and conference calls between the Service and Caltrans discussing technical assistance, early guidance, and possible mitigation options including onsite mitigation involving the SNWR.
- September 26, 2017:* Site visit to the SNWR including the Service, Caltrans, and SNWR staff. The proposed land set aside for onsite mitigation was toured and project logistics were discussed.
- November 9, 2017:* The Service attended a meeting with the Service's Realty Division to discuss Caltrans' proposed use of the SNWR land for onsite beetle mitigation. The new alignment of the proposed bridge was also discussed.
- November 20, 2017:* Conference call between the Service, Caltrans, and the Service's Realty Division discussing the proposed project description, bridge alignment alternatives, as well as mitigation options.

- November 21, 2017:* Conference call between the Service, Caltrans, and CDFW discussing potential mitigation options for the beetle and the cuckoo.
- December 2017:* Multiple e-mail exchanges and conference calls between the Service, the Service's Realty Division, and SNWR discussing bridge alignment issues and the feasibility of onsite beetle mitigation at the SNWR.
- December 26, 2017:* The Service received the December 18, 2017, letter from Caltrans requesting initiation of formal consultation.
- February 1, 2018:* Insufficiency letter sent from the Service to Caltrans requesting further clarification on proposed mitigation regarding the beetle and the cuckoo.
- April 12, 2018:* The Service received the April 4, 2018, revised letter from Caltrans requesting initiation of formal consultation.
- April 19, 2018:* The Service e-mailed Caltrans stating that the consultation package was complete and that April 12, 2018, was the official start date of formal consultation.

BIOLOGICAL OPINION

Description of the Action

The proposed project is located along the Sacramento River along State Route (SR) 162 near Butte City, approximately 20 miles southwest of Chico. The existing bridge does not meet current operational seismic safety design. The original steel truss segment of the bridge is experiencing significant deterioration of the steel H-piles and H-beams at the bridge piers. The replacement structure will be a pre-stressed concrete box girder superstructure supported on 2-column bents. The columns are 5-foot diameter cast-in-steel-shell (CISS) piles/extension. The new bridge will have a standard shoulder width (8 feet) in both directions of travel. The new shoulders will be conformed to meet the existing road shoulders for approximately 100 feet east of the bridge. The driveway that goes onto the levee north of the bridge will be moved eastward approximately 50 feet to accommodate for the new bridge approach slab railing end treatment. Excavation may be needed in the active river channel to prepare for driving piles and coffer dams. Trees, debris, and sediment that may have accumulated against the bents may need to be removed. This removal will be done prior to the placement of cofferdams or sediment barriers.

The existing viaduct across the river floodplain will also be replaced. Under an independent process, Caltrans will exchange property of equal or greater value with the Service to acquire land from the SNWR for the new right-of-way required by the proposed bridge alignment. The replacement structure is a typical slab on pile extension. The columns are 2-foot diameter CISS piles/extension. The new viaduct will have fewer columns than the existing viaduct. The existing viaduct spans 35 feet between column rows. The new viaduct will span 45 feet between column rows and the viaduct slab depth will be about 2 feet. Span length will be in the 40-45 foot range. Each bent will consist of 24 inch CISS piles, each with a concrete extension to the superstructure. The CISS pile shell will be installed using conventional pile driving equipment to an approximate depth of 60 feet. None of these piles are adjacent to water with the closest pile being 79 feet from water.

Other construction activities associated with the proposed project include placing new traffic signing and striping, constructing new ditches for roadside runoff, extending or placing new culverts and over-drains within the town of Butte City, placing new bridge approach guardrail, reconstructing driveways, levee road connections, and realigning the County Road 61/SR 162 intersection. It is anticipated that excavators, dozers, cranes, pavers, dump trucks, concrete trucks, concrete pumps, vibratory and impact pile driving hammers, and pile driving equipment may be required to construct the new bridge. Temporary access roads will be required to access work below the bridge. These proposed temporary roads will most likely be located on the north side of the new bridge and viaduct. Construction of these temporary access roads will take place within existing dirt roads or driveways. The proposed project is scheduled as a three season project, anticipated to take place between 2021 and 2024. Construction activities above the ordinary high water mark will occur outside of the in-water work window. In-water work activities will occur during the summer season (June 1-October 15).

A survey conducted in 2015 by Condor Country Consulting Inc. mapped 43 elderberry shrubs (*Sambucus* sp.), the sole host plant for the beetle, within the action area. Caltrans conducted an additional survey in 2017 for the expanded action area, which was not covered under the original 2015 survey. Caltrans located 49 additional elderberry shrubs within the expanded action area. In total, there are 92 elderberry shrubs that occur within the action area of the proposed project. Fifty-one elderberry shrubs, 25 in riparian habitat and 26 in non-riparian habitat, will be trimmed just above the root-ball and remain in place while construction activities occur. The elderberry shrub trimmings will be placed on an adjacent 250-acre SNWR valley oak and elderberry restoration site as determined by the SNWR team. This restoration site was established in 2011 and occurs on the SNWR and is unrelated to the proposed project. The remaining 41 elderberry shrubs are within the action area but are located at such a distance from construction activities that there will be no adverse effects.

Conservation Measures

In addition to implementing Caltrans' standard BMPs throughout the proposed project area for the duration of construction, including erosion and sediment control, the following measures to minimize effects to the beetle are proposed. The measures proposed below are considered part of the proposed action evaluated by the Service in this biological opinion.

1. All areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible. Fencing will be inspected daily by a Service-approved biologist and maintained during construction under the biologist's supervision.
2. Caltrans will place wetland protection mats over the exposed elderberry shrub root-balls to provide protection from construction activities. The wetland mats will be placed prior to the start of construction. Driving and parking on the mats will only occur if necessary and will be avoided if possible. No construction equipment will remain on the mats overnight.
3. A Service-approved biologist will provide Worker Environmental Awareness Training for all contractors, work crews, and any onsite personnel on the status of the beetle, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.
4. A Service-approved biologist will monitor the work area at project appropriate intervals to assure that all avoidance and minimization measures are implemented.

5. In order to avoid and minimize adverse effects to the beetle, trimming will occur between November and February.
6. Herbicides will not be used within the drip-line of any elderberry shrub. Insecticides will not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method.
7. Erosion control will be implemented and the affected area will be re-vegetated where feasible with appropriate native plants.
8. Dust control measures will be implemented for all ground-disturbing activities in the project area. These measures may include applying water to graded and disturbed areas that are unvegetated.
9. Any damage done to the buffered area will be restored, including re-vegetation with appropriate native plants.
10. Caltrans will submit an annual monitoring letter to both the SNWR and the Service after each growing season for a minimum of three (3) years. The letter will provide details on the health, vigor, and regrowth of each individual elderberry shrub root-ball that was left in place.
11. Caltrans will contact the SNWR and the Service to schedule a site meeting at a minimum of 10 working days prior to ground-breaking activities. Guidelines for working on the SNWR will be reviewed and a Special Use Permit will be issued to Caltrans. The Service's Special Use Permit will include Special Conditions for conducting activities on the SNWR.

As part of the proposed project, Caltrans has proposed to compensate for the trimming of 51 elderberry shrubs within the proposed project site. Following the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)* (Service 2017), all 51 elderberry shrubs will be mitigated at a 1:1 ratio for habitat level riparian and non-riparian impacts to the beetle. Elderberry shrub location and impact levels were analyzed to determine the appropriate compensation scenario. Compensation will occur through the purchase of 252 beetle conservation credits through a Service-approved mitigation bank per the total plantings shown in Table 1.

Table 1: Valley Elderberry Longhorn Beetle Habitat-Level Compensation

Habitat Type	Compensation Ratio	Total Acres of Disturbance	Acres of Credit	Mitigation Credits Required ¹
Riparian	1:1	2.2	53	53
Non-Riparian	1:1	8.2	199	199
			Total	252

¹One credit (unit) = 1,800 sq. ft. or 0.041 acre

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 project, the 78.3 acre action area includes a portion of the 250 acre restoration site on the SNWR property. This action area encompasses the construction footprint, mitigation area, and any areas used for

access and staging, as well as the area within 100 feet of these components to account for indirect impacts to the beetle. The action area also includes all areas up to 330 feet from the construction footprint in which noise from construction activities is expected to exceed ambient levels (derived from Service 2006).

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

For the most recent comprehensive assessment of the species’ range-wide status, please refer to the *Withdrawal of the Proposed Rule to Remove the Valley Elderberry Longhorn Beetle from the Federal List of Endangered and Threatened Wildlife* (Service 2014). Threats discussed in the withdrawal continue to act on the beetle, with loss of riparian habitat being the most significant effect. While there continue to be losses of beetle habitat throughout its range, to date no project has proposed a level of effect for which the Service has issued a biological opinion of jeopardy for the beetle.

Environmental Baseline

The restoration project was established in 2011 on the SNWR property. This project included planted elderberry shrubs and associated native species on the river floodplain within both riparian and non-riparian habitat. The action area encompasses riparian areas of dense vegetation surrounding the western oxbows, the riparian areas directly adjacent to the river, and the riparian area on the western border of the State parks parcel located south of the current bridge alignment. Sections of the Codora unit of the SNWR restoration project located south of the bridge are located within the action area.

Due to the fact that the life cycle of the beetle takes one or two years to complete, during which it spends most of its life in the larval stage living within the stems of elderberry shrubs, it is not possible to know if the elderberry shrubs in the action area are inhabited by the beetle. However, 25 of the 51 elderberry shrubs are in riparian habitat, which increases the likelihood of these elderberry shrubs being occupied by the beetle. The closest known CNDDDB occurrence of the beetle is approximately 0.7 mile north of the proposed project (CNDDDB 2018). The proximity to known occurrences increases the likelihood that the stems greater than or equal to 1 inch in

diameter at ground level are inhabited by the beetle. The 51 elderberry shrubs in the proposed project's action area represent a very small proportion of habitat available throughout the full range of the beetle.

Effects of the Action

The construction of the proposed project will result in direct effects to 51 elderberry shrubs which provide habitat for the beetle. The trimming and relocation of the trimmings from the elderberry shrubs due to the establishment of the new bridge will result in the harm or death of an unknown number of individual beetle larvae inhabiting the stems. Beetle larvae may be killed or the beetle's life cycle may be interrupted during or after the trimming and relocation of the trimmings on the SNWR property. The process of trimming and relocating the trimmings of the 51 elderberry shrubs that are, or could be, occupied by beetle larvae is expected to adversely affect the beetle because the elderberry shrubs may experience stress or die due to being trimmed down to their root-ball; and the trimmings that are being relocated to an adjacent site containing larvae may be broken, or crushed as a result of the relocation process. However, if the relocated elderberry shrub trimmings are occupied by both male and female larvae that successfully emerge, there is the potential for beetles to reproduce and colonize unoccupied elderberry shrubs at the adjacent SNWR restoration site.

As noted previously in the *Description of the Action* section, Caltrans has also proposed a set of conservation measures, including the commitment to provide compensatory habitat as a condition of the action. This compensatory habitat is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from the permanent loss of habitat described above. The compensatory habitat proposed will be in the form of beetle conservation credits at a Service-approved mitigation bank.

This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

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 considered in this biological opinion. 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. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the beetle, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the Sacramento River Butte City Bridge Replacement Project, as proposed, is not likely to jeopardize the continued existence of the beetle. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the elderberry shrubs

to be trimmed represent a very small proportion of habitat available throughout the full range of the beetle; and (2) the compensatory habitat proposed will ensure that habitat for the species will be protected and managed in perpetuity.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including 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 the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Caltrans so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, 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 assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of the beetle will be difficult to detect due to the fact that it is not possible to know how many larvae inhabit the 51 elderberry shrubs providing habitat for the beetle. The process of trimming and relocating the trimmings from the elderberry shrubs could result in the harm and mortality of all larvae inhabiting the stems. Therefore, the Service is authorizing incidental take to the proposed action as the harm or death of all larvae within the 51 elderberry shrubs with stems greater than or equal to 1 inch in diameter at ground level that are going to be trimmed from the proposed project.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of the beetle associated with the Sacramento River Butte City Bridge Replacement Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the beetle resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the beetle:

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Caltrans will include full implementation and adherence to the conservation measures as a condition of any permit or contract issued for the project.
2. Caltrans will provide a copy of the completed bill of sale and payment receipt to the Service upon the purchase of beetle conservation credits.
3. In order to monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Caltrans will adhere to the following reporting requirement. Should this anticipated amount or extent of incidental take be exceeded, Caltrans must immediately reinstate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Caltrans will provide a precise accounting of the elderberry shrubs impacted to the Service after the completion of construction. This report will also include any information about changes in project implementation that result in habitat disturbance not described in the *Description of the Action* and not analyzed in this biological opinion.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Sacramento River Butte City Bridge Replacement Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Adam Stewart, Fish and Wildlife Biologist (adam_stewart@fws.gov) or Kellie Berry, Sacramento Valley Division Chief (kellie_berry@fws.gov), at the letterhead address or at (916) 414-6631.

Sincerely,



Jennifer M. Norris, Ph.D.
Field Supervisor

cc:

Ms. Suzanne Gilmore, California Department of Fish and Wildlife, Rancho Cordova, CA

Mr. William Ness, U.S. Army Corps of Engineers, Sacramento, CA

Mr. Tom Sampson, U.S. Fish and Wildlife Service, Realty Division, Sacramento, CA

Mr. Joe Silveira, U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge, Willows, CA

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Appendix H NMFS Biological Opinion



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

Refer to NMFS No: WCR-2018-10151

October 5, 2018

Ms. Kelly McNally
Environmental Branch Chief
Office of Environmental Management
District 3, North Region
California Department of Transportation
703 B Street
Marysville, California 95901

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response, and Fish and Wildlife Coordination Act Recommendations for the Sacramento River Butte City Bridge Replacement

Dear Ms. McNally:

Thank you for your communication of June 19, 2018, requesting initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Sacramento River Butte City Bridge Replacement.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action.

This biological opinion (BO) is based on the final Biological Assessment (BA) for the Sacramento River Butte City Bridge Replacement Project (Project) in Glenn County, California. Based on the best available scientific and commercial information, the BO concludes that the Project is not likely to jeopardize the continued existence of the federally listed threatened California Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon (*O. tshawytscha*), Sacramento River winter-run Chinook salmon (*O. tshawytscha*), or the Southern distinct population segment of North American green sturgeon (*Acipenser medirostris*) and is not likely to destroy or adversely modify their designated critical habitats. NMFS has included an incidental take statement with reasonable and prudent measures and nondiscretionary terms and conditions that are necessary and appropriate to avoid, minimize, or monitor incidental take of listed species associated with the Project.

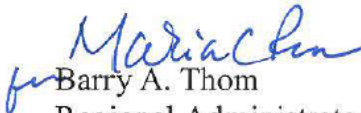


This letter also transmits NMFS's review of potential effects of the Project on EFH for Pacific Coast salmon, designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. The analysis concludes that the Project would adversely affect the EFH of Pacific Coast salmon in the action area. The EFH consultation concludes with conservation recommendations.

NMFS recognizes that Caltrans has assumed the Federal Highway Administration's (FHWA) responsibilities under Federal environmental laws for this project as allowed by a Memorandum of Understanding (NEPA Assignment) with the FHWA effective December 23, 2016. As such, Caltrans serves as the lead Federal Action Agency for the proposed project.

Please contact LTJG Caroline Wilkinson at the California Central Valley Office of NMFS at (916) 930-3731 or via email at caroline.wilkinson@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,


for Barry A. Thom
Regional Administrator

Enclosure

cc: To the file 151422-WCR2018-SA00453

Hanna Harrell, Associate Environmental Planner, 703 B Street, Marysville, California 95901

Cara Lambirth, Associate Environmental Planner, 703 B Street, Marysville, California 95901



UNITED STATES DEPARTMENT OF COMMERCE
 National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 West Coast Region
 650 Capitol Mall, Suite 5-100
 Sacramento, California 95814-4700

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response and Fish and Wildlife Coordination Act Recommendations

Sacramento River Butte City Bridge Replacement

NMFS Consultation Number: WCR-2018-10151

Action Agency: California Department of Transportation (Caltrans)

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Sacramento River winter-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	Endangered	Yes	No	Yes	No
Central Valley spring-run Chinook salmon (<i>O. tshawytscha</i>)	Threatened	Yes	No	Yes	No
California Central Valley steelhead (<i>O. mykiss</i>)	Threatened	Yes	No	Yes	No
Southern distinct population segment of North American green sturgeon (<i>Acipenser medirostris</i>)	Threatened	Yes	No	Yes	No

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:


 Barry A. Thom
 Regional Administrator

Date: OCTOBER 5, 2018



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1.0 INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

Because the proposed action would modify a stream or other body of water, NMFS also provides recommendations and comments for the purpose of conserving fish and wildlife resources, and enabling the Federal agency to give equal consideration with other Project purposes, as required under the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.).

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available through NMFS' Public Consultation Tracking System. A complete record of this consultation is on file at NMFS California Central Valley Office.

1.2 Consultation History

- On August 25, 2017, NMFS received a consultation initiation request letter and Biological Assessment (BA) from Caltrans requesting formal consultation.
- Over the next few months, various dialog were exchanged about Project effects and Caltrans priorities.
- On June 19, 2018, Caltrans contacted NMFS and asked to prioritize the Project, consultation was initiated.

1.3 Proposed Federal Action

“Action” means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). This Caltrans' Project proposes to replace the Sacramento River Butte City Bridge (Bridge No. 11-001 7) and the connecting viaduct in a new northern alignment. The Project is located at river mile 168.5 on State Route 162 in Glenn County, California at post mile 76.3-78.6 in the Butte City and Princeton 7.5 Quadrangles.

The existing bridge does not meet current operational seismic safety design. The replacement structure will have a standard shoulder width of 8 feet in both directions of travel. The slope north of

the highway would be likely built-up with imported material to reroute the driveway from the highway back onto the levee.

Evacuation may be needed in the active channel to prepare for driving piles and cofferdams. Tree, debris, and sediment that may have accumulated against the bents (transverse ridged frames) may need to be removed prior to placing cofferdams or sediment barriers.

Caltrans is also proposing to replace the existing viaduct across the Sacramento River floodplain from post mile 76.7 to 77.45 (a total length of 3,200 feet). The existing viaduct spans 35 feet between column rows and the new viaduct would span 45 feet between column rows. The viaduct slab depth would be about 2 feet. Span length would be in the 40-45 foot range. Each bent would consist of 24 inch cast-in-steel-shell (CISS) piles, each with a concrete extension to the superstructure. The CISS pile shell would be installed using conventional pile driving equipment to an approximate depth of 60 feet. None of the piles would be adjacent to water and the closest pile would be 79 feet from the river. The soil from inside the driven piles would be removed from the steel shell using a drill. Soil would be removed from the site or placed in the new embankment. Groundwater would likely be encountered during drilling requiring dewatering operations. After the pile is poured, individual columns would be formed and poured using steel or cardboard forms. Following column pour, falsework would be erected. Falsework would consist of steel stringers on timber posts and pads. Construction would likely progress in a linear fashion from one end to the other, probably starting at abutment 1 on the west end of the viaduct.

Other work includes new ditches that would be constructed for roadside runoff using extended or new culverts and overdrains, new bridge approach guardrail, levee road connections, and realigning the County Road 61/SR 162 intersection. The bridge approach embankment slopes would be generally 4:1 or less, but no steeper than 2:1.

Any traffic count census loops within existing pavement would be replaced due to the highway realignment and/or shoulder widening. Through Butte City, curb and gutter, and a sidewalk would be constructed on one side of the SR 162, along with curb ramps, and new driveways. After repairing failed pavement areas within the lanes and shoulders, the highway would then be overlaid with new Asphalt Concrete (AC). AC pavement grindings would be disposed of in conformance with the provisions in the Standard Specifications. Erosion control measures would be used to manage disturbed soil areas. The Storm-water treatment best management practice (BMP) strategy is to treat 100% of the water quality volume/water quality flow by maximizing site perviousness and the deployment of biofiltration consistent with the ability to convey bridge runoff to the abutments for treatment.

Some minimization measures in the Storm Water Pollution Prevention Plan require wetting of stock piles, disturbed areas, and road surfaces for dust abatement. Water would potentially be drafted from the Sacramento River from the dewatering of the piles and cofferdams. Should water drafting become necessary for dust suppression or other activities, it would be conducted in accordance with NFMS guidelines for water drafting.

Vegetation Removal

Temporary access roads would be required to access work below the bridge. These proposed temporary roads would most likely be located on the north and south sides of the new bridge and viaduct. Minor vegetation removal would occur as needed to construct a small portion of the

temporary access roads, construct the new bridge and viaduct abutments and piers, and remove the existing abutments and piers. Removal of the existing bridge and viaduct would provide an additional area within the Project area for possible replanting of riparian species.

The proposed project would permanently remove 0.072 acre and temporarily remove 0.378 acre of riparian habitat. A re-vegetation and monitoring plan would be prepared prior to the start of construction to address impacts and restoration to riparian habitats. Any areas of the river banks that are disturbed during construction would be returned to as near pre-construction conditions as feasible. Trees and shrubs proposed for removal are in locations that conflict with the proposed new bridge structure, and in locations where access is necessary to facilitate the demolition and removal of the existing bridge structure. These trees and shrubs are located along the banks of the Sacramento River and parallel to the existing structures within the Project area. The trees along the banks have the potential to provide shade and contribute nutrients to the river. Existing and adjacent native plant communities located within the Project limits and/or adjacent to the Project area would be surrounded during construction by protective fencing. This is intended to prevent unnecessary removal of additional riparian vegetation. Where feasible, rapidly sprouting plants, such as willows, would be cut off at ground level and root system would be left intact to promote regeneration.

Caltrans would concurrently restore 5 acres of a state parks parcel adjacent to the project to mitigate for the permanent loss of 0.072 acres of riparian habitat. This parcel borders the Sacramento River and has flooded approximately every 10 years (1997, 2006, 2017). It is located 0.5 mile east of a levee surrounded by USFWS refuge property. Caltrans would plant 5 acres in rows of primarily riparian habitat mimicking the restored parcel on its northern boundary (See Figure 1 Map).

Caltrans has not developed a restoration plan for the site yet, however, the planting list would likely consist of Valley Oak, Box elder, Arroyo and Gooding's Willow, Fremont Cottonwood, California Sycamore, Oregon Ash, and California rose.

Trestle Installation

Temporary work platforms (trestles) are required for construction of the new bridge and removal of the existing bridge. A total of two trestles would be used; one to construct the new bridge and one for the removal of the existing bridge. Temporary work trestles would be built either or both upstream or downstream of the proposed and existing bridges. Both trestles would be constructed during the in water work window between June 1 and October 15. The trestles would be placed between 20 and 75 feet from the new and old structures, respectively. The first trestle would be used as a work platform to build and support the structure for the new bridge. The second trestle would be used as a work platform to remove the existing structure.

The trestles would be elevated and supported on temporary piles to avoid blocking flow. The contractor would determine the final number and size of piles but the contract would specify that piles shall not exceed steel pipe or H-piles greater than 24-inches in diameter. The temporary trestles could be up to 30-50 feet wide with a maximum length of approximately 530 feet. Trestle piles would be placed in the river in groups of 5 to 10 in line with the flow of the river. Typically, the spacing between piles would be between 25 to 35 feet wide. A section of the river would remain open between the piles throughout the duration of construction to allow for fish passage.

The trestles can be designed to resist any flow requirement set by the permitting agency. If it is necessary to be left in the river over the winter, the deck of the temporary trestle could be removed during the rainy season so the structure does not interfere with high flows. While the piles of the temporary trestle are in place in the water, they would be monitored so that any accumulated debris would be removed at least daily, or more often as necessary, to protect the temporary structure.

Although not anticipated, the temporary piles may remain in the river for up to two winters and three summers. The piles used to support the second temporary trestle (used to remove the existing bridge) are anticipated to remain in the water for one season. Trestles would be removed after the new bridge is completed and the existing bridge is removed. To minimize disturbance to the river, the trestles would likely be constructed using top down methods where steel piles are first placed along the shoreline, then topped with the bridge deck units before moving sequentially out into the river. No equipment would operate in the water.

Pile Installation in water

Approximately 220, 24-inch diameter or smaller temporary trestle piles would be installed in order to construct two trestles crossing the river. A pile driving crane with a D-36 diesel impact hammer and or vibratory hammer would be used to drive the chosen pile into the ground. A vibratory hammer would be used over an impact hammer whenever feasible. Each temporary trestle pile would be under 60 feet in length. The depth of piles driven may vary depending on substrate composition but is assumed to be approximately 40 feet deep. It is estimated that a maximum of fifteen piles per day would be placed. Each pier would be constructed with 4 to 6 piles. Driving piles would take place between June 1 and October 15 when the Sacramento River is at its lowest. With an estimated 20 to 100 strikes per foot of embedment with 40 feet estimated embedment and up to fifteen 24-inch diameter pile being driven in a day, a maximum of 60,000 strikes per day would be calculated. However, the pile drivers are limited to 40 to 50 strikes per minute with an estimated maximum of 4 hours a day of operational time. Engineers have estimated 6,000 strikes per day. Trestle pile driving is estimated to last 20 to 40 days.

Falsework would be used to support the bridge structure while under construction. The temporary falsework would be supported by the trestles steel beams and steel piles that are approximately 16 to 20-inch diameter. With an estimated 20 to 100 strikes per foot of embedment with 40 feet estimated embedment and twenty 16- to 20-inch diameter pile being driven in a day, a maximum of 80,000 strikes per day is estimated. However, the pile drivers are limited to 40 to 50 strikes per minute with an estimated maximum of 4 hours a day of operational time. Engineers have estimated 8,000 strikes per day.

Six 60-inch diameter CISS piles would be driven in water or directly adjacent (within 17 feet of the water). Two 60-inch diameter piles are driven to construct each pier with one pile per bent (pier). Both impact and vibratory hammers would be used. A D-100 diesel hammer is expected to be used for the 60-inch diameter piles. Depending upon pile length and capacity, there is expected to be between 20 and 100 strikes per foot of embedment. The estimated length for the 60-inch diameter piles is between 80 to 120 feet. The expected depth the piles would be driven in the riverbed is between 80 to 100 feet. With an estimated 20 to 100 strikes per foot of embedment with 100 feet estimated embedment and one 60-inch diameter pile being driven in a day, a maximum of 10,000 strikes per day is estimated. CISS pile driving is estimated to last 8 to 16 days. Pile driving for the viaduct, at its closest 140 feet from the river, has the potential to occur simultaneous to pile driving in

the water. However, 60-inch diameter and 24-inch diameter piles in the water would not be driven simultaneously.

A dewatered casing is the most likely method of attenuation for the 60-inch diameter piles. Seat casings would be installed with a vibratory hammer, allowed to sink with its own weight, or with an excavator. A cofferdam may also be utilized at the contractor's discretion.

Cofferdams

Cofferdams would likely be used for removal of the existing bridge piers, removal of existing fenders, and attenuation for the driving of 60-inch diameter CISS piles. Cofferdams would be placed by vibrating or impact driving of steel sheet piles into the streambed. It is likely that the cofferdams would need to be dewatered. Cofferdams would most likely be in the range of 700-2,400 square feet. There is a small chance the contractor would elect to remove the fenders and draw rests inside a cofferdam. Such an operation would increase the cofferdam sizes to a maximum of 19,000 square feet.

Sheet piles would be installed if cofferdams are needed. It is estimated that 10 to 15 pairs would be installed each day over 10 to 40 days. This would amount to approximately 500 lineal feet of temporary sheet pile driven into the riverbed. Sheet piles would be installed with vibratory hammer if feasible.

Demolition

The contractor would be required to construct a catchment device to collect all demolition debris. No demolition debris would be allowed to fall within the river.

Staging Areas

The main equipment and staging areas are located within the wide Temporary Construction Easement areas on and beyond the east and west banks of the river. Parking, staging, and storage of equipment and materials would take place in previously disturbed open areas including existing pullouts devoid of trees or ground vegetation within the Project limits.

Construction Schedule

The proposed Project is scheduled as a three season Project, anticipated to take place between 2019 and 2021. Construction would last approximately 500 working days. Construction activities above the ordinary high water mark (OHWM) would occur outside of the in-water work window. In-water work activities would occur during the dry season (June 1-October 15). Construction in and over the water would be conducted during daylight hours. Lighting that might be necessary for construction activities above the OHWM, would be directed away from the Sacramento River to minimize the impact to migrating juvenile salmon.

Table 1. Temporary and Permanent Impacts to the Sacramento River

Temporary Impacts		
	Sq ft	Acre
Temporary Trestles piles	691	0.016
Temporary N. trestle shading	17,514	0.402
Temporary S. trestle shading	21,383	0.491
Cofferdam Minimum Area	700	0.016
Cofferdam Maximum Area	19,000	0.436
Riparian Habitat	16,465.6	0.378
Totals	75,754.6	1.739
Permanent Impacts		
Piles	78.5	0.002
Shading from new bridge	20,700	0.475
Riparian Habitat	3,136.3	0.072
Totals	23,914.8	0.549
Area of Existing In-Water Structure Removed		
Fenders	18,597	0.427
Piers	2,196	0.050
Totals	20,793	0.477

Table 2. Construction schedule

1 st SEASON	Clearing and grubbing	Above OHWM
	Driving 1 st trestle piles	Below OHWM
	Build 1 st trestle	Below OHWM
	Build cofferdams if needed	Below OHWM
	Install seat castings	Below OHWM
	Remove fenders and woody debris	Below OHWM
	Drive piles for new bridge	Below OHWM
	Drive piles for viaduct	Above OHWM
	Falsework piles (1 st or 2 nd season)	Below OHWM
	Viaduct falsework (1 st and/or 2 nd season)	Above OHWM
2 nd SEASON	Build falsework bridge	Over river
	Begin superstructure bridge	Over river
	Continue falsework viaduct	Above OHWM
	Begin superstructure viaduct	Above OHWM
3 rd SEASON	Drive piles for 2 nd trestle	Below OHWM
	Build 2 nd trestle	Below OHWM
	Build cofferdams if needed	Below OHWM
	Complete bridge superstructure	Below OHWM
	Complete viaduct superstructure	Above OHWM
	Demolition of viaduct	Above OHWM
Demolition of bridge	Over river	

Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

Under the Fish and Wildlife Coordination Act (FWCA), an action occurs whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license” (16 USC 662(a)).

“Interrelated actions” are those that are part of a larger action and depend on the larger action for their justification. “Interdependent actions” are those that have no independent utility apart from the action under consideration (50 CFR 402.02). There are no interdependent or interrelated activities associated with this Project.

1.4 Avoidance and Minimization Measures

Aquatic Sound Attenuation Devices

This measure consists of furnishing, installing, operating, maintaining and removing an aquatic sound attenuation system to reduce noise generated by driving piles in the water.

Approved aquatic sound attenuation systems would include one or more of the following. Each would attenuate equal to or greater than 5dB:

- 1) Air bubble curtain used with isolation casing (confined air bubble curtain).
- 2) De-watered isolation casing
- 3) De-watered cofferdam

Caltrans would require the contractor to submit working drawings and the supplement for sound attenuation system to the Caltrans Engineer, including the following:

- 1) Complete details of the system including mechanical and structural details
- 2) Details of anchorage components, air compressors, supply lines, distribution manifolds, aeration pipes and frames
- 3) Details of proposed means of isolating noise-producing systems on the driving platform
- 4) Details of meters, gauges, and recording devices
- 5) Details of the manufacturer's recommendations for the installation of the flow meters in conditions of laminar flow and non-laminar flow.

The engineer would be required to inspect the sound attenuation system for proper operation before each deployment and as necessary during deployment. Proper operation during deployment would be determined by the gauges in the monitoring system and by other methods determined by the engineer. Air pressure and air flow meters and gauges would be calibrated by a private laboratory approved by the Caltrans engineer prior to use in the air bubble curtain system. The condition of the sound attenuation system would be monitored and daily inspection reports would be prepared during pile installation operations and no less than every other day during periods of no activity.

The approved sound attenuation system would be operating prior to beginning pile driving at any given pile location. If the attenuation system fails, pile driving would immediately stop and would not resume at that location until it is again operating. A sound attenuation system is not required for pile or casing installation using a vibratory hammer, since noise levels would not exceed noise thresholds. Pile driving equipment would be isolated from the platform it is on and the pile driving operation is not transmitted through the platform to the water. The platform supporting the pile driving equipment would not be contained within the attenuation system.

In Stream Work Window:

The in-water work window is June 1 and October 15, which is expected to avoid the timing of most listed salmonids and green sturgeon in the Sacramento River. Therefore, it is recommended that any work occurring below the OHWM of the Sacramento River within the Project area, including barge operation, cofferdam installation and removal, and removal and installation of piles and the new fender system, would occur between this work window of each construction season. By requiring contractors to adhere to these dates for in-channel construction, the Project proponent would avoid and minimize Project effects on listed fish species.

Construction Site Best Management Practices:

The contractor would implement avoidance and minimization measures to contain construction related material in manageable locations, and prevent debris from entering surface waters during in-water work and for construction operations outside of receiving waters. BMPs used for erosion control would be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters receiving waters. Areas where a disturbance of soil has occurred would be stabilized appropriately and approved by the Central Valley Regional Water Quality Control Board (RWQCB) prior to filing the Notice of Termination.

Compliance with all construction site BMPs, specified in the approved Water Pollution Control Program and any other permit conditions, is mandatory to avoid and minimize the introduction of construction related contaminants and sediment to receiving waters. In order to achieve this and reduce the potential for discharge, the contractor would follow all applicable guidelines and requirements in the 2010 Caltrans Standard Specifications (2010 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water. Project specific BMPs would address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices and would be based on the best conventional and best available technology.

Caltrans staff and the contractor would perform routine inspections of the construction area to verify that field BMPs are properly implemented, maintained, and are operating effectively and as designed. Caltrans expects selected BMPs and mitigation measures to meet the standards and objectives to minimize water pollution impacts set forth in the 2010 CSS and would include (but not be limited to) the following:

- 1) Conduct all in-water work within streams that provide habitat for special status fish species (Sacramento River) between June 1 and October 15 only.

- 2) Use only equipment in good working order and free of dripping or leaking engine fluids.
- 3) Conduct any necessary equipment washing where water is prevented from flowing into MS4 drainage conveyance systems and receiving waters.
- 4) In case of an accidental spill, an "emergency response plan" would be prepared and submitted to NMFS and California Department of Fish and Wildlife (CDFW) for review and approval at least 14 days prior to conducting any construction work. A spill prevention control and countermeasures plan would be onsite and in place to handle any topside spills. The plan would include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also would identify the parties responsible for monitoring the spill response.
- 5) During construction, any spills would be cleaned up immediately according to the spill prevention and countermeasure plan.
- 6) BMPs for spill containment measures (plastic sheeting, absorbent pads and/or other containment devices) would be used during all barge-mounted construction activities. BMPs would be deployed around and beneath all over-water or barge-mounted construction equipment. Supplemental equipment would be on-site to collect and remove any spills.
- 7) Prevent discharge of turbid water to the Sacramento River during any construction activities by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration areas, and/or treating the water in a manner to ensure that discharges conform to the water quality requirements of the waste discharge permit issued by the Central Valley RWQCB prior to entering receiving waters.

Turbidity in the Sacramento River:

Caltrans would require the construction contractor to monitor turbidity levels in the Sacramento River during in-water construction activities (e.g. pile driving, extraction of temporary sheet piles used for cofferdams, placement of Rock Slope Protection). Turbidity would be measured using standard techniques upstream and downstream of the construction area to determine whether changes in ambient turbidity levels exceed 20%, the threshold derived from the Sacramento and San Joaquin Rivers Basins Plan (Central Valley Regional Water Quality Control Board 2011). If it is determined that turbidity levels exceed the 20% threshold, then Caltrans and/or its contractors would adjust work to ensure that turbidity levels do not exceed the 20% threshold.

De- Watering Activities - Water Quality:

To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary de-watering activities, water removed from the de-watered areas would be filtered and/or treated in a manner to ensure conformance with the water quality requirements of the approved 401 permit, issued by the Central Valley RWQCB, prior to being discharged into the aforementioned receiving waters.

Pile Removal BMPs:

The purpose of the following BMPs is to control turbidity and sediments re-entering the water column during pile removal (removal of existing fender timber piles and removal of any temporary sheet pile cofferdams), and prescribe debris capture and disposal of removed piles and debris.

- 1) Vibratory extraction is the preferred method of pile removal.
- 2) Crane operator shall be trained to remove pile slowly. This would minimize turbidity in the water column as well as sediment disturbance.
- 3) Operator to "Wake up" pile to break up bond with sediment.
- 4) Vibrate to break the skin friction bond between pile and soil. Bond breaking avoids pulling out a large block of soil - possibly breaking off the pile in the process. Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases, material may be attached to the pile tip, in line with the pile.
- 5) Extraction equipment would be kept out of the water. A creosote release to the environment may occur if equipment (bucket, steel cable, vibratory hammer) pinches a creosoted piling below the water line. Piling must not be broken off intentionally by twisting, bending or other deformation. This practice has the potential for releasing creosote to the water column. Work surface on barge deck or pier shall include a containment basin for pile and any sediment removed during pulling. Upon removal from substrate the pile would be moved expeditiously from the water into a containment basin. The pile shall not be shaken, hosed off, stripped or scraped off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.
- 6) Pulled pile would be placed in a containment basin to capture any adhering sediment. This should be done immediately after the pile is initially removed from the water.
- 7) Work surface and containment basin would be cleaned by disposing of sediment or other residues along with removed piling in a manner complying with applicable Federal and state regulations.

Environmental Awareness Training for Construction Personnel:

Before any work occurs in the Project area, including grading and tree removal, the Project proponent would retain a qualified biologist (familiar with the resources to be protected) to conduct a contractor/worker environmental awareness training for construction personnel. The awareness training would be provided to all construction crew and contractors to brief them on the need to avoid and minimize effects to sensitive biological resources (e.g., jurisdictional waters, special-status species, roosting bats, nesting birds) within construction areas and the penalties for not complying with applicable state and Federal laws and permit requirements. The biologist would inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the biological opinion or submitted to the Project proponent, and other overseeing agencies (i.e., CDFW, USFWS, and NMFS), as appropriate. The environmental training would cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during Project construction. The training also would include identifying the BMPs

written into construction specifications for avoiding and minimizing the discharge of construction materials or other contaminants into jurisdictional waters.

Establish Environmentally Sensitive Areas:

Additional direct and indirect impacts to special status biological resources, including wetland and terrestrial resources, throughout the Project area would be avoided or minimized by designating these features outside of the construction impact area as "Environmentally Sensitive Areas" (ESAs) on Project plans and in Project specifications. ESA information would be shown on contract plans and discussed in the Special Provisions. All areas outside of the Butte City Bridge Replacement Project area would be considered as ESAs for biological resources. Contractor encroachment into ESAs would be prohibited (including the staging/operation of heavy equipment or casting of excavated materials). ESA provisions would be implemented as a first order of work and remain in place until all construction activities are complete.

Limit Vegetation Removal:

Removal of riparian vegetation along the banks of the Sacramento River within the ESA would be avoided or preserved to the maximum extent practicable.

Restoration of Temporarily Impacted Riparian Habitat:

Any disturbed riparian vegetation would be replanted at a 1:1 ratio with native trees and shrubs. Rapidly sprouting plants, such as willows, would be cut off at ground level and root systems left intact. Caltrans would restore 5 acres of a state parks parcel adjacent to the project to mitigate for the permanent loss of 0.072 acres of riparian habitat. This parcel borders the Sacramento River and has flooded approximately every 10 years (1997, 2006, 2017). It is located 0.5 mile east of a levee, allowing the parcel to flood like a natural flood plain, and is surrounded by USFWS refuge property. Currently the state parks parcel is approximately 10.5 acres however its northern half is slowly getting eroded by the Sacramento River. Caltrans would plant 5 acres in rows mimicking the restored parcel on its northern boundary (See Figure 1 Map).

Caltrans has not developed a restoration plan for the site yet, however, the planting list would likely consist of Valley Oak, Box elder, Arroyo and Gooding's Willow, Fremont Cottonwood, California Sycamore, Oregon Ash, and California rose.

De-Watering Activities - Fish Relocation:

Caltrans would require contractor to submit a fish relocation plan to NMFS for approval prior to the start of in-water work. The plan would include a description of any anticipated fish relocation activities, including the number, frequency, and environmental or construction conditions that may trigger the need for fish relocation actions. A fish capture and relocation report would be prepared and submitted to CDFW, NMFS, and USFWS within 5 business days following completion of the fish relocation.

After any water diversion structures are in place and before dewatering is initiated, qualified fish biologists who have authorization from NMFS would be on site to capture and relocate

salmonids from areas to be dewatered. During dewatering, water would be incrementally diverted from the cofferdam, with diversion progressively increasing over a 4-hour period in the following increments: 50%, 75%, 90%, and 100%. Incremental reduction in flow allows fish that elude initial capture to move to deeper habitats where they can be captured and relocated before affected stream segments are completely dewatered. The biologists would relocate fish to suitable habitat outside of the construction area. The methods of removal and relocation of fish captured during the dewatering of the construction areas would be implemented in close coordination with NMFS and CDFW.

Cofferdam Restrictions:

The extent of the cofferdam footprints would be limited to the minimum necessary to support construction activities. Sheet piles used for cofferdams would be installed and removed using a vibratory pile driver. Cofferdams would be installed and removed only during the proposed in-water work window (June 1 - October 15). Cofferdams would not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area. All pumps used during dewatering of cofferdams would be screened according to CDFW and NMFS guidelines for fish screens. Cofferdam dewatering and fish rescue/relocation from within cofferdams would commence immediately following cofferdam closure.

Prevention of the spread or introduction of aquatic invasive species:

Caltrans or its contractors would coordinate with the CDFW invasive species program to ensure that the appropriate BMPs are implemented to prevent spread or introduction of AIS (Aquatic Invasive Species). Educate construction supervisors and managers about the importance of controlling and preventing the spread of AIS. Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of AIS. To the extent feasible, prior to departure of vessels from their place of origin and before in-water construction equipment is allowed to operate within waters of the Sacramento River, thoroughly inspect and remove and dispose of all dirt, mud, plant matter, and animals from all surfaces that are submerged or may become submerged, or places where water can be held and transferred to the surrounding water.

2 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS

that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and/or an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of “to jeopardize the continued existence of” a listed species, which is “to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which “means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features” (81 FR 7214).

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a “destruction or adverse modification” analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Identify the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an “exposure-response-risk” approach.
- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors by: (1) Reviewing the status of the species and critical habitat; and (2) adding the effects of the action, the environmental baseline, and cumulative effects to assess the risk that the proposed action poses to species and critical habitat.
- Reach a conclusion about whether species are jeopardized or critical habitat is adversely modified.
- If necessary, suggest a Reasonable and Prudent Alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This BO examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The BO also examines the condition of critical habitat throughout the designated area, evaluates the value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential PBFs that help to form that value for the conservation of the listed species.

Table 3.- Description of species, current ESA listing classification and summary of species status.

Species	Listing Classification and Federal Register Notice	Status Summary
Sacramento River Winter-run Chinook salmon	Endangered, 70 FR 37160, June 28, 2005	According to the NMFS 2016, 5-year species status review, the overall status of Sacramento River winter-run Chinook salmon has declined since the 2010 status review, with the single spawning population on the mainstem Sacramento River no longer at a low risk of extinction. New information indicates an increased extinction risk to winter-run Chinook salmon. The larger influence of the hatchery broodstock in addition to the rate of decline in abundance over the past decade has placed the population at a moderate risk of extinction and because there is only one remaining population, the extinction risk for the ESU has increased from moderate risk to high risk of extinction.
Central Valley (CV) Spring-run Chinook salmon ESU	Threatened, 70 FR 37160; June 28, 2005	According to the NMFS 2016, 5-year species status review, the status of the CV spring-run Chinook salmon ESU, until 2015, has improved since the 2010 5-year species status review. The improved status is due to extensive restoration, and increases in spatial structure with historically extirpated populations (Battle, Clear creeks) trending in the positive direction. Recent declines of many of the dependent populations, high pre-spawn and egg mortality during the 2012 to 2015 drought, uncertain juvenile survival during the drought are likely increasing the ESU's extinction risk.

Species	Listing Classification and Federal Register Notice	Status Summary
California Central Valley (CCV) Steelhead	Threatened, 71 FR 834; January 5, 2006	According to the NMFS 2016, 5-year species status review, the status of CCV steelhead appears to have changed little since the 2011 status review that concluded that the DPS was in danger of extinction. Most wild CCV populations are very small, are not monitored, and may lack the resiliency to persist for protracted periods if subjected to additional stressors, particularly widespread stressors such as climate change. The genetic diversity of CCV steelhead has likely been impacted by low population sizes and high numbers of hatchery fish relative to wild fish. The life-history diversity of the DPS is mostly unknown, as very few studies have been published on traits such as age structure, size at age, or growth rates in CCV steelhead.
Southern Distinct Population Segment (sDPS) of North American Green Sturgeon	Threatened, 71 FR 17757; April 7, 2006	According to the NMFS 2015, 5-year species status review, some threats to the species have recently been eliminated, such as take from commercial fisheries and removal of some passage barrier, but the species viability continues to be constrained by factors such as a small population size, lack of multiple populations, and concentration of spawning sites into just a few locations. The species continues to face a moderate risk of extinction.

Table 4.- Description of critical habitat, designation details and status summary.

Species	Designation Date and Federal Register Notice	Status Summary
Sacramento River Winter-run Chinook salmon	June 16, 1993, 58 FR 33212	<p>Designated critical habitat includes the Sacramento River from Keswick Dam (river mile (RM) 302) to Chipps Island (RM 0) at the westward margin of the Sacramento-San Joaquin Delta (Delta); all waters from Chipps Island westward to the Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and the Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of San Francisco Bay north of the San Francisco-Oakland Bay Bridge from San Pablo Bay to the Golden Gate Bridge. The designation includes the river water, river bottom and adjacent riparian zones used by fry and juveniles for rearing.</p> <p>Physical and biological features considered essential to the conservation of the species include: Access from the Pacific Ocean to spawning areas; availability of clean gravel for spawning substrate; adequate river flows for successful spawning, Incubation of eggs, fry development and emergence, and downstream transport of juveniles; water temperatures at 5.8–14.1°C (42.5–57.5°F) for successful spawning, egg incubation, and fry development; riparian and floodplain habitat that provides for successful juvenile development and survival; and access to downstream areas so that juveniles can migrate from spawning grounds to the San Francisco Bay and the Pacific Ocean.</p>
Central Valley Spring-run Chinook salmon ESU	September 2, 2005, 70 FR 52488	<p>Critical habitat for CV spring-run Chinook salmon includes stream reaches of the Feather, Yuba and American rivers, Big Chico, Butte, Deer, Mill, Battle, Antelope, and Clear creeks, the Sacramento River, as well as portions of the northern Delta. Critical habitat includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line. In areas where the ordinary high-water line has not been defined, the lateral extent will be defined by the bankfull elevation.</p> <p>Physical and biological features considered essential to the conservation of the species include: Spawning habitat; freshwater rearing habitat; freshwater migration corridors; and estuarine areas.</p>

Species	Designation Date and Federal Register Notice	Status Summary
California Central Valley Steelhead	September 2, 2005, 70 FR 52488	<p>Critical habitat for CCV steelhead includes stream reaches of the Feather, Yuba and American rivers, Big Chico, Butte, Deer, Mill, Battle, Antelope, and Clear creeks, the Sacramento River, as well as portions of the northern Delta. Critical habitat includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line. In areas where the ordinary high-water line has not been defined, the lateral extent will be defined by the bankfull elevation.</p> <p>Physical and biological features considered essential to the conservation of the species include: Spawning habitat; freshwater rearing habitat; freshwater migration corridors; and estuarine areas.</p>
Southern Distinct Population Segment (sDPS) of North American Green Sturgeon	October 9, 2009, 74 FR 52300	<p>Critical habitat includes the stream channels and waterways in the Delta to the ordinary high water line. Critical habitat also includes the main stem Sacramento River upstream from the I Street Bridge to Keswick Dam, the Feather River upstream to the fish barrier dam adjacent to the Feather River Fish Hatchery, and the Yuba River upstream to Daguerre Dam. Coastal marine areas include waters out to a depth of 60 fathoms, from Monterey Bay in California, to the Strait of Juan de Fuca in Washington. Coastal estuaries designated as critical habitat include San Francisco Bay, Suisun Bay, San Pablo Bay, and the lower Columbia River estuary. Certain coastal bays and estuaries in California (Humboldt Bay), Oregon (Coos Bay, Winchester Bay, Yaquina Bay, and Nehalem Bay), and Washington (Willapa Bay and Grays Harbor) are also included as critical habitat for sDPS green sturgeon.</p> <p>Physical and biological features considered essential to the conservation of the species for freshwater and estuarine habitats include: food resources, substrate type or size, water flow, water quality, migration corridor; water depth, sediment quality.</p>

2.2.1 Global Climate Change

One major factor affecting the rangewide status of the threatened and endangered anadromous fish in the Central Valley and aquatic habitat at large is climate change. Warmer temperatures associated with climate change reduce snowpack and alter the seasonality and volume of seasonal hydrograph patterns (Cohen *et al.* 2000). Central California has shown trends toward warmer winters since the 1940s (Dettinger and Cayan 1995). Projected warming is expected to

affect Central Valley Chinook salmon. Because the runs are restricted to low elevations as a result of impassable rim dams, if climate warms by 5°C (9°F), it is questionable whether any Central Valley Chinook salmon populations can persist (Williams 2006).

For winter-run Chinook, the embryonic and larval life stages that are most vulnerable to warmer water temperatures occur during the summer, so this run is particularly at risk from climate warming. Spring-run Chinook adults are vulnerable to climate change because they over-summer in freshwater streams before spawning in autumn (Thompson *et al.* 2011). Spring-run Chinook spawn primarily in the tributaries to the Sacramento River, and those tributaries without cold water refugia (usually input from springs) will be more susceptible to impacts of climate change. Although steelhead will experience similar effects of climate change to Chinook salmon, as they are also blocked from the vast majority of their historic spawning and rearing habitat, the effects may be even greater in some cases, as juvenile steelhead need to rear in the stream for one to two summers prior to emigrating as smolts. In the Central Valley, summer and fall temperatures below the dams in many streams already exceed the recommended temperatures for optimal growth of juvenile steelhead, which range from 14°C to 19°C (57°F to 66°F). The Anderson Cottonwood Irrigation Dam (ACID) is considered the upriver extent of green sturgeon passage in the Sacramento River. The upriver extent of green sturgeon spawning, however, is approximately 30 kilometers downriver of ACID where water temperature is higher than ACID during late spring and summer. Thus, if water temperatures increase with climate change, temperatures adjacent to ACID may remain within tolerable levels for the embryonic and larval life stages of green sturgeon, but temperatures at spawning locations lower in the river may be more affected.

In summary, observed and predicted climate change effects are generally detrimental to the species (McClure 2011, Wade *et al.* 2013), so unless offset by improvements in other factors, the status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. While there is uncertainty associated with projections, which increases over time, the direction of change is relatively certain (McClure *et al.* 2013).

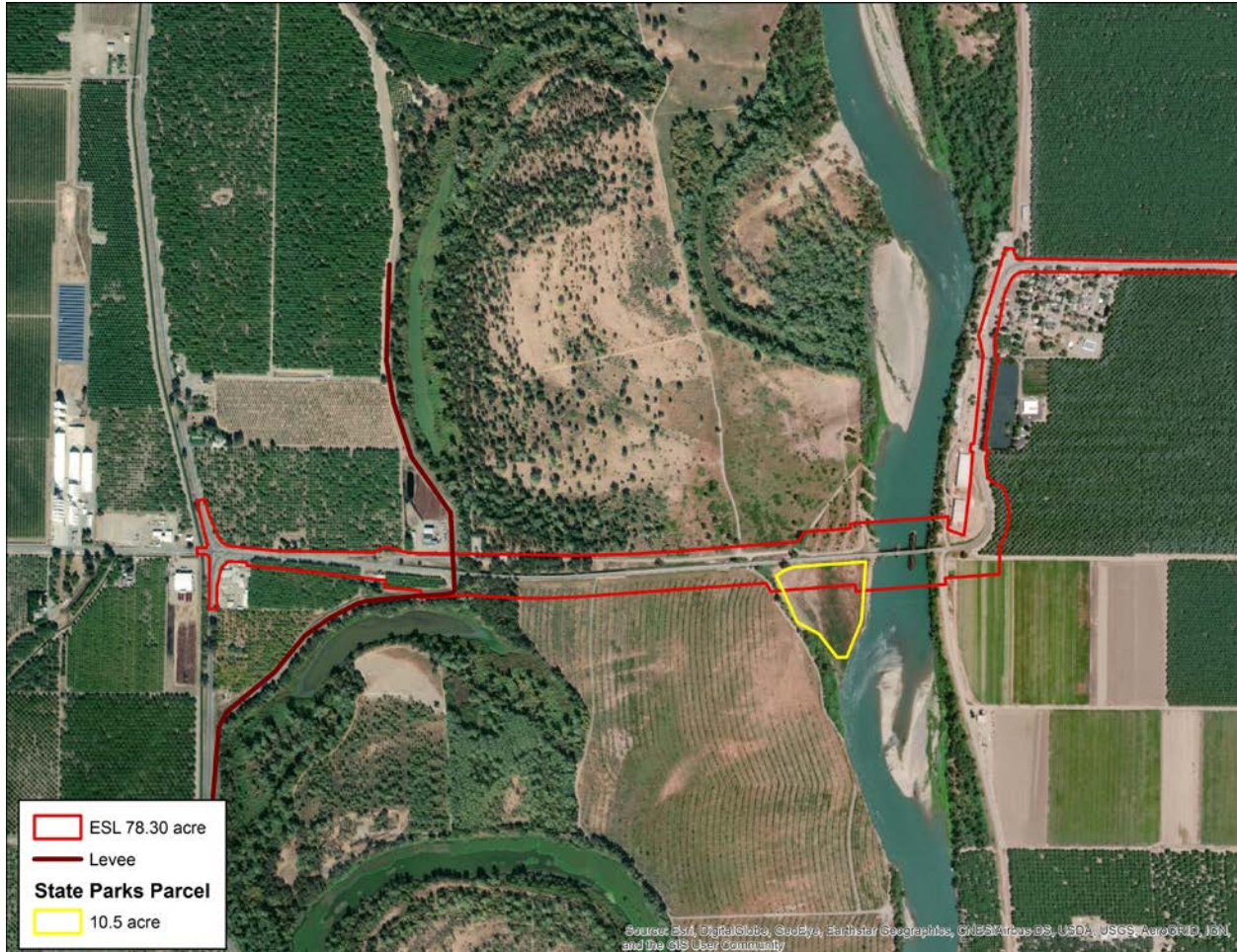
2.3 Action Area

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The Project is located along a one-mile stretch of State Route 162 as it crosses the Sacramento River near Butte City in Glenn County, California. The action area covers the 78.30 Environmental Study Area (ESL), the 10.5 acre state parks parcel, and the downstream and upstream extent to which construction effects from turbidity, hydroacoustic effects, or pollution may occur. The action area ranges from 67 to 99 feet above mean sea level. The center of the proposed new bridge will lie approximately in position 39.457287 °, -121.995168 ° at river mile 169.

The action area contains the construction footprint, which is 44.22 acres.

Figure 1. ESL and Mitigation Area



2.4 Environmental Baseline

The “environmental baseline” includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal Projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The action area encompasses 1,000 meters around the bridge, which is approximately 55 acres of the Sacramento River. The action area includes the portion of the river determined to likely experience potential adverse effects resulting from the Project including sedimentation, turbidity, and hydroacoustic impacts.

2.4.1 Status of Listed Species in the Action Area

The action area functions primarily as rearing habitat and as a migration corridor for Sacramento River winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon.

Various life stages of these species may be found within the action area throughout the year; although due to their lower suitable holding water temperatures, it is unlikely that any juvenile winter-run Chinook will be present in the action area during the in-water work window. Due to Project timing and location, fish in the action area are expected to be over 2 grams. This larger size means that they have different susceptibilities to effects from sound caused by pile driving.

The environmental baseline describes the status of listed species and critical habitat in the action area, to which we add the effects of the proposed bridge replacement, to consider the effects of the proposed Federal actions within the context of other factors that impact the listed species. The effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the status of listed species and, for non-Federal activities in the action area, those actions that are likely to affect listed species in the future, to determine if implementation of the proposed erosion repair is likely to cause an appreciable reduction in the likelihood of both survival and recovery or result in destruction or adverse modification of critical habitat.

The action area, which encompasses the Sacramento River and associated floodplains and riparian areas at and adjacent to river mile 169 of the Sacramento River, functions primarily as a rearing and migratory habitat for Sacramento River winter-run Chinook, CV spring-run Chinook, and CCV steelhead. The sDPS green sturgeon uses the area as a migration corridor for juveniles and adults. Holding post-spawn adults and rearing juveniles may utilize the area on their way to the estuary. Due to the life history timing of winter-run and spring-run Chinook, steelhead, and sDPS green sturgeon, it is possible for one or more of the following life stages to be present within the action area throughout the year: adult migrants, spawners, rearing juveniles, or emigrating juveniles. Although due to their lower suitable holding water temperatures, it is unlikely that any juvenile winter-run Chinook will be present in the action area during the in-water work window.

The action area is within designated critical habitat for Sacramento River winter-run Chinook, CV spring-run Chinook, and CCV steelhead. Habitat requirements for these species are similar. The PBFs of salmonid habitat within the action area include: freshwater rearing habitat and freshwater migration corridors. The essential features of these PBFs include, water quality and forage, water quantity and floodplain connectivity, water temperature, riparian habitat, natural cover, and access to and from spawning grounds. The intended conservation roles of habitat in the action area is to provide appropriate freshwater rearing and migration conditions for juveniles and unimpeded freshwater migration conditions for adults. However, the conservation condition and function of this habitat has been severely impaired through several factors, including unscreened or inadequately screened diversions, altered flows in the Delta, scarcity of complex in-river cover, and the lack of floodplain habitat. The result has been the reduction in quantity and quality of several essential features of migration and rearing habitat required by juveniles to grow and survive. In spite of the degraded condition of this habitat, the intrinsic conservation value of the action area is high as it is used by all federally listed salmonids in the Central Valley.

The action area is also within designated critical habitat for sDPS green sturgeon. PBFs for sDPS green sturgeon within freshwater riverine systems include food resources, substrate type or size,

water flow, water quality, migratory corridor free of passage impediments, depth (holding pools), and sediment quality. Currently, many of the PBFs of sDPS green sturgeon are degraded and provide limited high quality habitat. Additional features that lessen the quality of migratory corridors for juveniles include unscreened or inadequately screened diversions, altered flows in the Delta, and presence of contaminants in sediment. Although the current conditions of green sturgeon critical habitat are significantly degraded, the spawning habitat, migratory corridors, and rearing habitat that remain in both the Sacramento/San Joaquin River watersheds, the Delta, and nearshore coastal areas are considered to have high intrinsic value for the conservation of the species.

2.5 Effects of the Action

Under the ESA, “effects of the action” means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

The proposed action includes activities that may directly or indirectly impact winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon and/or the critical habitat of these species. The following is an analysis of the potential direct and indirect effects to listed fish species and/or their critical habitat that may occur because of implementing Butte City Bridge replacement Project.

2.5.1 Construction Related Effects

Construction-related activities have the potential to result in injury or death to listed fish species. Construction-related effects may include debris falling into the active channel, interactions with the construction barge, tools and/or equipment falling into the active channel, or noise generated by displaced rock and sediment and the operation of construction machinery. Noise generated during pile driving activity is discussed separately below. Adult CCV steelhead, CV spring-run Chinook, and Sacramento River winter-run Chinook are known to migrate through the action area; juvenile CCV steelhead and CV spring-run Chinook are known to rear in and migrate through the action area; and both adult and juvenile life stages of sDPS green sturgeon are known to utilize the action area as a migration corridor and may exhibit rearing behavior there as well. Any of these species/life stages may be present during the scheduled in-water work window and may be adversely affected by construction-related effects. BMPs, and avoidance and minimization techniques will be implemented, minimizing the probability of construction-related effects in the action area.

Species that migrate downstream may be exposed to short-term noise and disturbance caused by construction activities, which may cause stress from being displaced from their rearing area and needing to locate a new rearing area. As such, listed species may experience crowding and competition with resident fish for food and habitat, which can lead to reduced growth. Further, listed species may be subject to increased predation risk while they are locating new rearing areas, leading to reduced survival. However, we expect displaced fish will likely relocate to areas

downstream that have suitable habitat and low competition. Since only a small number of listed species are likely to be in the action area and temporarily displaced by the proposed Project actions, it is not expected that these actions will negatively impact the survival chances of individual fish nor the population as a whole.

Instream construction activities may cause mortality or reduce abundance of benthic aquatic macroinvertebrates within the footprint of the bridge repairs, due to coarse sediment smothering. These effects to aquatic macroinvertebrates are expected to be temporary, as rapid recolonization (about 2 weeks to 2 months) is expected (Merz and Chan 2005). Furthermore, downstream drift is expected to temporarily benefit any downstream, drift-feeding organisms, including juvenile listed species. The amount of food available for juvenile salmonids and green sturgeon is therefore expected to return to at least to pre-Project conditions.

Although listed fish may be exposed to construction areas with reduced prey base, listed fish will be able to retreat to adjacent suitable habitat, and food resources will only be temporarily impacted. Therefore, effects of instream construction activities are expected to be minor, resulting in behavioral modifications, and are unlikely to result in injury or death.

2.5.2 Fish Entrapment in Cofferdams

Cofferdams will be used for the removal of the existing bridge piers. It is also possible that they will be used for removal of existing fenders as well as attenuation for the pile driving. The exact area to be dewatered is unknown so NMFS is analyzing the greatest possible extent that would be required, 19,000 square feet or 0.436 acres. The potential exists for entrapment and mortality of fish following closure and dewatering of the cofferdam. The proposed timing of cofferdam installation (June) would avoid the migration period of most listed species; however, the potential would remain for some special-status fish species to become entrapped. This risk is minimized by relocating fish and limiting cofferdam footprints.

Caltrans will require the contractor to submit a fish relocation plan to NMFS for approval prior to the start of in-water work. The plan will include a description of any anticipated fish relocation activities, including the number, frequency, and environmental or construction conditions that may trigger the need for fish relocation actions. A fish rescue and relocation report will be prepared and submitted to NMFS within five business days following completion of the fish relocation. After any water diversion structures are in place and before dewatering is initiated, qualified fish biologists who have authorization from NMFS will be on site to capture and relocate salmonids from areas to be dewatered. During dewatering, water will be incrementally diverted from the cofferdam, with diversion progressively increasing over a four-hour period in the following increments: 50%, 75%, 90%, and 100%. Incremental reduction in flow allows fish that elude initial capture to move to deeper habitats where they can be captured and relocated before affected stream segments are completely dewatered. The biologists will relocate fish to suitable habitat outside of the construction area downstream and immediately after capture.

The fish capture/relocation is included in this Project in order to avoid or minimize injury or death to fish due to dewatering. However, the handling of fish rescue itself may cause stress,

injury, or death, even though it will be conducted by a qualified fish biologist and done according to a NMFS-approved relocation plan.

During dewatering, up to 19,000 square feet or 0.436 acres of critical habitat in the Sacramento River will be temporarily lost. The majority of this critical habitat will be regained once the cofferdams are removed and those portions of the river re-flooded. The extent of the cofferdam footprints will be limited to the minimum necessary to support construction activities. Cofferdams will be installed and removed only during the proposed in-water work window (June 1 -October 15). Cofferdams will not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area. All pumps used during dewatering of cofferdams will be screened according to NMFS guidelines for screens. Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure.

2.5.3 Acoustic Effects

Piles that are driven into riverbed substrate propagate sound through the water, which can damage a fish's swim bladder and other organs by causing sudden rapid changes in pressure, rupturing or hemorrhaging tissue in the bladder (Gisiner 1998, Popper et al. 2006). The swim bladder is the primary physiological mechanism that controls a fish's buoyancy. A perforated or hemorrhaged swim bladder has the potential to compromise the ability of a fish to orient itself both horizontally and vertically in the water column. This can result in diminished ability to feed, migrate, and avoid predators. Sensory cells and other internal organ tissue may also be damaged by noise generated during pile driving activities as sound reverberates through a fish's viscera (Gaspin 1975). In addition, morphological changes to the form and structure of auditory organs (saccular and lagenar maculae) have been observed after intense noise exposure (Hastings 1995). It is important to note that acute injury resulting from acoustic impacts should be scaled based on the mass of a given fish. Juveniles and fry have less inertial resistance to a passing sound wave and are therefore more at risk for non-auditory tissue damage (Popper and Hastings 2009). Fish can also be injured or killed when exposed to lower sound pressure levels for longer periods of time. Hastings (1995) found death rates of 50 percent and 56 percent for gouramis (*Trichogaster sp.*) when exposed to continuous sounds at 192 Db (decibel) (re 1 μ Pa) at 400 Hz and 198 dB (re 1 μ Pa) at 150 Hz, respectively, and 25 percent for goldfish (*Carassius auratus*) when exposed to sounds of 204 dB (re 1 μ Pa) at 250 Hz for 2 hours or less. Hastings (1995) also reported that acoustic "stunning," a potentially lethal effect resulting in a physiological shutdown of body functions, immobilized gourami within 8 to 30 minutes of exposure to the aforementioned sounds.

Multiple studies have shown responses in the form of behavioral changes in fish due to human produced noise (Wardle et al. 2001, Slotte et al. 2004, Popper and Hastings 2009). Instantaneous behavioral responses may range from slight variations, a mild awareness, to a startle response. Fish may also vacate their normally-occupied positions in their habitat for short or long durations. Depending on the behavior that is being disrupted, the direct and indirect negative effects could vary. Behavioral effects could affect juvenile fish more than adults, as there are essential behaviors to their maturation and survival, such as feeding, sheltering, and migration. An example of a significant, direct negative effect would be interruption or alteration of

migratory behavior. In the context of the proposed action area, the migratory behavior of juvenile salmonids and green sturgeon may be affected by various pile driving and acoustic impacts. Though pile driving may affect migratory behavior, it is not expected to prevent salmonids and sturgeon from passing upstream or downstream because pile driving will not be continuous through the day (maximum 16,000 strikes per day), and will not occur at night, when the majority of fish migrate.

The permanent piles for the bridge abutments will be installed on land using a vibratory hammer over an impact hammer to the maximum extent possible. The proposed action includes installation of 10, 60-inch diameter CISS piles. According to the Caltrans acoustic report attached to the Biological Assessment, the installation of 60-inch diameter CISS piles with an impact hammer in the water without attenuation will result in single-strike sound levels of 210 dB_{peak} and 195 dB_{root mean square (RMS)} at 10 meters (32.8 feet) from the pile with an estimated sound exposure level (SEL) of 185 dB. The installation of 60-inch CISS piles with the use of an impact hammer on land will result in single-strike sound levels of 204 dB_{peak} and 185 dB_{RMS} at 10 meters (32.8 feet) from the pile with an estimated SEL of 175 dB.

The piles for the temporary trestle will be installed in the water using a vibratory hammer over an impact hammer to the maximum extent possible. The proposed action includes installation of 220 piles for the temporary trestle. Piles will either be 24-inch diameter steel pipe. According to Caltrans, the installation of 24-inch diameter steel piles will result in single-strike sound levels of 205 dB_{peak} and 188 dB_{RMS} at 10 meters (32.8 feet) from the pile with an estimated SEL of 173 dB. According to Caltrans, the in-water installation of 15-inch H piles will result in single-strike sound levels of 200 dB_{peak} and 183 dB_{RMS} at 10 meters (32.8 feet) from the pile with an estimated SEL of 170 dB. The installation of 16 to 20-inch diameter steel in-water falsework will result in single-strike sound levels of 208 dB_{peak} and 187 dB_{RMS} at 10 meters (32.8 feet) from the pile with an estimated SEL of 176 dB. The 24-diameter CISS piles for the viaduct will result in on land single-strike sound levels of 185 dB_{peak} and 169 dB_{RMS} at 34 meters (111.5 feet) from the pile with an estimated SEL of 158 dB. The 24-diameter abutments will result in on land single-strike sound levels of 190 dB_{peak} and 164 dB_{RMS} at 55 meters (180.4 feet) from the pile with an estimated SEL of 153 dB.

For the water driven 60-inch CISS piles and the 16 to 20 inch steel falsework piles, the estimated non-attenuated peak sound level (210 dB and 208 dB respectively) is above the interim threshold (206 dB) for fish injury for a single strike. Cumulative acoustic effects are expected for any situation in which multiple strikes are being made to an object with a single strike peak dB level above the effective quiet threshold of 150 dB. This is the case for all pile driving associated with this Project.

Sheet piles will be installed using a vibratory driver. No impact driving will be used for the sheet piles. Vibratory hammers are expected to cause injury to fish. This is because the injury threshold for fish is higher using these machines because the shape of the sound is different. NMFS currently uses a dual metric criteria to assess onset of injury for fish exposed to pile driving sounds [Fisheries Hydroacoustic Working Group (FHWG) 2008]. Specifically, this includes a peak level of 206 dB and an accumulated SEL of 187 dB for fish equal to or greater than 2 grams. If either threshold is exceeded, then physical injury is assumed to occur. There is

uncertainty as to the behavioral response of fish exposed to high levels of underwater sound produced when driving piles in or near water. Based on the information currently available, and until new data indicate otherwise, NMFS uses a 150 dB RMS threshold for behavioral responses in salmonids and green sturgeon.

Distances to the thresholds for acoustic effects under the different construction scenarios are summarized in Table 5.

Table 5. Acoustic Impacts						Distance (m) to Threshold			
						Onset of Physical Injury			Behavior RMS dB
						Cumulative SEL dB			
						Peak dB	Fish >2g	Fish <2g	Behavior RMS dB
Pile type	Land/water	Total strikes /day	Peak	SEL	RMS	206 dB	187dB	183 dB	150 dB
60 in CISS	water	10,000	210	185	195	18	2,154	2,154	10,000
60 in CISS	land	10,000	204	175	185	7	464	464	2,154
Temp Trestle	water	6,000	205	173	188	9	341	341	3,451
Falsework	water	8,000	208	176	187	14	541	541	2,929
H pile	water	6,000	200	170	183	10	215	215	1,585
Viaduct	water	6,000	185	158	169	10	116	116	628
Abutment	land	800	190	153	164	10	87	87	472

Sound has the ability to injure fish physically by damaging a fish’s swim bladder and other organs by causing sudden rapid changes in pressure, rupturing or hemorrhaging tissue in the bladder. Additionally, it can harass fish by instigating behavioral changes. These behavioral changes can also lead to injury or death, such as fish being scared into higher predation areas. The calculations above state that there is the potential for the cumulative acoustic effects to exceed the effective quiet threshold allowing for injury or behavioral changes.

Based on the acoustic effects analysis (Table 5), peak sound pressures are estimated to be above the thresholds for injury and/or mortality of listed fish within 0 to 18 meters (0 to 59 feet) of the pile driving, depending on the size of piles used. Peak sound pressures are not estimated to be above the threshold for injury and/or mortality of listed fish >18 meters (or 59 feet) from the pile driving. Cumulative sound exposure levels are expected to exceed the 187 dB threshold for physical injury for fish greater than 2 grams, from 87 to 2154 meters (285.4 to 7,066.9 feet) of the pile, depending on the size of piles used (Table 5). Non-injurious behavioral effects are expected to occur from 472 to 10,000 meters (1,548.5 to 32,808.4 feet) of the pile, depending on the size of pile used (Table 5).

Number of strikes per day is listed in Table 5 and pile driving will occur during the June 1 to October 15 in water work window. Listed species present during the in-water work window such as Adult CCV steelhead, CV spring-run Chinook, and Sacramento River winter-run Chinook; juvenile CCV steelhead and CV spring-run Chinook; and both adult and juvenile life stages of sDPS green sturgeon.

Avoidance and minimization measures for pile driving include, the seasonal work window which will avoid many sensitive life stages, limiting pile driving to daylight hours to allow migration through the area at night, vibrating piles to the maximum extent possible, the use of a vibratory driver for the sheet piles and the use of attenuation methods such as installing inside a dewatered cofferdam.

One of the following sound attenuation methods will be used: 1) Air bubble curtain with isolation casing, 2) De-watered attenuation casing, 3) De-watered cofferdam. Piles will be installed using a vibratory hammer over an impact hammer to the maximum extent possible. Use of attenuation is assumed to provide a minimum 5 dB of sound reduction for all sound levels. However, because the specifics of the attenuation method used for installation are not yet known, NMFS has analyzed the effects of pile driving without attenuation. Even with avoidance and mitigation measures in place, the acoustic noise will cause significant behavioral effects and physical injury to listed fish located in the action area during pile driving.

2.5.4 Sedimentation and Turbidity Effects

Increased sedimentation and turbidity in the Sacramento River may result from a number of sources associated with the proposed Project. Site clearing, earthwork, driving of permanent piles, driving and removal of piles for the temporary trestles, vibrating and removal of sheet piles for cofferdams, vegetation removal and planting, and placement of Rock Slope Protection will result in disturbance of soil and riverbed sediments and therefore temporary increases in turbidity and suspended sediments. Non-soluble contaminants known to be present in the Sacramento River include polychlorinated biphenyls (PCBs), mercury, pesticides and insecticides, and other unknown toxicities (State Water Resources Control Board 2011). Disturbance of sediments during in-water construction could lead to a degradation of water quality. In addition, dewatering and soil removal from the inside of the cofferdams could result in temporary increases in turbidity and suspended sediments in the river, if water from within the cofferdams is not properly disposed of or contained and treated before being discharged back to the river. Increased exposure to contaminants and elevated levels of suspended sediments have the potential to result in physiological, behavioral and habitat effects. The severity of these effects depends on the extent of the disturbance, duration of exposure, and sensitivity of the affected life stage. Based on the types and duration of proposed in-water construction methods, short-term increases in turbidity and suspended sediment may disrupt feeding activities or result in avoidance or displacement of fish from preferred habitat.

Salmonids have been observed to avoid streams that are chronically turbid (Lloyd 1987) or move laterally or downstream to avoid turbidity plumes (Sigler *et al.* 1984). Chronic exposure to high turbidity and suspended sediment may also affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress (Waters 1995). Any increase in turbidity associated with instream work is likely to be brief and occur only near the site, attenuating downstream as suspended sediment settles out of the water column. Temporary spikes in suspended sediment may result in behavioral avoidance of the site by fish; several studies have documented active avoidance of turbid areas by juvenile and adult salmonids (e.g., Sigler *et al.* 1984, Lloyd 1987, Servizi and Martens 1992).

Although less is known about the timing of rearing and migration of sDPS green sturgeon, both adult and juvenile life stages are known to utilize the action area as a migration corridor and may exhibit rearing behavior there as well. Less is known about the specific detrimental physical and physiological effects of sedimentation and turbidity to sturgeon. However, it is thought that high levels of turbidity can generally result in gill fouling, reduced temperature tolerance, reduced swimming capacity and reduced forage capacity in lotic fishes (Wood and Armitage 1997).

Potential direct and indirect effects of increased sedimentation and turbidity will be addressed using BMPs. All in water work will be conducted between June 1 and October 15 to minimize impacts to fish. During in-water construction activities, monitoring will occur to ensure that turbidity levels do not exceed a 20% increase above ambient, as this is the threshold determined in the Sacramento and San Joaquin Rivers Basins Plan (RWQCB 2011). If this threshold is exceeded, work will be adjusted to maintain compliance. To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary de-watering activities, water removed from the de-watered areas will be filtered and/or treated in a manner to ensure conformance with the water quality requirements of the approved 401 permit, issued by the Central Valley RWQCB, prior to being discharged into the aforementioned receiving waters. Piling removal can cause elevated turbidity and disturbance of sediment in the water. BMPs addressing piling removal include removal by vibratory extraction. This should be done by a crane operator who is trained to do so slowly to minimize turbidity and disturbance. The piling should be vibrated to break the friction bond between the pile and soil and prevent additional soil from being pulled up. Extraction equipment should minimize the time the exposed timber pile is in the water to prevent unnecessary exposure of creosote. Upon removal from substrate the pile should be moved expeditiously from the water into a containment basin. This should be done directly without any action being taken to clean or remove adhering material from the pile. The work surface and containment basin should be cleaned by disposing of any sediment in a manner compliant with Federal and state regulations.

There is still some potential for impact to adult and juvenile fish due to temporary, localized plumes of turbidity during pile driving, removal of piles, and demolition processes. However, these BMP actions will minimize the extent of adverse effects associated with the proposed action and impacts to fish are expected to be minimal.

2.5.5 Spills and Hazardous Materials

During construction, the potential exists for spills or leakage of toxic substances to enter the Sacramento River. Refueling, operation, and storage of construction equipment and materials could result in accidental spills of pollutants (e.g., fuels, lubricants, concrete, sealants, and oil).

High concentrations of contaminants can cause direct and indirect effects to fish. Direct effects include mortality from exposure or increased susceptibility to disease that reduces the overall health and survival of the exposed fish. The severity of these effects depends on the contaminant, the concentration, duration of exposure, and sensitivity of the affected life stage. A potential indirect effect of contamination is reduced prey availability; invertebrate prey survival could be reduced following exposure, therefore making food less available for fish. Fish consuming infected prey may also absorb toxins directly. For salmonids and sturgeon, potential direct and

indirect effects of reduced water quality during Project construction will be addressed with BMPs including measures to control non-storm water management and waste management practices. Equipment will be in good working order and free of dripping or leaking fluids. Any necessary equipment washing will be conducted where water is prevented from flowing into the drainage conveyance systems and receiving waters. An emergency response plan will also be put into place including strict onsite handling procedures to prevent construction and maintenance materials from entering the river, procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. BMPs will be in place for spill containment measures. This includes the use of plastic sheeting, absorbent pads and containment devices during all barge-mounted construction activities. BMPs will be deployed around and beneath all over-water or barge-mounted construction equipment and supplemental equipment will be present on-site to collect and remove any spills which may occur. Returning turbid water to the river will be prevented by filtering discharge with a filter bag, diverting to a settling tank and treatment of the water consistent with the requirements of the waste discharge permit issued by the Central Valley RWQCB. With these BMPs in place, impacts to listed species from contaminants are expected to be very minor and short-term.

2.5.6 Increase in Overwater Structure

A temporary trestle will be installed to assist in bridge construction. This trestle will be used during the in-water work window and left in place year round during construction. Shading from this trestle will cover 38,897 ft² (0.893 acres) of critical habitat on or along the Sacramento River. Additionally, the new bridge cause permanently shading on the river. The current bridge is 30 feet wide and 455 feet long which is 13,650 square feet (0.313 acres) of shading. The new bridge will be 45 feet wide and 480 feet long which is 20,700 square feet (0.475 acres) of shading. Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that prey on juvenile fishes. Temporary shading attributable to the presence of the temporary trestles, work platforms, and barges during bridge construction and permanent shading from the new bridge potentially could reduce primary productivity of affected habitats. Shading also could increase the number of predatory fishes (e.g., striped bass, largemouth bass) holding in the action area and/or their ability to prey on juvenile fishes. Because the temporary trestles, work platforms, and barges would be present only during construction, effects of trestle and work platform would be temporary and localized. Temporary shading effects from these platforms will extend outside of the in-water work window because they will be left in place year round from 2019 to 2021. Permanent shading effects will occur throughout the life of the bridge.

To mitigate for these effects, contractors will remove the deck of the temporary trestle during the rainy season so the structure does not interfere with high flows. While the piles of the temporary trestle are in place in the water, they will be monitored so that any accumulated debris will be removed at least daily, or more often as necessary, to protect the temporary structure. Although not anticipated, the temporary piles may remain in the river for up to two winters and three summers. The piles used to support the second temporary trestle (used to remove the existing bridge) are anticipated to remain in the water for one season. Trestles will be removed after the new bridge is completed and existing bridge is removed. To minimize disturbance to the river, the trestles would likely be constructed using top down methods where steel piles are first placed

along the shoreline, then topped with the bridge deck units before moving sequentially out into the river. These construction methods will minimize the amount of shading from trestles and the effects of that shading.

Effects of trestle and work platform would be temporary and localized. With the BMPs described above in place, it is not anticipated that listed species will be negatively impacted by increased temporary shading effects. The construction of the new bridge will result in 0.475 acres of permanent shading.

2.5.7 Effects to Critical Habitat

Critical habitat has been designated in the action area for winter-run Chinook, CV spring-run Chinook, CCV steelhead, and southern DPS of green sturgeon. The PBFs that occur within the action area for winter-run Chinook are: (1) access to and from spawning grounds, (2) habitat areas and adequate prey items that are free of contaminants, (3) riparian habitat for juvenile rearing, (4) adequate river flows, and (5) water temperatures between 42.5 and 57.5°F. The PBFs within the action area for CV spring-run Chinook and CCV steelhead are (1) freshwater rearing sites and (2) freshwater migration corridors. The PBFs within the action area for sDPS green sturgeon are: (1) food resources, (2) adequate flow regime for all life stages, (3) water quality, (4) migratory corridors, (5) adequate water depth for all life stages, and (6) adequate sediment quality.

Migratory corridor PBFs for winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon are likely to be affected by the proposed action. The construction of bridge piles associated with the proposed action will create a permanent loss of 0.002 acres of critical habitat below the OHWM. The Project also includes removal of 0.477 acres of existing fenders and piers, which is expected to result in less predator habitat.

Cofferdams, sheet piles, and temporary trestle piles are expected to temporarily affect a maximum of 0.452 acres critical habitat. Impacts are expected to include minor decreases in the flow regime and slight increases in temperatures. During the three seasons of in-water work, the entirety of the migratory corridor will be decreased, but the long-term project footprint is expected to result in an increase to usable area for fish migration.

The new bridge will shade the Sacramento River by 0.475 acres. This will degrade the PBF of migratory corridors by increasing the predation risk. Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that prey on juvenile listed fishes.

In addition, this Project will permanently remove 0.072 acres, and temporarily remove 0.378 acres of Sacramento River riparian woodland habitat that supports rearing PBFs of critical habitat. BMPs will be implemented to minimize temporary effects; any disturbed riparian vegetation will be replanted at a 1:1 ratio with native trees and shrubs. Rapidly sprouting plants will be cut off at ground level to allow root systems to remain intact. For onsite replacement plants, Caltrans will prepare a revegetation plan. This plan will include a list of species, planting locations, and maintenance requirements. The composition of planted species will include all

native riparian species similar to those removed from the Project footprint. Caltrans would additionally restore 5 acres of a state parks parcel adjacent to the project to mitigate for the permanent loss of 0.072 acres of riparian habitat. This parcel borders the Sacramento River and has flooded approximately every 10 years (1997, 2006, 2017). This restored floodplain would provide additionally riparian habitat for juvenile rearing. Caltrans would plant 5 acres in rows mimicking the restored parcel on its northern boundary, planting species such as of Valley Oak, Box elder, Arroyo and Gooding's Willow, Fremont Cottonwood, California Sycamore, Oregon Ash, and California rose. Because of this revegetation plan and mitigation efforts, permanent impacts to critical habitat will be minimal. Short-term impacts to critical habitat are minimal and planting the 5-acre parcel will provide a long term benefit for the PBF of rearing.

Habitat and prey items may be temporarily affected due to turbidity and removal of woody debris. This will affect the PBFs of food sources adequate prey items free from containments. Additionally, water quality will be affected by increased turbidity when large woody debris is removed, during pile driving, and cofferdam dewatering which could cause a temporary drop in oxygen levels. This will affect the PBF of adequate flow. These effects as well as construction debris, runoff, dust, and potential release of creosote from the old wooden fenders, affecting water quality PBFs, will be prevented through the implementation of aforementioned pile removal BMPs, turbidity monitoring, and spill prevention measures and an emergency response plan. These BMP actions will minimize the extent of adverse effects associated with the proposed action and impacts to critical habitat are expected to be minimal and temporary.

Pile driving creating noise vibrations may temporarily degrade PBFs of rearing and migratory habitat in the action area.

2.6 Cumulative Effects

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). 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 ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

2.6.1 Water Diversions

Water diversions for municipal and industrial use are found in action area. Depending on the size, location, and season of operation, any of the diversions that are unscreened may entrain and kill many life stages of aquatic species, including juvenile listed anadromous fish species.

2.6.2 Increased Urbanization

Increases in urbanization and housing developments can affect habitat by altering watershed characteristics, and changing both water use and storm water runoff patterns. Increased growth will place additional burdens on resource allocations, including natural gas, electricity, and water, as well as on infrastructure such as wastewater sanitation plants, roads and highways, and public utilities. Some of these actions, particularly those that are situated away from waterbodies, will not require Federal permits, and thus will not undergo review through the ESA section 7 consultation process with NMFS.

Increased urbanization also is expected to result in increased recreational activities in the region. Among the activities expected to increase in volume and frequency is recreational boating. Boating activities typically result in increased wave action and propeller wash in waterways. This potentially will degrade riparian and wetland habitat by eroding channel banks and midchannel islands, thereby causing an increase in siltation and turbidity. Wakes and propeller wash also churn up benthic sediments thereby potentially re-suspending contaminated sediments and degrading areas of submerged vegetation. This, in turn, will reduce habitat quality for the invertebrate forage base required for the survival of juvenile salmonids and green sturgeon moving through the system. Increased recreational boat operation is anticipated to result in more contamination from the operation of gasoline and diesel powered engines on watercraft entering the associated water bodies.

2.6.3 Rock Revetment and Levee Repair Projects

Cumulative effects include non-Federal riprap projects. Depending on the scope of the action, some non-Federal riprap projects carried out by state or local agencies do not require Federal permits. These types of actions and illegal placement of riprap occur within the Sacramento River watershed. The effects of such actions result in continued degradation, simplification and fragmentation of riparian and freshwater habitat.

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

In our *Rangewide Status of the Species* section, NMFS summarized the current likelihood of extinction of each of the listed species. We described the factors that have led to the current listing of each species under the ESA and across their ranges. These factors include past and present human activities and climatological trends and ocean conditions that have been identified

as influential to the survival and recovery of the listed species. Beyond the continuation of the human activities affecting the species, we also expect that ocean condition cycles and climatic shifts will continue to have both positive and negative effects on the species' ability to survive and recover. The *Environmental Baseline* section reviewed the status of the species and the factors that are affecting their survival and recovery in the action area. The *Effects of the Action* section reviewed the exposure of the species and critical habitat to the proposed action and cumulative effects. NMFS then evaluated the likely responses of individuals, populations, and critical habitat. This *Integration and Synthesis* section will consider all of these factors to determine the proposed action's influence on the likelihood of both the survival and recovery of the listed species, and on the conservation value of designated critical habitats.

In order to estimate the risk to CCV steelhead, CV spring-run Chinook, winter-run Chinook, and green sturgeon as a result of the proposed action, NMFS uses a hierarchical approach. The condition of the ESU or DPS is summarized from the *Status of the Species* section of this BO. We then consider how the status of populations in the action area, as described in the *Environmental Baseline*, is affected by the proposed action. Effects on individuals are summarized, and the consequence of those effects is applied to establish risk to the diversity group, ESU, or DPS.

Status of the Species and Environmental Baseline

There are several criteria that would qualify the winter-run Chinook population at moderate risk of extinction (continued low abundance, a negative growth rate over two complete generations, significant rate of decline since 2006, increased hatchery influence on the population, and increased risk of catastrophe), and because there is still only one population that spawns below Keswick Dam, winter-run Chinook are at a high risk of extinction in the long term. Although many of the PBFs of winter-run Chinook critical habitat are currently degraded and provide limited high quality habitat, the spawning habitat, migratory corridors, and rearing habitat that remain are considered to have high intrinsic value for the conservation of the species.

CV spring-run Chinook remain at moderate risk of extinction based on the evaluation for years 2012 – 2014 (Williams et al. 2016). However, based on the severity of the drought and the low escapements, as well as increased pre-spawn mortality in Butte, Mill, and Deer creeks in 2015, there is concern that these CV spring-run Chinook strongholds will deteriorate into high extinction risk in the coming years based on the population size or rate of decline criteria (NMFS 2016b). Although many of the PBFs of CV spring-run Chinook critical habitat are currently degraded and provide limited high quality habitat, the spawning habitat, migratory corridors, and rearing habitat that remain are considered to have high intrinsic value for the conservation of the species.

The status of the CCV steelhead DPS appears to have remained unchanged since the 2016 status review and the DPS is likely to become endangered within the near future throughout all or a significant portion of its range (NMFS 2016a). Many of the PBFs of CCV steelhead critical habitat are degraded and provide limited high quality habitat. Although the current conditions of CCV steelhead critical habitat are significantly degraded, the spawning habitat, migratory corridors, and rearing habitat that remain in the Sacramento watershed are considered to have

high intrinsic value for the conservation of the species, as they are critical to ongoing recovery efforts.

The viability of sDPS green sturgeon is constrained by factors such as a small population size, lack of multiple populations, and concentration of spawning sites into just a few locations. The risk of extinction is believed to be moderate (NMFS 2015). Currently, many of the PBFs of sDPS green sturgeon are degraded and provide limited high quality habitat. Factors that lessen the quality of migratory corridors for juveniles include unscreened or inadequately screened diversions, altered flows in the Delta, and presence of contaminants in sediment. Although currently many of the PBFs of sDPS green sturgeon critical habitat are degraded and provide limited high quality habitat, the spawning habitat, migratory corridors, and rearing habitat that remain are considered to have high intrinsic value for the conservation of the species. The evidence presented in the *Environmental Baseline* section indicates that past and present activities within the Sacramento River basin have caused significant habitat loss, degradation, and fragmentation. This has significantly reduced the quality and quantity of the remaining PBFs within action area of the Sacramento River for the populations of CCV steelhead, CV winter-run Chinook and CV spring-run Chinook, and sDPS green sturgeon that utilize this area. Alterations in the flow regimes of the Sacramento River system, removal of riparian vegetation and shallow water habitat, reduced habitat complexity, construction of armored levees for flood protection, and the influx of contaminants from agricultural and urban dischargers have also substantially reduced the functionality of the waterways.

Cumulative Effects

Water diversions, increased urbanization, and continuing rock revetment and levee projects can be reasonably assumed to occur in the future in the action area. The effects of these actions result in the continued degradation, simplification, and fragmentation of the riparian and freshwater habitat. Some of these actions, particularly those that are situated away from waterbodies, will not require Federal permits, and thus will not undergo review through the ESA section 7 consultation process with NMFS.

Summary of the Effects of the Proposed Action

Fish will be harassed, injured, or killed during completion of the proposed action through various pathways. Direct effects from Project activities could result in negative effects through behavioral responses, or prey items killed from sediment or pollutant buildup. Any spills or leaks of toxic substances from construction equipment could cause direct or indirect effects to fish that risk mortality or reduces the overall health and survival of exposed fish. A rescue and relocation plan involves capturing fish and physically handling and relocating them, which risks injury and death. Construction-related increases in sedimentation and siltation above background level could potentially affect fish species and their habitat reducing survival of juveniles or interfering with feeding, migrating, and rearing activities. A large and varied amount of pile driving can create enough sound to damage a fish's internal organs or affect their migration and behavioral responses. Avoidance and mitigation measures, as well as BMPs, have been put in place to minimize any negative effects to listed species.

Critical habitat has been designated in the action area for winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon. PBFs affected for each species are listed in section 2.5.7. The proposed action will permanently affect an area that already contains degraded PBFs. The migratory corridors and rearing habitat that remain are considered to have high intrinsic value for the conservation of the species. Therefore, the loss of any amount of these PBFs in the action area would negatively affect all of the listed species that utilize the action area.

NMFS Recovery Plan

The NMFS Recovery Plan for salmonids recommends recovery actions to be taken on the Sacramento River to enhance fish passage and habitat. Four actions relevant to the proposed action are (1) Restore and maintain riparian and floodplain ecosystems along both banks of the Sacramento River to provide a diversity of habitat types including riparian forest, gravel bars and bare cut banks, shady vegetated banks, side channels, and sheltered wetlands, such as sloughs and oxbow lakes following the guidance of the Sacramento River Conservation Area Handbook. (2) Ensure that riverbank stabilization projects along the Sacramento River utilize biotechnical techniques that restore riparian habitat, rather than solely using the conventional technique of adding riprap. (3) Curtail further development in active Sacramento River floodplains through zoning restrictions, county master plans, and other Federal, State, and county planning and regulatory processes. (4) Implement projects that promote native riparian (e.g., willows) species including eradication projects for nonnative species (e.g., Arundo, tamarisk).

The proposed Project reduces the riparian ecosystem by converting 0.072 acres of critical habitat to hardscape and creating 0.475 acres in shading over the Sacramento River. Although the in-water structure associated with the new bridge decreases by 0.477 acres, this structure represents new development in active Sacramento River floodplains.

Summary

According to the most recent status reviews, CV spring-run Chinook, winter-run Chinook, CCV steelhead, and sDPS green sturgeon are at some level or threat or risk of extinction due to past and present activities within the Sacramento River basin that have caused significant habitat loss, degradation, and fragmentation. Cumulative effects like water diversions, increased urbanization, and continuing rock and levee projects will all continue to happen in the action area without necessarily requiring Federal permitting. During this proposed Project, fish are expected to be harassed, injured, or killed during completion of the proposed action through various pathways. Construction related effects from the Project as well as pollution events, dewatering and fish capture and relocation, turbidity increases, pile driving, increased shading, and a loss of critical habitat all have the potential to affect fish. Avoidance and mitigation measures, as well as BMPs, have been put in place to decrease any negative effects to listed species.

The proposed construction will temporarily decrease the action area's ability to safely support listed fish at a variety of life stages and will increase the risk of mortality events or behavioral changes. A total of 0.072 acres of critical habitat will be permanently affected (both above and below the OHWM) and 0.475 acres of critical habitat below the OHWM in shading from the

bridge. These rearing and migratory corridor PBFs that support listed species will be turned into hardscape and be negatively impacted through bridge shading. These permanent impacts only represent a small loss in the scope of the available habitat for the ESU/DPS, but the intrinsic value of the area for the conservation of fish remains high. Onsite mitigation will minimize the loss of ecosystem function due to the modification of the riverbank and streambed (see section 1.3). Measures are included in the proposed action to protect fish and designated critical habitat. The proposed Project, with the implementation of these measures and the restoration of adjacent riparian floodplains, is not expected to reduce appreciably the likelihood of either the survival or recovery of a listed species in the wild by reducing their numbers, reproduction, or distribution; or appreciably diminish the value of designated critical habitat for the conservation of the species.

2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Sacramento River winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon, or destroy or adversely modify their designated critical habitats.

2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.9.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

NMFS anticipates incidental take of adult winter-run Chinook, adult and juvenile CV spring run Chinook, adult and juvenile CCV steelhead, and adult and juvenile sDPS green sturgeon from impacts directly related to sedimentation and turbidity, pile driving and impairment of essential behavior patterns as a result of these activities, dewatering and potential fish entrainment, shading created by the bridge, and the possibility deleterious materials entering the waterway at

the Project construction site. The incidental take is expected to be in the form of harm, harassment, or mortality of winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon resulting from the installation and removal of temporary and permanent piles during bridge construction. Incidental take is expected to occur for any in-water work window seasons when winter-run Chinook, CV spring-run Chinook, CCV steelhead, and sDPS green sturgeon individuals could potentially be in the action area.

It is impossible to precisely quantify and track the amount or number of individuals that are expected to be incidentally taken (injure, harm, kill, etc.) per species as a result of the proposed action due to the variability and uncertainty associated with the response of listed species to the effects of the proposed action, the varying population size of each species, annual variations in the timing of spawning and migration, individual habitat use within the action area, and difficulty in observing injured or dead fish. However, it is possible to estimate the extent of incidental take by designating as ecological surrogates, those elements of the Project that are expected to result in incidental take, that are more predictable and/or measurable, with the ability to monitor those surrogates to determine the extent of take that is occurring.

Ecological surrogates are Project elements that are expected to result in take and are somewhat predictable and/or measurable. Ecological surrogates can be monitored to approximate the level of take that occurs. Ecological surrogates for construction effects are described below. Overall, the number of listed fish that may be incidentally taken during activities is expected to be small, due to BMPs such as implementing the proposed work window.

1) Construction Related Effects

Incidental take is expected to occur from construction-related effects in the form of injury or death of listed species. Additionally, take in the form of harassment is likely to occur as a result of displacement due to construction operations. Disruption of habitat utilization is likely to result in increased predation risk, decreased feeding, and increased competition. The behavioral modifications are expected to result from disruption of habitat use. Fish crushed by falling debris or interactions with construction equipment. Additionally they may experience a reduced prey base as a result of construction related mortality to macroinvertebrates.

The construction footprint is 44.22 acres. This area contains the permanent effects and serves as the ecological surrogate for direct effects because it is where construction will directly affect listed species. If Caltrans construction effects exceeds the 44.2 acre footprint, the proposed Project will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

2) Fish Entrapment in Cofferdams

The proposed Project involves cofferdams used for the removal of the existing bridge piers. Dewatering will occur over 0.436 acres. A fish capture and relocation plan will be designed to recover any fish caught in cofferdams. It is impossible to estimate how many fish may need to be relocated from cofferdams or may be effected due to dewatering. Fish may become entrained

may be injured or killed if the piles are dewatered and during relocation. The cofferdams are to remain in place only during construction of the new bridge piers. The temporary cofferdams and trestle piles will occupy 0.436 acres of river during construction. This area contains the dewatering and relocation effects and serves as the ecological surrogate for these effects because it is where relocation or dewatering will directly affect listed species. If Caltrans exceeds the 0.436 acre cofferdam footprint, the proposed Project will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

3) Increased Sedimentation and Turbidity

The analysis of the effects of the proposed Project anticipates that the turbidity levels produced by installation and removal of piles will not exceed 20% over background, the threshold derived from the Sacramento and San Joaquin Rivers Basins Plan. The 20% turbidity level is being used as an ecological surrogate. If turbidity exceeds 20% over background levels, and construction activities fail to halt and adjust work to return to acceptable levels, the proposed Project will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

4) Pile Driving and Acoustic Impacts

NMFS will use the area of sound pressure wave impacts extending into the water column from each pile, and the time period for pile driving as a surrogate for number of fish. The proposed Project effects anticipate installation of all of the piles be driven by vibratory and impact hammers. Pile driving with an impact hammer will occur during daylight hours only. Caltrans/contractor will drive piles listed in Table 3, during the in-water work window, between June 1 and October 15. Pile driving with an impact hammer is expected to cause incidental take in the form of injury and mortality to salmonids and sturgeon through exposure to temporary high noise levels or sustained exposure to lower sound levels (> 206 dB peak or 183 or 187 dB SEL) within the water column during the installation of the piles. Attenuation will be used to provide an assumed minimum 5 dB of sound reduction for all sound levels. However, because the specifics of the attenuation method used for installation are not yet known, NMFS has analyzed the effects of pile driving without attenuation.

Based on the acoustic effects analysis (Table 3), peak sound pressures are estimated to be above the thresholds for injury and/or mortality of listed fish within 7 to 18 meters (22.9 to 59 feet) of the pile driving, depending on the size of piles used. Cumulative sound exposure levels are expected to exceed the 187 threshold for physical injury for fish greater than 2 grams from 87 to 2,154 meters (285.4 to 7,066.9 feet) of the pile, depending on the size of piles used (Table 3). Non-injurious behavioral effects are expected to occur from 472 to 10,000 meters (1,548.5 to 32,808.4 feet) of the pile, depending on the size of pile used (Table 3). If Caltrans' monitoring indicates that sound levels greater than 206 dB peak, 187 dB or 183 dB cumulative SEL, or 150 dB RMS extend beyond the distances expected for the pile size and attenuation type, the amount of incidental take would be exceeded. If these ecological surrogates thresholds are exceeded, the proposed Project will be considered to have exceeded anticipated take levels, thus requiring

Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

5) Overwater Structure Impacts

NMFS anticipates that listed anadromous fish may be harmed as a result of shading by the new structure over the Sacramento River. This shading is expected to reduce the primary productivity of affected habitats and increase the number of predatory fishes holding in the action area and/or their ability to prey. It is impossible to precisely quantify and track the amount or number of individuals that are expected to be incidentally harmed as a result of the proposed action due to the varying population size (annually and seasonally), annual variations in the timing of spawning and migration, variation in individual habitat use with the action area, and difficulty in making observations of injured or dead fish. The ecological surrogate for incidental take associated with the action is the permanent shading of 0.475 acres of the Sacramento River in the action area. This area contains the shading effects and serves as the ecological surrogate for these effects because it is where shading will directly affect listed species.

Anticipated incidental take will be exceeded if the ecological surrogates described in the sections above continue to be exceeded after additional measures (in coordination with NMFS) have been taken, the Action is not implemented as described in the BA prepared for this Action, all conservation measures are not implemented as described in the BA (including successful completion of monitoring and reporting criteria), or the Action is not implemented in compliance with the terms and conditions of this incidental take statement. If these ecological surrogates are not met and maintained, the proposed action will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

6) Effects to Critical Habitat

Take in the form of harm to listed anadromous fish as a result of significant habitat impacts are expected to result in injury and death from habitat modifications at the Project site that reduce the quantity and quality of rearing habitat and by creating habitat conditions that increase the likelihood of predation. It is impossible to precisely quantify and track the amount or number of individuals that are expected to be incidentally harmed as a result of the proposed action due to the varying population size (annually and seasonally), annual variations in the timing of spawning and migration, variation in individual habitat use with the action area, and difficulty in making observations of injured or dead fish. The ecological surrogate for incidental take associated with the action is the permanent loss of 0.072 acres of critical habitat and the degradation of riparian vegetation where migrating and rearing juveniles of the species exist within the footprint of the proposed action. This is expected to result in reduced growth and fitness for listed species in the area as riparian habitat for juvenile rearing and migration corridors are being degraded. However, the planting of the parcel will provide a long term benefit by increasing the riparian habitat in the area.

Anticipated incidental take will be exceeded if the ecological surrogates described in the sections above are not met, the Action is not implemented as described in the BA prepared for this

Action, all conservation measures are not implemented as described in the BA (including successful completion of monitoring and reporting criteria), or the Action is not implemented in compliance with the terms and conditions of this incidental take statement. If these ecological surrogates are not met and maintained, the proposed action will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

2.9.2 *Effect of the Take*

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.9.3 *Reasonable and Prudent Measures*

“Reasonable and prudent measures” are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The measures described below are non-discretionary, and must be undertaken by Caltrans so that they become binding conditions of any contracts or permits, as appropriate, 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 assume and implement the terms and conditions or (2) fails to require its contractor(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement [50 CFR§402.14(i)(3)].

1. Measures shall be taken to minimize sedimentation events and turbidity plumes.
2. Measures shall be taken to reduce sound impacts.
3. Measures shall be taken to revegetate impacted areas below and above the OHWM with native plants and shrubs.
4. Caltrans shall monitor and report on the amount or extent of incidental take.

2.9.4 *Terms and Conditions*

The terms and conditions described below are non-discretionary, and Caltrans or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). Caltrans or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

The following terms and conditions implement reasonable and prudent measure 1: Measures shall be taken to minimize sedimentation events and turbidity plumes.

- a) BMPs shall be implemented to prevent sediment incursion into the active channel.

- b) Water discharged into the Sacramento River during construction will be filtered with a filter bag, diverted to a settling tank or infiltration area, and/or treated in a manner to ensure that discharges conform to the water quality requirements of the waste discharge permit.
- c) Turbidity and settleable solids shall be monitored according to water quality permits. If acceptable limits are exceeded, work shall be suspended until acceptable measured levels are achieved.

The following terms and conditions implement reasonable and prudent measure 2: Measures shall be taken to reduce sound impacts.

- a) Noise attenuation methods, as optioned in the BA, shall be used.
- b) Vibratory hammers shall be used over impact hammers to the greatest extent possible.
- c) Pile driving shall not be conducted at night when migration is most prevalent.

The following terms and conditions implement reasonable and prudent measure 3: Measures shall be taken to revegetate impacted areas below and above the OHWM with native plants and shrubs.

- a) The removal of existing riparian and native vegetation shall be minimized to the maximum extent practicable.
- b) A restoration plan for the state parks parcel shall be sent to NMFS prior to construction.
- c) The restoration on the state parks parcel shall prioritize planting native species and vegetate as close to the river bank as practicable.

The following terms and conditions implement reasonable and prudent measure 4: Caltrans shall monitor and report on the amount or extent of incidental take.

- a) Caltrans shall provide a report of Project activities to NMFS by December 31 of each construction year.
- b) The report shall include Project schedules, Project completions, and details regarding Project implementation for each given year.
- c) This report shall include a summary description of in-water constraint activities, avoidance and minimization measures taken, and any observed take incidents.
- d) Caltrans shall submit a fish passage plan at least 60 days in advance of construction to NMFS for review.
- e) Caltrans shall visually monitor the waterway in the action area during operations for any affected fish, including, but not limited to, CV spring-run Chinook, CCV steelhead, winter-run Chinook, and the sDPS green sturgeon. Observation of affected fish shall be reported to NMFS by telephone at (916) 930-3600 or at the address given below within 24 hours of the incident. Operations shall be halted immediately until Caltrans coordinates with NMFS to determine the cause of the incident and whether any additional protective measures are necessary to protect listed salmonids and green sturgeon. Any protective measures that are determined necessary to protect listed salmonids and sturgeon shall be implemented as soon as practicable within 72 hours of the incident. Affected fish are defined as:
 - a. Dead or moribund fish at the water surface;
 - b. Showing signs of erratic swimming behavior or other obvious signs of distress;
 - c. Gassing at the water surface; or

- d. Showing signs of other unusual behavior.

A follow-up written notification shall also be submitted to NMFS which includes the date, time, and location that the carcass or injured specimen was found, a color photograph, the cause of injury or death, if known, and the name and affiliation of the person who found the specimen. Written notification shall be submitted to NMFS at the above address. Any dead specimen(s) shall be placed in a cooler with ice and held for pick up by NMFS personnel or an individual designated by NMFS to do so.

Updates and reports required by these terms and conditions shall be submitted to:

Assistant Regional Administrator
National Marine Fisheries Service
California Central Valley Office
650 Capitol Mall, Suite 5-100
Sacramento California 95814-4607

2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

- 1) Caltrans should work cooperatively with other State and Federal agencies, private landowners, governments, and local watershed groups to identify opportunities for cooperative analysis and funding to support salmonid and sturgeon habitat restoration projects within the Sacramento River Basin.
- 2) Equipment used for the Project shall be thoroughly inspected off-site for drips or leaks.
- 3) To the extent practicable, equipment shall be serviced with petroleum or other containment sources, off-site.
- 4) Equipment used for the Project shall be thoroughly cleaned off-site to prevent introduction of contaminants.
- 5) Caltrans should mitigate for the impacts of the Butte City Bridge Replacement Project by purchasing credits from a NMFS approved mitigation bank at a 3:1 ratio for permanent bridge shading effects of aquatic habitat (totaling 1.425 acres). Caltrans should additionally include this mitigation ratio purchase for effects of shading in all future consultations with NMFS.
- 6) Caltrans should shield any lights used in or around the water at night to ensure that only the necessary light is being directed into the water.

2.11 Reinitiation of Consultation

This concludes formal consultation for Butte City State Route 162 replacement over the Sacramento River.

As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS 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, (3) the agency action is subsequently modified in a manner that causes an effect on the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the Action Agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by Caltrans and descriptions of EFH for Pacific Coast salmon (PFMC 2014) contained in the fishery management plans developed by the PFMC and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

EFH designated under the Pacific Coast Salmon FMP may be affected by the proposed action. Species that utilize EFH designated under this FMP within the action area include fall-run/late fall-run Chinook salmon, threatened CV spring-run Chinook salmon and endangered winter-run Chinook. The HAPC that may be either directly or indirectly adversely affected include (1) complex channels and floodplain habitats and (2) thermal refugia.

3.2 Adverse Effects on Essential Fish Habitat

Consistent with the ESA portion of this document which determined that aspects of the proposed action will result in impacts to Pacific Coast salmonids and critical habitat, we conclude that aspects of the proposed action would also adversely affect EFH for these species. We conclude that the following adverse effects on EFH designated for Pacific Coast Salmon are reasonably certain to occur:

Pile Driving:

- Permanent loss of habitat (1)

Sedimentation and Turbidity

- Reduced habitat complexity (1)
- Degraded water quality (1)
- Reduction in aquatic macroinvertebrate production (1)

Contaminants and Pollution-related Effects

- Degraded water quality (1, 2)
- Reduction in aquatic macroinvertebrate production, or bioaccumulation in prey (1)

Vegetation removal:

- Permanent loss of natural shade cover (2)

- Permanent loss of habitat (1)
- De-watering of cofferdams
- Degraded water quality (1, 2)
 - Temporary loss of habitat (1, 2)

3.3 Essential Fish Habitat Conservation Recommendations

In order to minimize effects to EFH, Caltrans should implement the terms and conditions that apply to effects to critical habitat, specifically terms and conditions numbers 1 and 3 from section 2.9.4 above. Additionally, the following are EFH conservation recommendations for impacts to complex channels and floodplain habitat:

- (1) Caltrans should provide a NMFS-approved Worker Environmental Awareness Training Program for construction personnel to be conducted by a NMFS-approved biologist for all construction workers prior to the commencement of construction activities. The program should provide workers with information on their responsibilities with regard to federally-listed fish, their critical habitat, an overview of the life-history of all the species, information on take prohibitions, protections under the ESA, and an explanation of terms and conditions identified in this BO. Written documentation of the training should be submitted to NMFS within 30 days of the completion of training.

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in section 3.2, above.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, Caltrans must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the Action Agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

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 (50 CFR 600.920(1)).

4 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 USC 661). The FWCA establishes a consultation requirement for Federal agencies that undertake any action to modify any stream or other body of water for any purpose, including navigation and drainage (16 USC 662(a)), regarding the impacts of their actions on fish and wildlife, and measures to mitigate those impacts. Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources, and providing equal consideration for these resources. NMFS' recommendations are provided to conserve wildlife resources by preventing loss of and damage to such resources. The FWCA allows the opportunity to provide recommendations for the conservation of all species and habitats within NMFS' authority, not just those currently managed under the ESA and MSA.

The following recommendations apply to the proposed action:

- Caltrans should post interpretive signs within the action area describing the presence of listed fish and/or critical habitat as well as highlighting their ecological and cultural value.

The Action Agency must give these recommendations equal consideration with the other aspects of the proposed action so as to meet the purpose of the FWCA.

This concludes the FWCA portion of this consultation.

5 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

5.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion is Caltrans. Other interested users could include Butte City, Glenn County, U.S. Coast Guard, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife. Individual copies of this opinion were provided to Caltrans. This opinion will be posted on the Public Consultation Tracking System website. The format and naming adheres to conventional standards for style.

5.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

5.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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