Navy Drive Bridge Replacement Project

SAN JOAQUIN COUNTY, CALIFORNIA
District 10 – SJ – Port of Stockton
BRLS-6349(002)

Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment and Section 4(f) Evaluation

Prepared by the
State of California Department of Transportation
and the Port of Stockton

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

April 2013

General Information about This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration, has prepared this Initial Study/Environmental Assessment and Section 4(f) Evaluation, which examines the potential environmental impacts of the alternatives being considered for the proposed project located in San Joaquin County, California. Caltrans is the lead agency under the National Environmental Policy Act. The United States Coast Guard is a cooperating agency under National Environmental Policy Act. The Port of Stockton is the lead agency under the California Environmental Quality Act. The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read the document.
- Additional copies of the document and the technical studies we relied on in preparing it, are available for review at the Caltrans District 10 office at 1976 E. Martin Luther King Jr. Blvd, Stockton; and the Port of Stockton at 2201 West Washington Street, Stockton.
- Attend the public information meeting on Wednesday, May 1, 2013 from 5:00-7:00pm at the Port of Stockton Commission Hearing Room, 2201 W. Washington Street, Stockton.
- We'd like to hear what you think. If you have any comments regarding the proposed project, please attend the public information and/or send your written comments to Caltrans by the deadline.
- Submit comments via postal mail to:
  Julie Myrah, Environmental Branch Chief, Attn: Kathy Ikeda
  Department of Transportation, Environmental Planning
  1976 E. Dr. Martin Luther King Jr. Blvd, Stockton, CA 95205
- Submit comments via email to: Julie_Myrah@dot.ca.gov
- Be sure to submit comments by the deadline: May 15, 2013
- If you are interested in acquiring artifacts removed from the Navy Drive Bridge during demolition please contact:
  Jason Cashman, Port of Stockton
  2201 West Washington Street, Stockton, CA 95203

What happens next:

After comments are received from the public and reviewing agencies, the Port and Caltrans, as assigned by the Federal Highway Administration, 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 appropriated, the Port could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to California Department of Transportation, Attn:

Kathy Ikeda, Environmental Planning, 1976 E. Dr. Martin Luther King Jr. Blvd, Stockton, CA 95205; (209) 948-3825 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

SCH#
10- SJ- Port of Stockton
Federal Aid Number BRLS-6349(002)

Replace the Navy Drive Bridge over the San Joaquin River at the Port of Stockton in the City of Stockton

INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION/ ENVIRONMENTAL ASSESSMENT AND PROGRAMMATIC SECTION 4(F) EVALUATION

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

THE STATE OF CALIFORNIA
Department of Transportation
and
Port of Stockton, California

Cooperating Agency: United States Coast Guard

4/12/13
Date of Approval

Margaret L. Lawrence
MARGARET L. LAWRENCE
Environmental Office Chief – North
Caltrans Central Region
NEPA Lead Agency

4/12/2013
Date of Approval

JUAN VILLANUEVA
Projects & Contract Administration Manager
Port of Stockton
CEQA Lead Agency

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

Kathy Ikeda
Caltrans District 10
Environmental Coordinator
1976 E. Dr. Martin Luther King Jr. Blvd
Stockton, CA 95205
(209) 948-3825

Juan Villanueva
Port of Stockton
Projects & Contract Administration Manager
2201 West Washington Street
Stockton, CA 95205
(209) 946-0246

SCH:

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The Port of Stockton (Port), proposes to replace the existing Navy Drive Bridge (bridge no. 29C-0023) across the San Joaquin River in the City of Stockton, San Joaquin County. The proposed Navy Drive Bridge Replacement Project (proposed project) would replace the existing two-lane swing bridge with a new four-lane removable span bridge on a slightly different alignment.

Determination

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

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

The proposed project would have no effect on: Existing and Future Land Uses, Coastal Zone, Wild and Scenic Rivers, Parks and Recreational Facilities, Farmlands/Timberlands, Community Character and Cohesion, Relocations and Real Property Acquisition, and Paleontology.

In addition, the proposed project will have no significant effect on: Growth, Environmental Justice, Utilities/Emergency Services, Hydrology and Floodplain, Cumulative Impacts, and Climate Change.

The proposed project will have no significant adverse effect on, Traffic and Transportation, Visual/Aesthetics, Cultural Resources, Water Quality and Storm Water, Geology/Soils/Seismic/Topography, Hazardous Waste/Materials, Air Quality, Noise, Natural Communities, Wetlands and Other Waters, Plants Species, Animal Species, Threatened and Endangered Species, and Invasive Species because the following avoidance, minimization, and mitigation measures would reduce potential effects to insignificance:

- Implement a Traffic Control Plan
- Construct additional transportation improvements in the Port area
- Replace landscape screening at the Stockton Police Department Training Facility
- Photograph and document the existing historic bridge
- Stop work if cultural resources are found during construction
- Implement Best Management Practices
- Prepare a Stormwater Management Plan
- Implement various water quality measures
- Conduct soil testing

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- Implement measures to avoid and minimize exposure to various hazardous materials
- Comply with Air Pollution Control District control measures
- Implement noise control measures during construction
- Prepare and implement a Revegetation Plan for areas of disturbed riverbank
- Implement seasonal restrictions for in-water work
- Conduct preconstruction plant surveys
- Conduct preconstruction wildlife surveys
- Implement seasonal work restrictions
- Erect and maintain environmentally sensitive area (ESA) fencing
- Comply with the USFWS Biological Opinion
- Comply with the NOAA/NMFS Biological Opinion
- Regularly clean construction equipment

Juan G. Villanueva

JUAN VILLANUEVA
Projects & Contract Administration Manager
Port of Stockton
CEQA Lead Agency

4/12/2013

Date of Approval

DRAFT

Summary

The Port of Stockton (Port) as the California Environmental Quality Act lead agency, in cooperation with the California Department of Transportation (Caltrans) as the National Environmental Policy Act lead agency, proposes to replace the existing Navy Drive Bridge (bridge no. 29C-0023) across the San Joaquin River in the City of Stockton, San Joaquin County. The proposed Navy Drive Bridge Replacement Project (proposed project) will replace the existing two-lane swing bridge with a new four-lane removable span bridge on a slightly different alignment. The project will be funded by the Federal Highway Administration through the Local Assistance Highway Bridge Program. Two alternatives have been considered: one build alternative and a no-build alternative.

Build Alternatives

At the project outset, the Port examined multiple build alternatives for the proposed project. See Chapter 1 for Alternatives Considered but Eliminated from Further Discussion. One build alternative, the removable span alternative, was determined to meet the purpose and need of the project. The alternative would construct a new four-lane removable span bridge and demolish the existing bridge.

No-Build Alternative

The No-Build Alternative would retain the existing bridge in its current location.

Table S-1 compares potential impacts from the Removable Span Alternative and the No-Build Alternative and includes design and environmental information.

Table S-1: Summary of Potential Impacts from Alternatives

Potential Impact	Removable Span Alternative	No-Build Alternative
Existing and Planned Land Use	None	None
Coastal Zone	None	None
Wild and Scenic Rivers	None	None
Parks and Recreation	None	None
Growth	None (not a growth- inducing project)	None
Farmlands/Timberlands	None	None
Community Character and Cohesion	None	None
Relocation	None	None
Environmental Justice	None	None
Utilities/Emergency Services	Utility relocations	None
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Improved long-term operations; short-term construction-related impacts	Traffic levels of service would continue to degrade
Visual/Aesthetics	Minor changes to visual environment	None
Cultural Resources	Adverse effect (NEPA) and substantial adverse change (CEQA) to a historic district	None
Hydrology and Floodplain	None	None
Water Quality and Storm Water Runoff	Potential water quality impacts from construction	None
Geology/Soils/Seismic/ Topography	None	None
Paleontology	None	None
Hazardous Waste/Materials	Short-term construction-related impacts	None
Air Quality	Short-term construction-related impacts	Long-term air quality would degrade with continued congestion
Noise and Vibration	Short-term construction-related impacts	None
Natural Communities	Impacts to 1.48 acres of annual grassland	None

Potential Impact	Removable Span Alternative	No-Build Alternative
Wetlands and other Waters	Net gain of 581 square feet of riverine habitat	None
Plant Species	Impacts to 0.05 acres of riparian scrub habitat	None
Animal Species	Impacts to habitat for Pacific pond turtle, burrowing owl, nesting raptors, and nesting songbirds	None
Threatened and Endangered Species	Impacts to habitat for Delta smelt, Central Valley steelhead, Chinook salmon, and green sturgeon. Potential “take” of Delta smelt.	None
Invasive Species	Construction-related activities would potentially promote the distribution of invasive plant species to off-site areas	None
Construction	Short-term construction impacts	None
Global Climate Change	None	None

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Chapter 1 – Proposed Project

1.1. Introduction

The Port of Stockton (Port), in cooperation with the California Department of Transportation (Caltrans), proposes to replace the existing Navy Drive Bridge (bridge no. 29C-0023) across the San Joaquin River in the City of Stockton, San Joaquin County. The proposed Navy Drive Bridge Replacement Project (proposed project) will replace the existing two-lane swing bridge with a new four-lane removable span bridge on a slightly different alignment. The project would be funded by the Federal Highway Administration through the Local Assistance Highway Bridge Program. Figure 1-1 shows the project's regional location and Figure 1-2 shows the project area.

The Port is the California Environmental Quality Act lead agency and Caltrans is the assigned National Environmental Policy Act lead agency for the proposed project. Each agency shall ensure compliance with all regulatory requirements of the respective state and federal environmental processes pursuant to California Environmental Quality Act and National Environmental Policy Act. The United States Coast Guard (Coast Guard) has agreed to be a cooperating agency for satisfying the requirements of National Environmental Policy Act. The Coast Guard has the authority under the General Bridge Act of 1946, as amended, to approve the location and clearances of bridges over navigable waters of the United States. A Coast Guard Bridge Permit would be required for this project.

The proposed project is included in the San Joaquin County 2011 Regional Transportation Plan and is listed in the approved 2011 Federal Transportation Improvement Program.

1.1.1 Project Location And Setting

The proposed project is generally located in the northern portion of California's San Joaquin Valley. The proposed project is specifically located in an industrial area within the western boundary of the City of Stockton (City). Navy Drive is an undivided two-lane east-west collector that currently provides access, via the Navy Drive Bridge, between the Port's East Complex and West Complex (formerly Rough and Ready Island). Rough and Ready Island was formerly owned by the United States Navy, but ownership of the island was transferred to the Port in 2003, and is now under development by the Port. Navy Drive is an extension of McCloy Avenue on the West Complex side and intersects with Washington Street on the East Complex side. The Port is located south of the Stockton Deep Water Channel, west of Interstate 5, and generally north of State Route 4.

The project site is currently unoccupied. Surrounding land uses to the east include various industrial and maritime uses associated with the Port's East Complex. Land uses to the south include the Stockton Police Department Training Facility and industrial uses. Industrial and maritime uses associated with the Port's West Complex are located to the west. Lyon's Rough and Ready Golf Course, formerly operated by the Port but closed indefinitely as of February 2010, is located to the north and is outside the project study area. No agricultural areas (e.g., prime or unique farmland), publicly owned recreation areas, or wildlife refuges are located within the project construction area. The nearest residential areas are Riviera Cliffs and Boggs Tract, located approximately 0.75 mile to

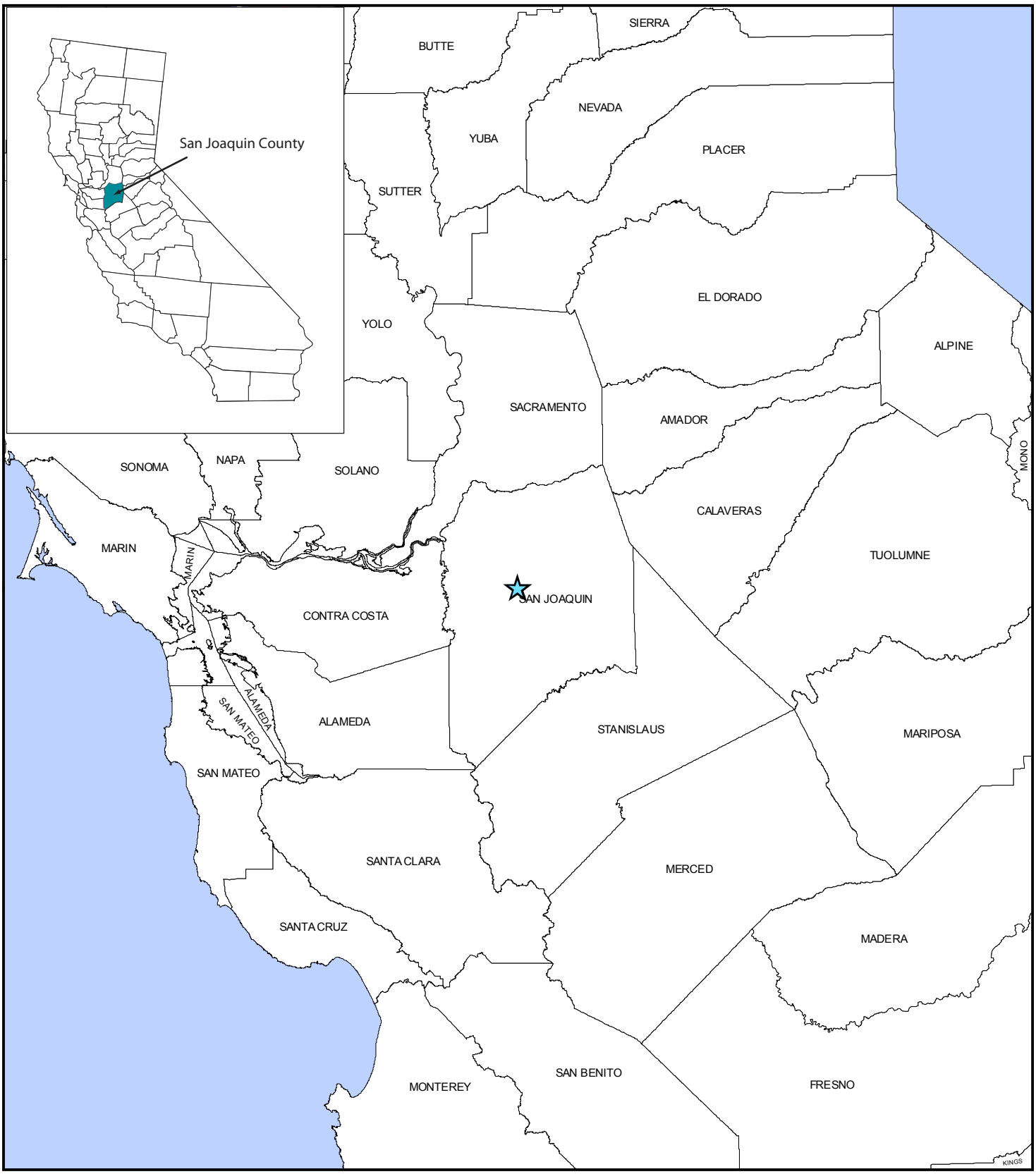

FIGURE 1-1

LEGEND

Project Location

N

0 12.5 25

MILES

SOURCE: ESRI Imagery (2008)

P:\PRC1002\GIS\fig1-1-reg_vic.pdf (9/23/11)

Navy Drive Bridge Replacement Project

Regional Vicinity

LSA

FIGURE 1-2

LEGEND

Project Location

N

0 1500 3000

FEET

SOURCE: Microsoft Bing Map - Aerial (2010)

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Navy Drive Bridge Replacement Project

Project Location

over 1.5 miles to the north and east of the project site, respectively. Figure 1-3 shows the proposed project area and the surrounding land uses.

1.1.2 Project Background

The existing Navy Drive Bridge was built in 1941, is a critical link that currently serves as the shortest and most direct means of vehicle access between the Port's East and West Complexes, and is one of two access points for regional traffic entering the Port. It was constructed as a "swing" bridge, one that rotates on a central pier or support, in order to allow boats to continue to navigate this portion of the San Joaquin River. Historically, use along this portion of the San Joaquin River and associated bridge opening has occurred primarily to provide clearance for dredges performing levee maintenance from the 1950s through the 1970s and to facilitate one construction project in 1978. Levee maintenance is now performed from the landside rather than the water, and navigational use along this portion of the San Joaquin River is comprised primarily of small recreational and fishing boats.

The last time the bridge opened was in 1978. In 1982, the Coast Guard revised the drawbridge operating regulation (33 Code of Federal Regulations117.191), relieving the bridge owner (Port) of the responsibility to operate the Navy Drive Bridge. However, the Port can be required to restore the bridge operation within six months of being notified by the Coast Guard.

The Port conducted a survey of commercial waterway operators in 2002 to determine whether there was any opposition to a fixed bridge at the Navy Drive crossing location. No opposition was identified through implementation of the survey. In 2008, the Coast Guard conducted a similar survey of potential users of the navigation channel as an initial step toward obtaining a permit for a replacement bridge. These users included major stakeholders such as the local reclamation districts, the Port, Caltrans, and local pleasure boat organizations and users. The survey resulted in the navigational clearances being proposed for the replacement bridge project.

West Complex Development Plan

The Port of Stockton has prepared a Development Plan to help guide future development at the West Complex as a result of the transfer of ownership of the majority of the island from the United States Navy to the Port in 2003. The Plan describes potential development activities and infrastructure improvements that could occur at the West Complex, given market or economic conditions for the area. Specific improvements identified in the West Complex Development Plan relating to the proposed project, and analyzed in the Port's 2003 West Complex Development Plan Environmental Impact Report include:

- Replacement of the Navy Drive Bridge and widening of a portion of Navy Drive from two to four lanes. The anticipated construction date given in the Environmental Impact Report was 2006, but the updated expected construction date for the bridge replacement is 2013.
- Construction of McCloy Avenue on the West Complex from the existing Navy Drive Bridge approach to Humphreys Drive. This project, which reconfigured the West Complex road connection to the bridge, was completed in 2007.

FIGURE 1-3

Legend

- Railway Lines
- Roadway Network
- Proposed Project
- Port of Stockton Complex
- Boggs Tract
- Stockton Police Department Training Facility
- Lyon's Golf Course
- Riviera Cliffs

N

0 1250 2500
FEET

SOURCE: Microsoft Bing Map - Aerial (2010)

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Navy Drive Bridge Replacement Project

Project Area Land Uses

Other Regionally Significant Improvements

In addition to the transportation improvements identified in the West Complex Development Plan, three projects are currently underway, or planned, that impact traffic circulation to/from the Port's East and West complexes.

Daggett Road (Port of Stockton Expressway)/Burlington Northern Santa Fe Grade Separation

This Port-sponsored project was completed in August 2012 and constructed a two-lane overcrossing of the Port of Stockton Expressway (formerly Daggett Road) over the Burlington Northern Santa Fe railroad tracks. The project provides safer and more efficient access to the West Complex from the south via State Route 4.

State Route 4 (Crosstown Freeway) Extension

This project, sponsored by the San Joaquin Council of Governments, is currently under construction. The project would extend the Crosstown Freeway approximately 0.7 miles west from its current western terminus at Fresno Avenue. When completed, the freeway would end at Navy Drive, and the existing ramps at Fresno Avenue would be permanently closed. This project has regional implications to the Port's traffic circulation as, once completed, Navy Drive would become the primary route to the Port's East and West complexes from State Route 4.

McCloy Avenue Extension/Widening

This project was completed in 2007 and included widening the existing two-lane McCloy Avenue to four lanes from the Navy Drive Bridge to the McCloy Avenue/Daggett Road intersection.

1.2. Purpose and Need

1.2.1. Purpose

The primary purpose of the Navy Drive Bridge Replacement Project is to provide safe and adequate local and regional access to the Port's West Complex Development Area while meeting the reasonable needs of navigation on this portion of the San Joaquin River. Navy Drive currently serves as the shortest and most direct means of vehicle access between the Port's East and West Complexes and, with the construction of the Crosstown Freeway Extension, would become the primary link between the Port and the regional transportation system. Because the Port and the West Complex is a goods movement terminal handling a wide variety of freight and raw materials, a high number of heavy trucks must travel to and from the Port to transport these goods to their destinations. The proposed project will facilitate this movement of goods, since a new Navy Drive Bridge would improve access between the Port's West Complex and the regional transportation network.

The following are objectives of the proposed Navy Drive Bridge Replacement project:

- To provide a structurally and functionally adequate bridge that meets current design standards

- To accommodate projected traffic levels on Navy Drive
- To improve traffic operations in the vicinity of the bridge
- To be consistent with local and regional planning efforts and accommodate existing and planned development
- To comply with Coast Guard and Homeland Security requirements

1.2.2. NEED

Structural and Functional Deficiencies

The existing Navy Drive Bridge has many structural and functional deficiencies that justify its replacement. The existing bridge has only 14.2 feet of vertical clearance between the bridge deck and the bottom of the trusses that are above the bridge. Standard vertical clearance for interstate highway facilities, from which much of the truck traffic entering the West Complex originates, is 15.5 feet. The bridge's limited vertical clearance prevents vehicles over 14.2 feet tall from utilizing Navy Drive to access the West Complex.

The existing bridge has two 12-foot-wide travel lanes with no shoulders, which does not meet current American Association of State Highway and Transportation Officials standards. The replacement bridge would provide 12-foot-wide lanes, 4-foot-wide median, and 8-foot-wide shoulders consistent with American Association of State Highway and Transportation Officials standards for a four-lane bridge.

The existing movable swing bridge was built in 1941 and has been given a sufficiency rating of 46.8 (out of a possible score of 100) based on a Caltrans inspection completed on October 15, 2012. The rating makes the bridge eligible for replacement under the Highway Bridge Program. Inspections conducted by Caltrans have determined that the existing Navy Drive Bridge does not adequately meet current safety and design standards and is functionally obsolete. Below is a list of insufficiencies identified in the sufficiency rating inspection conducted by Caltrans:

- Out of a possible score of nine (9) for each category, the bridge was given a Condition Rating of six (6) for the bridge deck, five (5) for the bridge superstructure, and six (6) for the bridge substructure
- Out of a possible score of nine (9) for each category, the bridge was given an Appraisal Rating of five (5) for the overall structural evaluation, four (4) for the deck geometry, seven (7) for the waterway adequacy, and four (4) for the approach roadway alignment
- The bridge was given a Rail Rating of zero (0), which indicates the railings, transitions, approach guardrail, and approach guardrail ends do not meet currently accepted standards

The existing Navy Drive Bridge is a through truss type bridge. This bridge type consists of two side trusses connected across the top and bottom, creating a box-like structure. The steel members are connected together at joints, forming triangular and rectangular-shaped sections. This design does not allow trusses to be removed or modified to provide greater vertical and horizontal clearance across the bridge without incurring

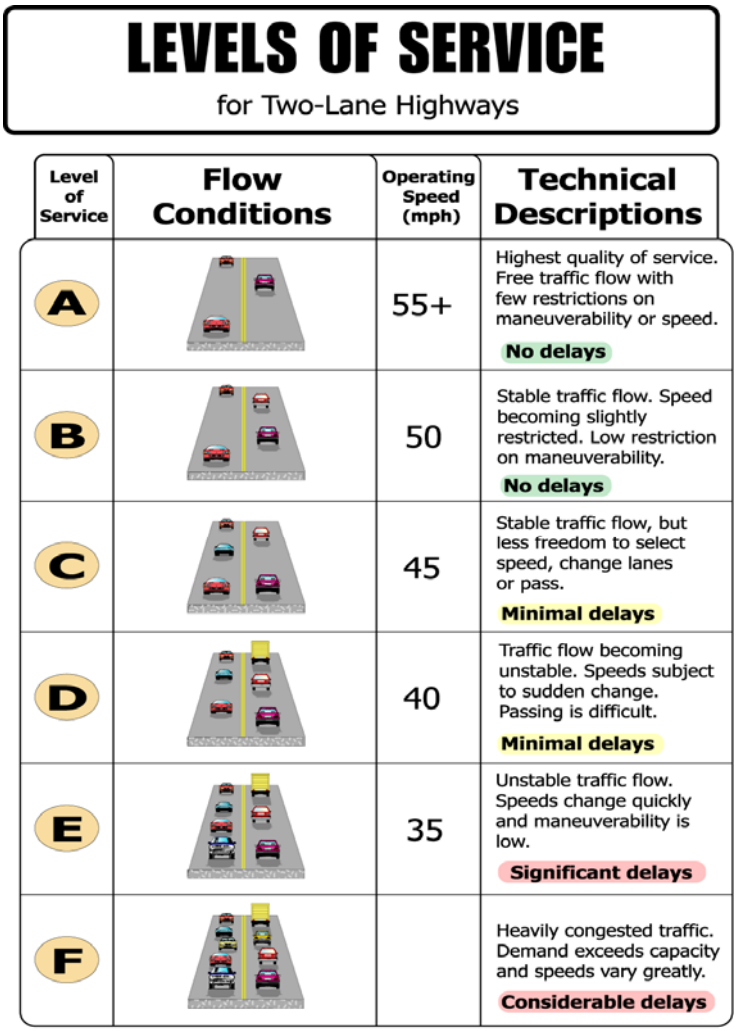
unreasonable high costs for bridge retrofit. Replacement of the existing bridge would correct these structural and functional deficiencies by:

- Eliminating the current vertical clearance constraints
- Constructing a bridge and roadway approaches that meet current design standards
- Providing a new bridge structure with a new bridge deck, superstructure and substructure that would provide adequate deck geometry and approach roadway alignment
- Constructing guardrails and guardrail approaches that meet currently accepted standards

Projected Traffic Levels on Navy Drive

Projected growth at the Port's West Complex, combined with the imminent State Route 4 Crosstown Freeway Extension to Navy Drive, would significantly increase future vehicle traffic on the Navy Drive Bridge, especially once Navy Drive becomes the main truck route to the West Complex. Traffic forecasts for 2035 estimate that peak hour traffic on Navy Drive north of Washington Street would increase from 282 in the AM peak hour (year 2011) to approximately 2826 in the year 2035, a tenfold increase. Anticipated average daily traffic would increase from 4,300 in 2011 to 36,250 vehicles in 2035, a 743 percent increase. With these volumes, the level of service on the existing two-lane Navy Drive Bridge and approaches would deteriorate to level of service F in the year 2025 (see Figure 1-4 for an example of what LOS ratings include. Actual project specific ratings may vary). The Port of Stockton is pursuing a separate project to widen Navy Drive to four lanes; this would provide additional capacity to accommodate the projected increase in local and regional traffic, and address projected traffic congestion on Navy Drive by improving level of service to D.

Figure 1-4: Levels of Service for Two-Lane Highways



LEVELS OF SERVICE

for Two-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		55+	Highest quality of service. Free traffic flow with few restrictions on maneuverability or speed. **No delays**
B		50	Stable traffic flow. Speed becoming slightly restricted. Low restriction on maneuverability. **No delays**
C		45	Stable traffic flow, but less freedom to select speed, change lanes or pass. **Minimal delays**
D		40	Traffic flow becoming unstable. Speeds subject to sudden change. Passing is difficult. **Minimal delays**
E		35	Unstable traffic flow. Speeds change quickly and maneuverability is low. **Significant delays**
F			Heavily congested traffic. Demand exceeds capacity and speeds vary greatly. **Considerable delays**

Source: 2000 HCM, Exhibit 20-2, LOS Criteria for Two-Lane Highways in Class 1

Traffic Operations

The August 2011 traffic operations report notes that the reconfiguration of the Navy Drive/Washington intersection, which would realign Navy Drive to make it the primary through-traffic street, is needed by the year 2030 to maintain an adequate level of service at the intersection. The Navy Drive Bridge East Complex approach, as shown in Figure 1-5, is planned to accommodate this future intersection reconfiguration. In the interim, the approach roadway would be striped consistent with the short term plans to maintain the intersection in its current configuration. Prior to reconfiguring the intersection, widening the East Complex approach would improve traffic operations by providing an acceleration lane for slow moving trucks turning left from northbound Navy Drive and merging with vehicles travelling westbound on Washington Street.

Local and Regional Planning Efforts

The West Complex Development Plan Environmental Impact Report identifies infrastructure improvements that would be necessary to accommodate future

development associated with the West Complex. Relevant improvements identified in the Environmental Impact Report include the replacement of the existing two-lane Navy Drive Bridge with a four-lane bridge and widening of Navy Drive to four lanes from the existing bridge to the Navy Drive/Washington Street intersection. In addition to the Navy Drive Bridge Replacement and Crosstown Freeway Extension projects, the San Joaquin County 2011 Regional Transportation Plan includes a project to widen Navy Drive to four lanes, from just east of the Burlington Northern Santa Fe undercrossing to the Navy Drive/Washington Street intersection. Combined, these projects would provide a continuous four-lane Navy Drive from State Route 4 to the West Complex.

Coast Guard Requirements

Following the events of Hurricane Katrina in August 2005, the Coast Guard reconsidered the approval of future fixed-span bridges on navigable waterways nationwide, including the San Joaquin River. The Coast Guard established that the replacement Navy Drive Bridge must have a center span that is able to open in an emergency. The only bridge type that would now meet Coast Guard clearance requirements at this location is a removable span bridge. The removable span bridge is identified in this document as Alternative 1, and is one of seven alternatives discussed below.

Homeland Security Requirements

Security considerations require that the new Navy Drive Bridge have two westbound lanes. Because of the high number of heavy trucks entering the Port, the federal Department of Homeland Security requires the Port to separate incoming traffic into “secure” and “non-secure” lanes for inspection at the Port’s existing security checkpoint, which is located at the entrance to the West Complex (see Figure 1-3). The addition of a second through lane beginning at Navy Drive Bridge would help facilitate this separation of traffic into two lanes at the security checkpoint.

1.3. Project Alternatives

Early in the project development phase, the Port analyzed a bridge replacement alternative that assumed the new bridge would be constructed approximately 80-100 feet upstream of the existing bridge. This bridge location required the Navy Drive approaches to be realigned to the west of the current roadway. The realigned roadway required the adjacent police firing range parking lot to be reconfigured, along with the construction of a retaining wall approximately 250 feet long at the parking lot’s eastern edge. Along with the added cost of these features, approximately 12-14 parking spaces would be eliminated by the proposed alignment.

To minimize and/or avoid these impacts, the Port pursued a revised bridge alignment further downstream, which shifted the approaches to the east, avoiding the firing range parking lot and eliminating the need for the retaining wall. This revised alignment is described as Alternative 1 on the following pages.

1.3.1 Alternative 1 – Construct A New Four-Lane Removable Span Bridge And Demolish The Existing Bridge (Proposed Build Alternative)

One build alternative, the removable span alternative, meets the purpose and need of the project. The alternative would construct a new four-lane removable span bridge and demolish the existing bridge.

The proposed replacement bridge would be located about 40 feet upstream and to the west of the existing Navy Drive Bridge (Figure 1-5). The proposed bridge would incorporate a center navigation channel that provides 80 feet of horizontal clearance[1], 15 feet of vertical clearance at Mean High Water[2], when closed, and unlimited vertical clearance in the open position. Final operating regulations would be proposed by the Coast Guard once the replacement bridge is built and the existing bridge has been removed from the waterway. The Coast Guard has solicited input from stakeholders, including local waterway users. Input from waterway users would assist in determining the operating schedule.

Figure 1-6 shows a cross-section of this alternative. Figure 1-7 shows an aerial view of the bridge and an elevation view of the bridge with a cross-section of the San Joaquin River.

Bridge Design Features

The removable span bridge alternative includes the following features:

- Concrete construction, with a lightweight concrete deck removable center span;
- Four 12-foot-wide traffic lanes, a 4-foot-wide median, and two 8-foot-wide shoulders;
- Minimum 15 feet of vertical clearance above Mean High Water in the closed position;
- Substructure:
  - 2 in-channel bents[3] made of five 48-inch diameter Cast-In-Steel-Shell piles and either drop bent caps or integral bent caps[4]
  - Abutments supported by four 48-inch diameter Cast-In-Steel-Shell piles
  - Wingwalls that extend 20 feet behind the abutments
- Two to three double arm light standards located on the median
- The overall length of the bridge would increase by 31 feet, from 271 feet with the existing bridge to 302 feet with the new bridge. Three reasons exist for the increased length:
  - The existing bridge is perpendicular to the San Joaquin River, but the replacement bridge would be located upstream at a 10-degree skew to the river. The skew requires a longer bridge but it also improves the alignment of Navy Drive and allows for a higher design speed than that of the existing bridge
  - The river widens slightly upstream of the existing bridge, so the new bridge has to span a greater distance than the existing bridge
  - The new bridge abutments would be located slightly behind the existing riverbanks to minimize disturbance, since the riverbanks form flood control levees. Placing the abutments behind the edges of the levees would simplify abutment construction, but would also lead to a longer bridge structure

[1] Horizontal clearance is measured pier face to pier face, normal to the axis of the channel.
[2] Mean High Water is 3.5 feet above Mean Lower Low Water. Mean High Water is the average of high water heights measured over a number of years. Mean Lower Low Water is the average of lower low water heights measured over a number of years.
[3] In-channel bents are structures that support the bridge deck.
[4] Bent caps are used in connecting the piles to the bridge deck. Drop bent caps are below or partially below the girder soffit whereas, integral bent caps are completely framed within the depth of the bridge superstructure.

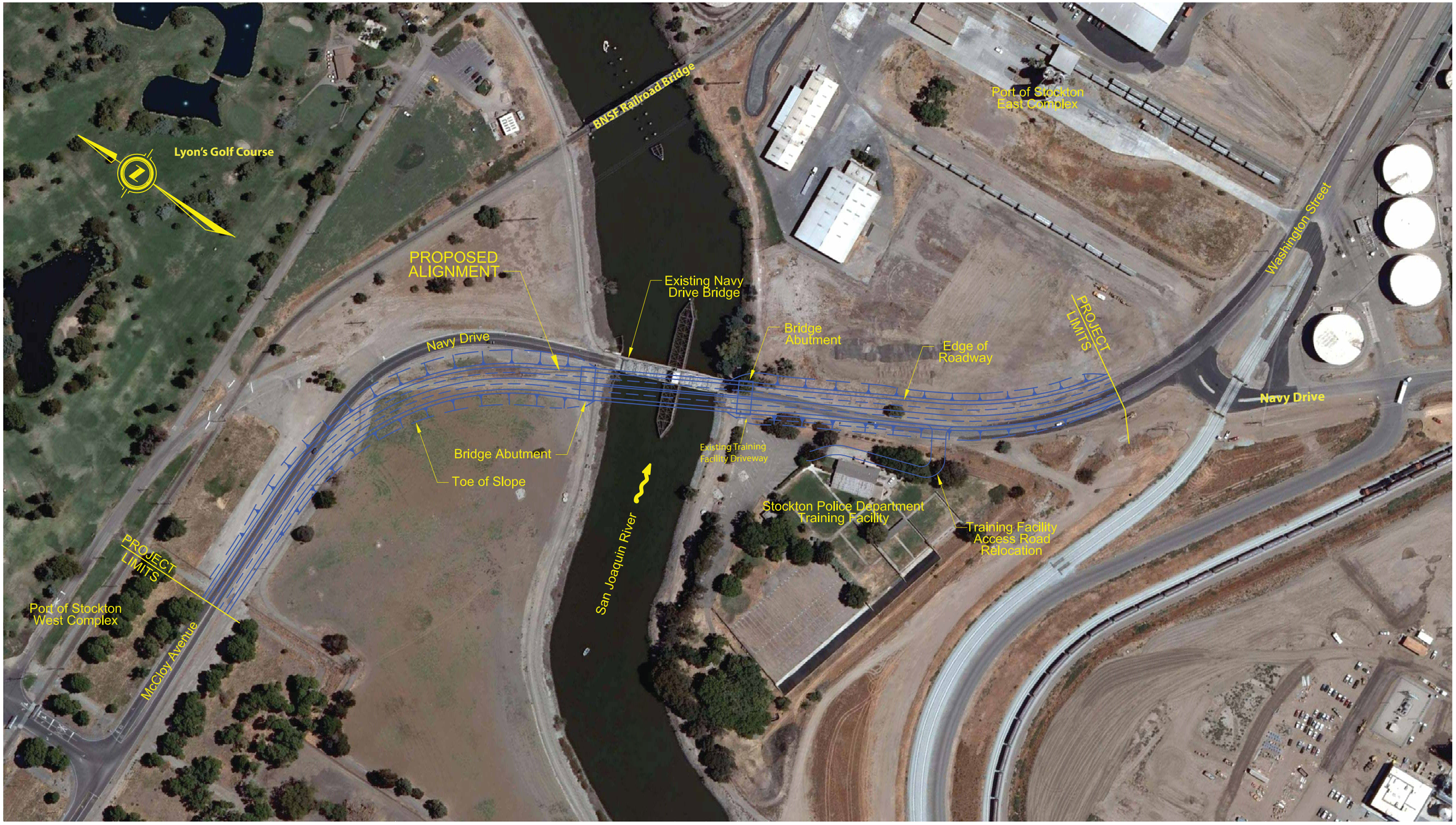


FIGURE 1-5

Navy Drive Bridge Replacement Project
Proposed Project Site

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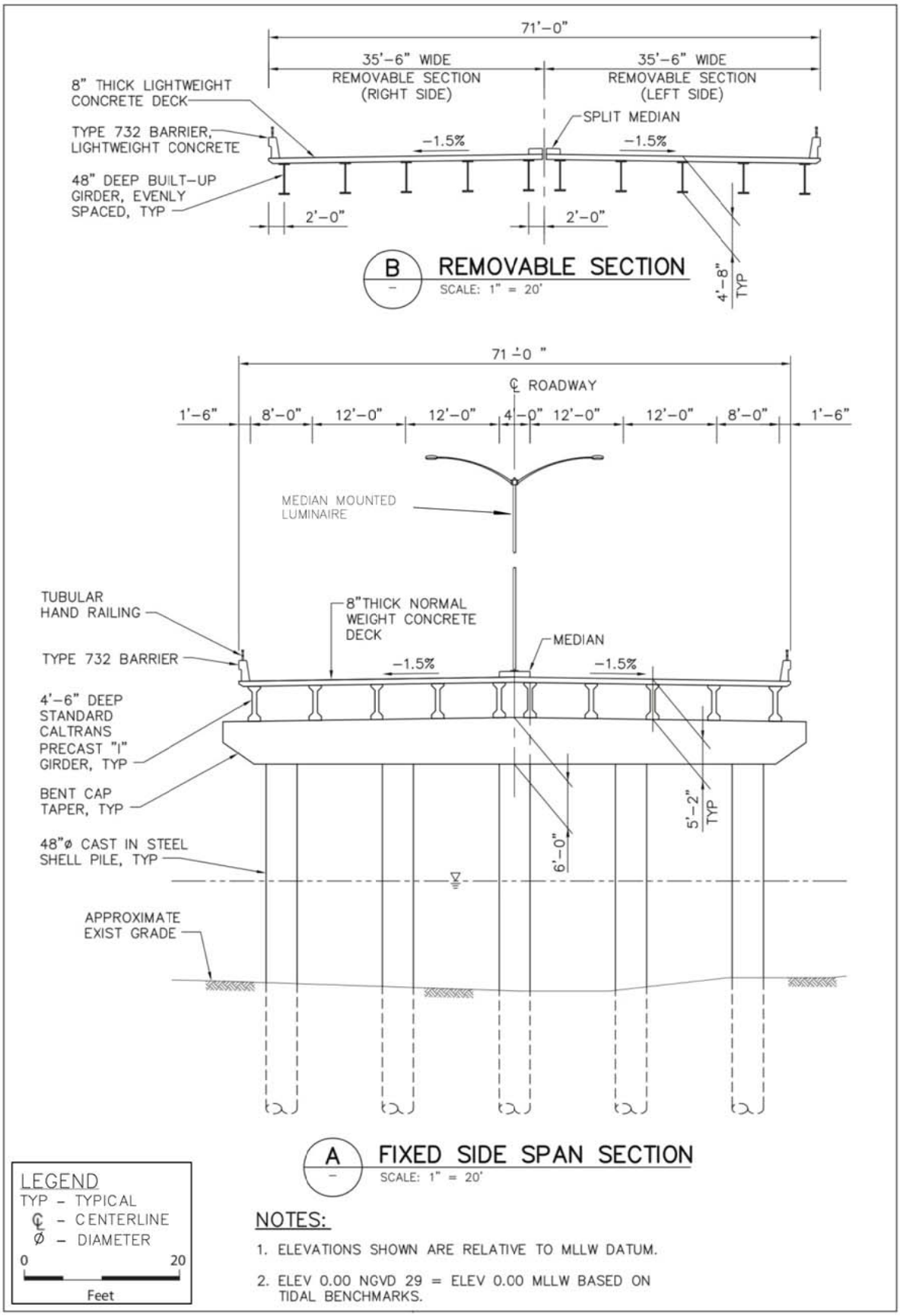
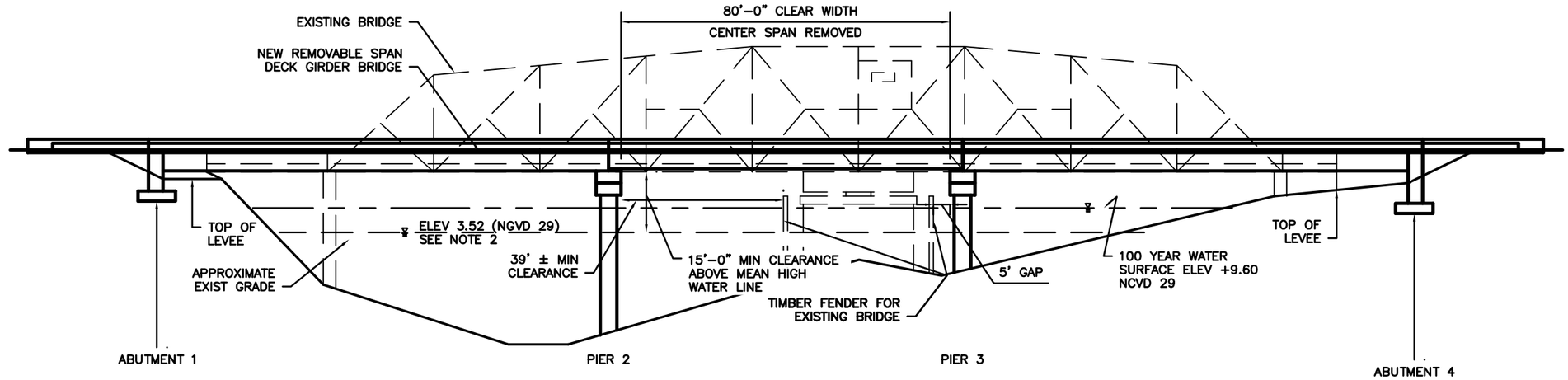


FIGURE 1-6

Navy Drive Bridge Replacement Project

New Four-Lane Removable Span Bridge-Typical Cross-Section

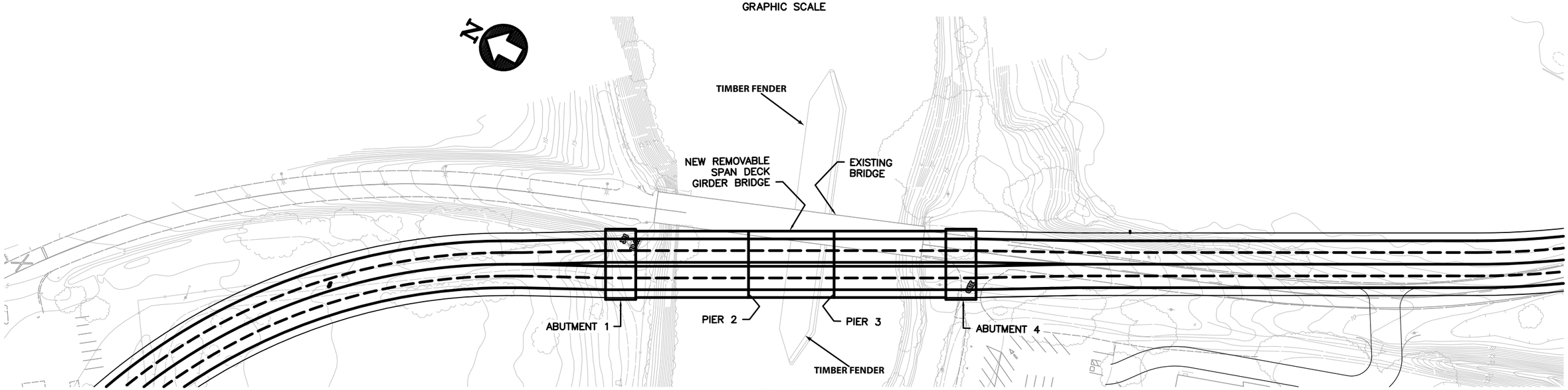
SOURCE: ESA (2004)



ELEVATION

30 0 15 30 60

GRAPHIC SCALE



PLAN

100 0 50 100 200

GRAPHIC SCALE

FIGURE 1-7

Navy Drive Bridge Replacement Project

New Four-Lane Removable Span Bridge-Elevation and Overhead Views

SOURCE: Parsons (2013)

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Table 1-1 compares the features of the removable span bridge alternative to the existing bridge.

Table 1-1: Comparison of Bridge Dimensions

Alternative	Bridge Width	Bridge Length	Vertical Clearance*	Horizontal Clearance	Bridge Opening	Bridge Depth
Alternative 1 – Construct a New Four-Lane Removable Span Bridge and Demolish the Existing Bridge	71 feet Four 12-foot-wide traffic lanes, a 4-foot-wide median, and two 8-foot-wide paved shoulders	302 feet	Unlimited clearance in the open position (with center span removed) 15.0 feet above Mean High Water in the closed position	80 feet (at center span)	Center of Channel	5.0 feet
Existing Bridge	47 feet Two 12-foot-wide traffic lanes, and a 3.5 foot-wide sidewalk on east side	271 feet	Unlimited clearance in the open position 14.5 feet above Mean High Water in the closed position	100 Feet	North of Channel Center	5.5 feet

* Measured above Mean High Water

The existing bridge has a 3.5-foot-wide sidewalk on the east side. The proposed bridge includes two 8-foot-wide shoulders with no sidewalks. This is due to the industrial nature of the project area. Development in the project area is not conducive to pedestrian activities; in addition, no other sidewalks occur on adjacent roadway networks. The 8-foot-wide shoulders on the new bridge would be able to serve the occasional bicyclist or pedestrian.

The in-channel piles of the removable span bridge were analyzed to determine their ability to withstand a vessel-bridge collision in accordance with Caltrans requirements and the 2008 American Association of State Highway and Transportation Officials Vessel Collision Design of Highway Bridges, Guide Specifications (Moffatt & Nichol 2009). The analysis concluded that the removable span bridge could safely withstand collision from a typical larger vessel expected on the channel.

Since the new Navy Drive Bridge would be built on a slightly different location than the existing bridge, the portions of Navy Drive on the West and East Complexes that approach the bridge would need to be realigned and new bridge abutments would need to be constructed. The build alternative would also involve removal of the existing Navy Drive Bridge, possible relocation of utilities, and specific navigational requirements. These issues are discussed below.

Navy Drive Realignment and Approach – West Complex

Currently, Navy Drive ties in to McCloy Avenue on the West Complex approximately 990 feet north of the existing bridge. As part of the proposed project Navy Drive will be realigned; Navy Drive will connect with McCloy Avenue approximately 100 feet west of its current connection point to accommodate the new location of the Navy Drive Bridge (Figure 1-5).

Navy Drive Realignment and Approach – East Complex

The new bridge approach and alignment of Navy Drive within the East Complex would be approximately 830 feet long. The new alignment would begin at the end of the new bridge and would end just west of the Washington Street/Navy Drive intersection. Additionally, the entrance to the Stockton Police Department Training Facility would be relocated (see Figure 1-5) approximately 700 feet east of its existing location to provide adequate sight distance.

Navigation Channel Clearances

Under the current Coast Guard permit, the existing Navy Drive Bridge in the closed position provides a horizontal navigational clearance (the width of the opening) of 99.7 feet and a vertical navigational clearance (the height of the opening) of 15.1 feet (above Mean High Water[1]). Navigational use along this portion of the San Joaquin River is comprised primarily of small recreational and fishing boats. Recreational traffic on this section of the river is, on average, less than 5-10 vessels per day. The horizontal and vertical clearances of the proposed project will accommodate current and future recreational demand, as well as barge/tug vessels that may be required for future channel and/or levee maintenance.

Based on preliminary feedback from stakeholders, which includes reclamation districts, construction companies, the California Department of Water Resources, and boating interests, the Coast Guard established that the replacement bridge should have a center span that is able to open in an emergency. Alternative 1 would provide a minimum 15 feet vertical clearance above Mean High Water (see Table 1-1) in the closed position, and unlimited vertical clearance in the open position (with the center span removed). Based on consultation with water way users, the proposed bridge location will not affect navigability for recreational and maintenance vessels through this section of the river. This is consistent with the Coast Guard review letter dated August 21, 2008 (Appendix G). It should be noted that the proposed bridge would meet Coast Guard requirements, but would not provide an advantage over the existing bridge in terms of channel clearances.

Under the current operating regulations for the both the existing and proposed removable span bridge, the Port would be required to, “restore the draws to full operation within six months of notification by the USCG.” For the proposed removable span bridge, this refers to the removal of the center span to provide unlimited vertical clearance for passage of vessels. If unlimited vertical clearance is required in the event of an emergency, the Code of Federal Regulations state, “the drawtender (i.e. the Port) shall take all reasonable measures to have the draw opened, regardless of the operating

[1] Mean High Water is 3.5 feet above Mean Lower Low Water. Mean High Water is the average of high water heights measured over a number of years. Mean Lower Low Water is the average of lower low water heights measured over a number of years.

schedule of the draw, for passage of the following, provided this opening does not conflict with local emergency management procedures which have been approved by the cognizant Coast Guard Captain of the Port:"

(1) Federal, State, and local government vessels used for public safety;
(2) Vessels in distress where a delay would endanger life or property;
(3) Commercial vessels engaged in rescue or emergency salvage operations; and
(4) Vessels seeking shelter from severe weather.

Construction Details

Construction of the new Navy Drive Bridge and demolition of the existing bridge would encompass two complete construction season windows.

Construction Season One

During this construction season, one-half of the proposed new Navy Drive Bridge would be built upstream and immediately adjacent to the existing bridge. Traffic on Navy Drive would continue to use the existing Navy Drive Bridge during this first stage of construction.

During the first construction window, the contractor would construct a trestle or assembly of barges to create a working platform upstream of the new bridge. The details of construction for the two methods include:

- Temporary Trestles – Two short trestles would be constructed between the north and south river banks and the two in-channel bents. The trestles would be approximately 96 feet long by 60 feet wide with six temporary steel pile bents in the channel. The contractor would design the temporary pile bents. There would be 42 temporary 14-inch-diameter steel piles supporting the temporary trestle. The temporary steel piles would be either driven or vibrated into the bottom of the river channel to support the anticipated construction loads. A temporary deck structure would be constructed above the bents to support cranes and concrete trucks. A conceptual plan of the temporary trestle for the removable span bridge is shown in Figure 1-8.
- Barges - Barges would either be floated down the San Joaquin River to the site of the new bridge, or they would be assembled from Flexi-Floats trucked to the site. A crane would work off the barges.

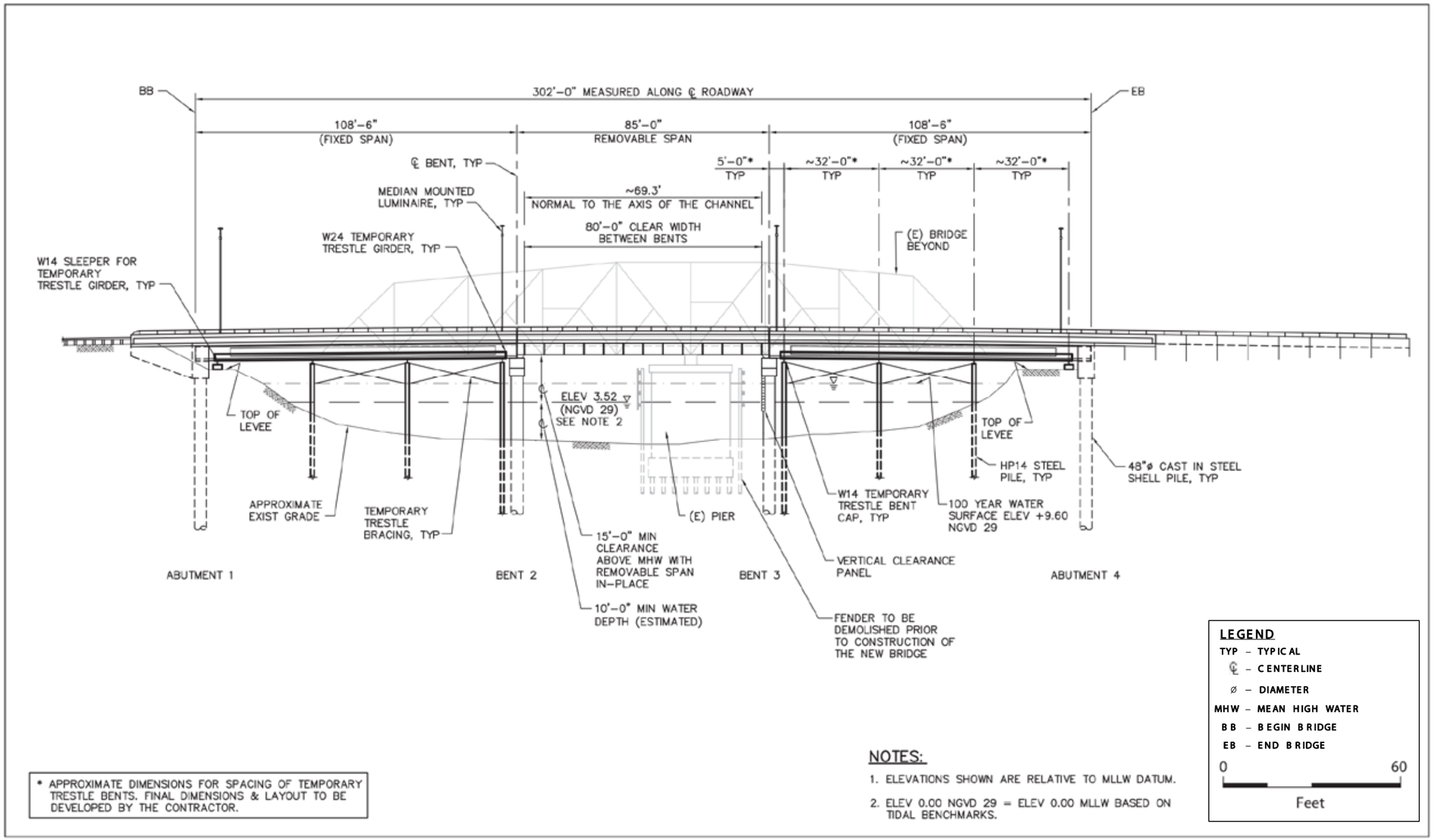

FIGURE 1-8

SOURCE: ESA (2004)

Navy Drive Bridge Replacement Project

Conceptual Plan of a Temporary Trestle for the Removable Span Bridge

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After construction of the work platform, anticipated items of work include:

- The wooden fender system upstream of the existing bridge would be removed.
- Cast-In-Steel-Shell piles would be installed in the riverbed for the upstream half of the new bridge (first stage).
    - Construction specifications would require that once each steel shell is driven into the riverbed, soil would be removed from inside the shell and disposed of off-site.
    - A reinforcing cage would be placed in the shell and concrete would be placed inside of the shell by the tremie method. With this method, concrete is placed below water level through a pipe, the lower end of which is kept immersed in fresh concrete so that the rising concrete from the bottom displaces the water without washing out the cement content. Expected water volume from this displacement would be 500 gallons per pile multiplied by 10 piles.
    - Construction specifications would require that water taken off the tremie lift would be discharged to a settling pond on shore where it would percolate into the soil. Any residue would be removed when construction is completed. Dewatering inside of the Cast-In-Steel-Shell is not required as water above the concrete is removed during the concrete placement process.
- Any water and soil inside the pipe is removed by clamshell or auger and removed from the site. The steel pipes are then filled with concrete.
- Following completion of the temporary bents, either the center span girders would be placed or the temporary trestles would be dismantled and removed. The contractor may take advantage of the temporary trestles to construct the removable center span. Alternatively, the contractor would remove the temporary trestles, construct the side spans, and utilize the side spans to construct the removable center span.
- Construction of pier caps and spans for the new bridge would follow installation of Cast-In-Steel-Shell piles. The pier caps would consist of formed and poured concrete and steel reinforcement.
- The bridge abutments would be built on dry land, since they would be located behind the top of the levee bank and above the high water level of the San Joaquin River. Each abutment would be supported by four 48-inch-diameter Cast-In-Steel-Shell piles. The steel shells would either be vibrated or driven into the ground, followed by installation of reinforcement cages and placement of concrete, similar to the construction method for in-channel piles. Installation of the Cast-In-Steel-Shell piles may require the dewatering of groundwater. Soil would be removed from inside of the Cast-In-Steel-Shell shells and disposed of off-site.
- Precast and steel girders would be trucked to the site and erected by crane to support the spans. Forming for the cast-in-place concrete deck would be supported off the girders.
- The upstream half of the new Navy Drive Bridge, providing two lanes of traffic, would be completed and the work platform removed before the end of the first season construction window.
- After traffic on the existing bridge is directed onto the new bridge, the partial demolition of the existing bridge concrete deck, control cabin, and selected steel

truss members would commence. A debris retention system would be supported off the existing truss bottom chord to prevent material from falling into the river. Additional details for the demolition are provided below.

Minor utility infrastructure located in the project area may be relocated. Three underground water and natural gas pipelines cross under the San Joaquin River south of the proposed new bridge site; however, the proposed bridge location was chosen to avoid these three pipelines, and they would not be affected. There are no high voltage electrical lines crossing the river at the location of the proposed bridge. Overhead electrical lines owned by PG&E are located along Navy Drive both north and south of the existing Navy Drive Bridge. Adjacent to the Stockton Police Department Training Facility south of the bridge, the realigned roadway would require relocation of three utility poles and their associated facilities (i.e. electrical cable, guy-wires, transformers, etc.). The first is located west of Navy Drive adjacent to the Stockton Police Department Training Facility. The other two poles are located north of the shooting range between the fence line and the levee road. North of the bridge, the realigned roadway would require the relocation of four utility poles. The exact relocation of these poles would be determined as part of the final design. A portion of the electrical lines may be moved to underground conduit within the road right of way. Any relocated poles would also be within the future road right of way.

Due to the requirement for a bridge that can open, no utilities other than power for bridge lights would be supported on the bridge. No utility work is anticipated during the second construction season.

Construction Season Two

- At the beginning of the second construction season, the contractor would install another work platform downstream of the new bridge and any remaining portions of the existing truss, center pier, abutments, and fender system would be removed.
- The remaining Cast-In-Steel-Shell piles would be installed, followed by the pier cap and spans in the same manner as the first stage. The work platform would then be removed from the river and all four lanes of the bridge opened to traffic prior to the end of the second season work window.

Existing Bridge Demolition Details

Construction specifications would require the contractor to prevent all superstructure debris from entering the channel during demolition of the existing bridge and fenders, and would prohibit the use of blasting. The construction staging area would be located south of the San Joaquin River and east of the existing Navy Drive Bridge. The contractor would likely use a system of barges that either float down river to the project site, or be assembled from Flexi-Floats that are trucked to the site to facilitate demolition.

Demolition of the existing Navy Drive Bridge may begin by removing the bridge control house, guardrails, lights, stairs, and any other appurtenances to reduce weight. The concrete deck may also be demolished to remove weight. The debris would be trapped by the floats and brought to shore for off-site disposal. The truss would be cut into segments, which would be lifted out and set on land for dismantling and removal. The mechanical elements would be removed from the center pier of the existing bridge.

Construction specifications would require the existing substructure to be removed and all debris to be removed from the channel. A timber fender system is located around the central pier of the existing bridge. The fender system would be demolished and removed from the site. Construction specifications would require that the demolished timber to be off-loaded from floats and trucked to an off-site disposal area. Removal elevation of the existing bridge piers and fender system would be determined by the Coast Guard and included as a condition of the permit for the proposed replacement bridge. Demolition of the center pier would begin by removing the interior walls of the center pier down to the top of the center pier footing. Demolished concrete would be removed from the center of the pier using an excavator or clamshell operating from Flexi-Floats. Once the inside of the center pier was demolished, the exterior of the center pier would be demolished. Initially an excavator fitted with a chipping tool would work the sides down with debris falling into the center of the pier. Divers using jackhammers would complete the demolition. The concrete debris would be removed from the center of the pier using a clamshell as the demolition progresses.

The side piers would be demolished to just below the top of the existing bank using an excavator with a chipper. Any concrete debris would be removed from the river using a clamshell. The abutments would be demolished to just below the top of the bank using conventional demolition equipment.

1.3.2 Alternative 2 – No Build Alternative.

The No-Build Alternative would keep the existing Navy Drive Bridge without rehabilitation, reconstruction, or replacement. According to Caltrans inspections, this configuration does not meet current safety and design standards.

The No-Build Alternative has two advantages: (1) It would avoid all construction impacts, and (2) It would initially avoid impacts to a historic resource, since the existing bridge is a contributing element to the Naval Supply Annex Stockton Historic District (see Appendix B, Section 4(f) Evaluation). However, without any rehabilitation, the condition of the bridge would eventually deteriorate, resulting in potential effects to a historic resource.

The No-Build Alternative does not satisfy the project purpose and need. The following aspects of the existing Navy Drive Bridge are in direct conflict with the project purpose and need:

- The existing two-lane bridge would not address projected traffic volumes, resulting in level of service F conditions by 2023
- The vertical clearance for vehicles does not meet the standard height requirement of 15.5 feet
- The bridge has a substandard deck, superstructure, substructure, guardrails and guardrail approaches;
- Seismic safety hazards would not be resolved without reconstruction of the existing bridge;

1.3.3 Comparison Of Alternatives

The alternatives were compared and evaluated using the following evaluation criteria considered important for comparison:

- Is the alternative consistent with the purpose and need by addressing projected traffic volumes and operations on Navy Drive?
- Does the alternative meet Homeland Security requirements by providing two westbound lanes for West Complex incoming traffic?
- Is the proposed alternative structurally and functionally adequate (to meet the project needs)?
- Are the navigational clearances (vertical and horizontal) for the proposed alignment satisfactory? Does the proposed alternative create any alignment difficulties (e.g. between new and existing structures in the river channel)?
- Does the alternative minimize environmental impacts related to in-channel construction?
- Does the alternative meet Coast Guard requirements to provide access for levee repair equipment in the event of an emergency?
- What is the estimated cost of constructing the alternative (if known)?

These criteria were developed by the project development team, including the Port of Stockton, Caltrans, and the project engineer. In addition, the Coast Guard and other interested agencies were consulted regarding these criteria. A preferred alternative (Alternative 1) was identified based on the fulfillment of all evaluation criteria.

The following table applies the evaluation criteria to the project alternatives discussed above and to all other alternatives discussed in the following section “Alternatives Considered but Eliminated from Further Consideration.” Evaluation criteria that would be met under an alternative are noted with “✓” in the respective evaluation criteria column. The estimated cost, if known, is also listed in Table 1-2.

Table 1-2: Comparison of Alternatives

	Evaluation Criteria						
	Addresses future traffic demand	Homeland Security Requirements	Structurally /Functionally Adequate	Navigation Clearance/ Alignment Satisfactory?	Minimize In-Channel Impacts	Meets Coast Guard Requirements	Estimated Cost
Alternative 1 Construct a New Four-Lane Removable Span Bridge and Demolish the Existing Bridge	✓	✓	✓	✓	✓	✓	$11,828,000
Alternative 2 No-Build				✓	✓	✓	No Cost*
Alternatives Considered But Withdrawn from Further Consideration							
Alternative 3a Construct a New Four-Lane Fixed Span Bridge (with Bulb Tee Girders) and Demolish the Existing Bridge	✓	✓	✓	✓	✓		$10,024,800
Alternative 3b Construct a New Four-Lane Fixed Span Bridge (with Precast I Girders) and Demolish the Existing Bridge	✓	✓	✓	✓	✓		$10,148,500
Alternative 3c Construct a New Four-Lane Fixed Span Bridge (with Cast-In-Place Post-Tensioned Box Girder)s and Demolish the Existing Bridge	✓	✓	✓	✓			$10,655,100
Alternative 4 Construct a New Four Lane Bridge and Preserve the Existing Bridge	✓	✓	✓			✓**	$10-12 million
Alternative 5 Rehabilitate the Existing Two-Lane Bridge				✓	✓	✓	$2-3 million
Alternative 6 Replace the Existing Bridge with a New Two-Lane Bridge			✓	✓	✓	✓**	$9,764,200
Alternative 7 Transportation System Management				✓	✓	✓	$500,000-$1 million

* In order to meet Coast Guard requirements, the ability for the bridge to open would need to be restored. Cost estimates for this range from $100,000-$300,000

** Applies only to removable span option

1.3.4 Identification Of A Preferred Alternative

In general, a preferred alternative is not identified at the Draft Environmental Document stage of a project. However, due to specific project requirements (explained in Section 1.2 and below) only one alternative met these requirements. Therefore, a preferred alternative was identified early in the process.

During the selection process, several different bridge types or configurations were considered as build alternatives. The New Four-Lane Removable Span Bridge (Alternative 1) is identified as the Preferred Alternative for a combination of reasons:

- Unlimited vertical navigational clearance in the open position for emergency situations,
- Increased vertical clearance for vehicles,
- Environmental considerations,

Implementation of this design also does not have the specific disadvantages associated with the other design types:

- Reduced channel clearances,
- Inability to meet requirements for emergency situations due to a fixed center span,
- Permitting associated with falsework in the river during environment clearance windows,
- Reduced navigational clearance during construction, and
- Increased embankment height, and vulnerability of the false work in the river.

Final selection of a Preferred Alternative is subject to public review and agency approvals. After the public circulation period, all comments would be considered, and Caltrans would make the final determination of the project's effect on the environment. In accordance with the California Environmental Quality Act, if no unmitigable significant adverse impacts are identified, the Port would prepare a Mitigated Negative Declaration. Similarly, if Caltrans determines the action does not significantly impact the environment, Caltrans, as assigned by the Federal Highway Administration, would issue a Finding of No Significant Impact in accordance with the National Environmental Policy Act.

1.3.5 Alternatives Considered But Eliminated From Further Consideration

Five alternatives were initially considered but withdrawn from further consideration due to various reasons, such as the inability to meet the purpose and need and navigation hazards. These alternatives include:

- **Alternative 3**: Construct a New Four-Lane Fixed Span Bridge and Demolish the Existing Bridge
- **Alternative 4**: Construct a New Four-Lane Bridge and Preserve the Existing Bridge
- **Alternative 5**: Rehabilitate the Existing Two-Lane Bridge,
- **Alternative 6**: Replace the Existing Bridge with a New Two-Lane Bridge, and

- **Alternative 7:** Transportation System Management

These alternatives are further discussed below.

Alternative 3 – Construct a New Four-Lane Fixed Span Bridge and Demolish the Existing Bridge

Alternative 3 would replace the existing two-lane, swing-span Navy Drive Bridge with a new four lane, fixed span bridge. Three different design variations of this alternative were considered: precast bulb tee girders, precast I girders, and cast-in-place post-tensioned box girders. The fixed-span variations are similar in regards to structure width and length, vertical and horizontal clearance, cost, and have similar dimensions, which are summarized in Table 1-3 below.

Table 1-3: Comparison of Alternative 3 Design Variations

Alternative	Width	Length	Vertical Clearance*	Horizontal Clearance*	Estimated Cost [2008/2009]	Superstructure Depth
New Four-Lane Bridge with Precast Bulb Tee Girders	80 feet	302 feet	15 feet	120 feet	$10,024,800	6.5 feet
New Four-Lane Bridge with Precast I Girders	80 feet	302 feet	15 feet	115 feet	$10,148,500	7.0 feet
New Four-Lane Bridge with Cast-In-Place Post-Tensioned Box Girders	80 feet	302 feet	15 feet	115 feet	$10,655,100	5.6 feet

* Vertical clearance is measured from mean high water to the lowest point of the bridge substructure. Horizontal clearance is measured between the centermost piles of the bridge.

The Alternative 3 design variations were withdrawn from further consideration late in the project planning process because they provide only 15 feet of vertical clearance from within the channel of the San Joaquin River and therefore do not meet proposed Coast Guard navigational requirements for unlimited clearance in emergency situations.

Alternative 4 – Construct a New Four-Lane Bridge and Preserve the Existing Bridge

Alternative 4 would construct either the removable or fixed span four-lane bridge and would leave in place and rehabilitate the existing two-lane bridge.

Rehabilitation of the existing bridge was considered and withdrawn prior to commencement of the environmental review process, due to cost, engineering, and navigational reasons:

- Current seismic standards could not be met without substantial retrofit of the existing bridge. As discussed above, retrofit would be cost-prohibitive and would not have an identified funding source.

- In order to satisfy the project requirements, the ability of the existing bridge to swing would need to be restored. This would involve substantial repairs and retrofit work. However, even with improvements, the existing bridge would not be able to swing open fully due to the proximity of the new bridge.
- Funding constraints. The existing bridge would require some level of rehabilitation to meet current standards, even if it was to be preserved for use by pedestrians and bicyclists rather than vehicles. Necessary improvements would include resurfacing, safety railing improvements, and remediation of hazardous materials including lead-based paint and asbestos containing materials. However, based on an August 29, 2010 Caltrans inspection, the existing bridge is not eligible for rehabilitation funding through the Federal Highway Administration Highway Bridge Program.
- Navigation hazards. The proposed new bridge would be located close to and slightly southwest (upstream) of the existing bridge. The navigational channel under the existing bridge is on the north side of its central pier to the side of the San Joaquin River, while the navigational channel of the proposed bridge would be located in the center of the river. If both bridges were in place at the same time, the alignment of their navigational channels would be mismatched, and this would pose a hazard to waterway users on the San Joaquin River. Alternative locations for the proposed bridge to eliminate the navigational conflict were not considered since they would require relocation of buildings or would conflict with nearby railroad lines. This was considered infeasible due to expense and potential community impacts.

Alternative 5 – Rehabilitate the Existing Two-Lane Bridge

This alternative would involve rehabilitating the existing bridge for use as the primary vehicular access between the Port's East and West Complexes. This alternative was considered and withdrawn prior to commencement of the environmental review process for the following reasons:

- The Navy Drive Bridge sufficiency rating is 45.2 (out of a possible score of 100) based on a Caltrans inspection completed on August 29, 2010. This low rating makes the bridge ineligible for rehabilitation funding from the Federal Highway Administration Highway Bridge Program.
- The vertical clearance on the existing bridge is only 14.1 feet, while standard vertical clearance for highway facilities is 15.5 feet. The trusses on the existing bridge cannot be removed or modified to provide greater vertical clearance across the bridge without incurring unreasonable high costs for bridge retrofit.
- The existing bridge configuration, which accommodates two travel lanes and a sidewalk in a 24-foot-wide roadway, does not meet current design standards.
- Current seismic standards could not be met without substantial retrofit of the existing bridge. As discussed above, retrofit would be cost-prohibitive and would not have an identified funding source.
- In order to satisfy the project requirements, the ability of the existing bridge to swing would need to be restored. This would involve substantial repairs and retrofit work.
- A two-lane bridge would not accommodate projected traffic volumes on Navy Drive and would not meet Homeland Security requirements.

Alternative 6 – Replace the Existing Bridge with a New Two-Lane Bridge

Alternative 6 was withdrawn from further consideration for the following reasons:

- A two-lane bridge would not accommodate projected traffic volumes on Navy Drive.
- A two-lane bridge would not meet Homeland Security requirements to provide two westbound lanes for West Complex in-coming traffic.

Alternative 7 – Transportation System Management

Alternative 7 would implement Transportation Systems Management in lieu of replacing the Navy Drive Bridge. Transportation Systems Management is a coordinated and integrated decision making approach to (1) construction, (2) preservation, (3) maintenance, and (4) operations of transportation facilities with the intent of maximizing transportation system performance. The goal of transportation systems management is safe, reliable, predictable and user-friendly transportation. The operations aspect of system management includes scheduled/recurring activities (e.g., preventive maintenance, signal retiming,), planned disruptions (e.g., work zones), unscheduled/non-recurring disruptions (e.g., incidents, accidents, unanticipated repairs), special events, and real-time transportation system management (e.g., traveler information, ramp metering, lane controls).

Under this Alternative, signal retiming, metering, and other system management techniques would be used to manage traffic in order to avoid replacement of the bridge and the creation of additional travel lanes.

The Navy Drive Bridge Replacement Project does not easily lend itself to implementation of Transportation Systems Management as a stand-alone alternative. The bridge itself is structurally deficient, and represents a potential bottleneck in the Port's circulation system. This bottleneck would be increased by the proposed addition of a dedicated security checkpoint lane on McCloy Avenue. The following deficiencies would not be solved under the Transportation Systems Management Alternative:

- Vertical clearance for vehicles does not meet height requirement of 15.5 feet;
- Substandard bridge deck, superstructure, substructure, guardrails and guardrail approaches;
- Seismic safety hazards would not be resolved without retrofit of the existing bridge.

Based on these factors, the Transportation Systems Management Alternative was withdrawn from further consideration. However, it should be noted that several Transportation Systems Management tools have been incorporated into the project and the West Complex Development Plan. Transportation Systems Management tools include monitoring of traffic volumes, future traffic signal improvements, and realignment of roadway intersections to increase safety.

1.4 Permits and Approvals Needed

Table 1-4 presents the permits and consultation required for approval and implementation of the proposed build alternative.

Table 1-4: Project Permits and Approvals

Agency	Permit/Approval	Status
San Joaquin Council of Governments	$PM_{2.5}/PM_{10}$ Interagency Consultation (IAC)	Facilitation of IAC process originally completed in January 2007. Due to updates of the existing setting, a new IAC consultation process is underway. Completion expected summer 2013
Caltrans	$PM_{2.5}/PM_{10}$ Interagency Consultation (IAC)	Concurrence in a non-project of air quality concern (POAQC) determination made in January 2007. A revised IAC memo has been sent to SJCOG and is pending concurrence from involved agencies.
Environmental Protection Agency (EPA)	$PM_{2.5}/PM_{10}$ Interagency Consultation (IAC)	Concurrence in a non-POAQC determination made in January 2007. A revised IAC memo has been sent to SJCOG and is pending concurrence from involved agencies.
Advisory Council on Historic Preservation	Memorandum of Agreement Approval	Memorandum of Agreement has been executed (4/30/2008) and fulfillment of stipulations is required prior to issuance of Finding of No Significant Impact
Federal Highway Administration	Air Quality Conformity Determination	To be made before approval of the environmental document
Port of Stockton and Caltrans	Approval of the Final IS/EA and Section 4(f) Evaluation	This would follow the public review period
National Marine Fisheries Service	Consultation under Section 7 of the Endangered Species Act	Biological Opinion issued on August12, 2008, Project is not likely to jeopardize the continued existence of Central Valley steelhead or North American green sturgeon. Note: Critical Habitat for green sturgeon was designated November 9, 2009, subsequent to the issuance of the National Marine Fisheries Service Biological Opinion. Consultation with the National Marine Fisheries Service has been reinitiated in pursuit of a ”not likely to adversely modify” finding for effects to green sturgeon critical habitat.
United States Fish and Wildlife Service	Consultation under Section 7 of the Endangered Species Act	Biological Opinion issued on May 12, 2008, Project is not likely to result in jeopardy to delta smelt.
State Office of Historic Preservation	Consultation under Section106 of the National Historic Preservation Act	Memorandum of Agreement has been executed and fulfillment of stipulations is required prior to issuance of Finding of No Significant Impact
Port of Stockton	Mitigated Negative Declaration	Upon approval of the environmental document
Caltrans	Finding of No Significant Impact	Upon approval of the environmental document

Agency	Permit/Approval	Status
Caltrans	Notice of Availability of the Finding of No Significant Impact	To be sent to affected units of Federal, State and local government and to the State Clearinghouse in compliance with Executive Order 12372 after Finding of No Significant Impact approval
Central Valley Regional Water Quality Control Board	General construction activity stormwater discharge permit	File Notice of Intent and prepare Stormwater Pollution Prevention Plan prior to construction
Army Corps of Engineers	Section 404 Permit (Clean Water Act) and/or Section10 Permit (Rivers and Harbors Act)	Nationwide Permit 15 will be obtained from ACOE following approval of the environmental document.
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification	Permit application to follow approval of the environmental document. Permit is required prior to construction.
Central Valley Flood Protection Control Board	Encroachment Permit	Permit application to follow approval of the environmental document. Permit is required prior to construction.
California Department of Fish and Wildlife	Section 1602 Streambed Alteration Agreement	Permit application to follow approval of the environmental document. Permit is required prior to construction.
California Department of Fish and Wildlife	Due to potential “take” of Delta smelt, an Incidental Take Permit pursuant to Section 2081 of the State Fish and Game Code or Consistency Determination pursuant to 2080.1 of the State Fish and Game Code might be required.	Process cannot begin until CEQA review is complete.
San Joaquin Valley Unified Air Pollution Control District	Permit to Construct	Permit application to follow approval of the environmental document. Permit required prior to construction.
State Lands Commission	Approval of lease for lands below mean high tide	Permit lease application to follow approval of the environmental document. Permit lease application required prior to construction. A new lease from the State Lands Commission will be required for the new bridge. [Lease duration varies from 10-49 years.]
United States Coast Guard	Coast Guard Bridge Permit (General Bridge Act of 1946, as amended)	Permit application to follow approval of the environmental document. Permit required prior to construction.
Federal Highway Administration	Publication of a 150-Day Statute of Limitations Notice in the Federal Register	To occur after finalization of all Federal agency decisions, permits, and approvals.

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

This chapter explains the impacts that the project will have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow. Related regulatory information laws, regulations, and governmental and regulatory agencies involved for each impact area is provided at the beginning of each section as needed.

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

- Existing and Future Land Uses – The Navy Drive Bridge is an existing bridge and the proposed replacement would not conflict with or change existing or planned land uses, zoning codes. The proposed project is also consistent with State, regional and local plans and programs. It is listed for funding in the approved 2013 Federal Transportation Improvement Program, as amended, and is included in the San Joaquin County 2011 Regional Transportation Plan. The project is also consistent with applicable goals and policies (Goal TC-1, Goal TC-2, Goal TC-8, and Policy TC-8.2) in the Transportation and Circulation Element of the City of Stockton 2035 General Plan Update.
- Coastal Zone – The project site is located in the northern portion of the San Joaquin Valley, and outside of the coastal zone.
- Wild and Scenic Rivers – The Navy Drive Bridge spans the San Joaquin River which is not a designated Wild and Scenic River.
- Parks and Recreational Facilities – The proposed project will not introduce any population-generating components, such as long-term employment, housing, or commercial development; therefore, the project will not result in any additional demands for public park facilities. There are no impacts to existing parks or recreational facilities.
- Farmlands/Timberlands – The project site is comprised of disturbed lands and urban uses, most of which are industrial. There are no impacts to farmlands or timberlands.
- Community Character and Cohesion – The project will replace an existing bridge in an industrial area. No impacts to the existing character or cohesion of a community would occur.
- Relocations and Real Property Acquisition – No businesses or residences are within the project site or would require relocation as a result of the proposed project. All project construction activities will occur on property owned by the Port of Stockton with the exception of one property owned by the Bogg's Family. This property is currently being utilized as part of Navy Drive as roadway. Although this area will be acquired as part of the right-of-way acquisitions process, no change in property land use is anticipated.

2.1 Human Environment

2.1.1. Growth

Regulatory Setting

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

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

Affected Environment

The City of Stockton is one of the fastest growing communities in California. Since incorporating in 1850, Stockton has been a rapidly growing city. The City experienced its highest average annual growth rate between 1980 and 1990 when the population grew at an average annual growth rate of 3.6 percent. The population growth slowed significantly between 1990 and 2000, and then increased again through the 2000s. Stockton's population was 291,707as of 2010.

The Navy Drive Bridge serves as a critical link that currently serves as the shortest and most direct means of vehicle access between the Port of Stockton's East and West Complexes, and is one of two access points for regional traffic entering the Port. The Port of Stockton has prepared a Development Plan to help guide future industrial development at the West Complex as a result of the transfer of ownership of the majority of the island from the United States Navy to the Port in 2003. The port anticipates substantial job creation and increased regional revenues as a result of development and reuse of West Complex facilities.

Environmental Consequences

A "first cut screening" was developed to help determine the likely growth-potential of the project and whether further analysis was necessary:

Table 2-1: Growth First Cut Screening

Screening Factor	Discussion
Accessibility	The proposed project will replace the existing 2-lane bridge with a 4-lane bridge on a slightly different alignment. Navy Drive would connect with the recently extended McCloy Avenue. The Stockton Police Department Training Facility would have its entrance access relocated. With the exception of the Training Facility entrance, the proposed project will not change accessibility in the project area. The project will not provide new connections or eliminate existing connections.
Project type, location, and growth pressure	The proposed project consists of replacing an existing bridge in a predominately industrial area. Projected industrial growth at the Port's West Complex, combined with the imminent State Route 4 Crosstown Freeway Extension to Navy Drive, would increase future vehicle traffic on Navy Drive. The proposed project is being built to meet existing and projected future demand, and is not expected to independently affect growth in the project area.
Foreseeable growth	The proposed project will not directly affect growth within the Port of Stockton or the City of Stockton. The project will improve safety and provide adequate local and regional access to the Port's West Complex consistent with 2011 San Joaquin County Regional Transportation Plan and the 2013 Federal Transportation Improvement Program.
Growth and its impact on resources	Because the project will not occur without the implementation of the planned growth projected in the West Complex Development Plan, City of Stockton 2035 General Plan Update, and the San Joaquin County Regional Transportation Plan, no build-related growth is foreseeable. As such, no growth-related impacts on resources are anticipated.

Based on the results of the "first cut screening" above, the proposed project will not influence growth, and therefore no further analysis is required.

Avoidance, Minimization, and/or Mitigation Measures

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

2.1.2. Community Impacts

2.1.2.1. Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2012, this was $23,050 for a family of four.

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

Affected Environment

Demographic information presented in this section is based on data from the 2010 United States Census. The "study area" referenced in this section is composed of a single block group within Census Tract 8.01 (Figure 2-1). This block group is a neighborhood commonly referred to as "Boggs Tract" which lies approximately 1 mile east of the Navy Drive Bridge. Boggs Tract is identified in the San Joaquin General Plan as a distinct neighborhood having discrete residential areas; commercial areas; public facilities, including a school, a public park, and a community center; and other community features.

The Boggs Tract neighborhood contains local amenities such as the Boggs Tract Community Center and Park, Washington Elementary School, and a community church that contribute to a cohesive community. The study area has a predominantly minority and low-income population. Based on census information of the study area, 97% of the population in the study area is minority (Table 2-2) and 27 percent is low-income (Table 2-3). The study area has a Hispanic population, which, at 76.9 %, is much higher than that of the City at 40.3% or the County at 38.9%. The study area also has a significant black or African-American population (12.6%). Overall, about 97% of the study area is composed of ethnic minorities, as compared with approximately 63% in the City and 49% in the County.

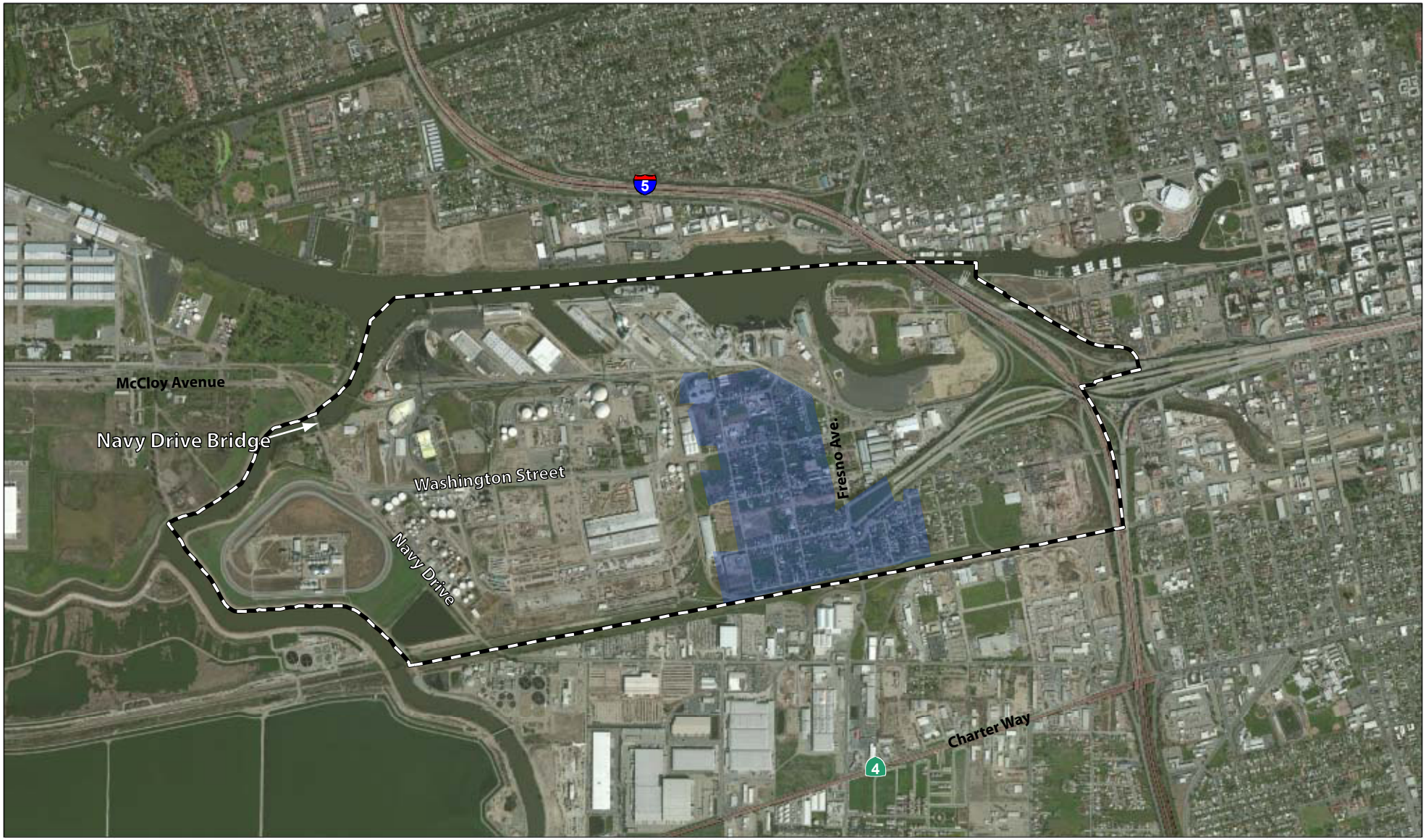

FIGURE 2-1

LEGEND

Environmental Justice Study Area (Census Tract 8.01)

Boggs Tract

N

0 1000 2000
FEET

SOURCE: Microsoft Bing Map - Aerial (2010)

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Navy Drive Bridge Replacement Project

Environmental Justice Study Area

Table 2-2: Ethnicity Breakdown

Study Area	Total Population (100 %)	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race Alone	Two or More Races	Hispanic or Latino
Study Area (Census Tract 8.01)	7,248	289 (4 %)	998 (13.8 %)	0 (0 %)	1,338 (18.5%)	0 (0 %)	0 (0 %)	132 (1.8 %)	4,491 (62.0 %)
City of Stockton	289,926	67,556 (23.3 %)	32,181 (11.1 %)	1,220 (0.4 %)	61,550 (21.2 %)	1,382 (0.5 %)	164 (0.1 %)	9,941 (3.4 %)	115,932 (40.0 %)
San Joaquin County	680,277	348,594 (36.5 %)	46,907 (6.9 %)	3,043 (0.4 %)	95,230 (14.0 %)	3,229 (0.5 %)	1,162 (0.2 %)	21,476 (3.2 %)	260,636 (38.3 %)

Source: American Community Survey, 2007-2011

Table 2-3 shows the number of households, average size of the household, total number of families, and median household income in the study area Census Tract 8.01) compared with the City's and County's. The household income statistics show that 27.4% of the study area lives below poverty level. This compares to 23% in the City and 19.2% in the County.

Table 2-3: Number, Size, and Income of Households

Geographic Area	Number of Households[a]	Average Household Size	Total Number of Families[b]	Percent of Family Households	Median Household Income	Percent of Households below Poverty Level
Study Area (Census Tract 8.01)	1,647	4.04	1,392	84.5 %	$46,042	27.4 %
City of Stockton	90,605	3.16	65,778	72.6 %	$45,606	23.0 %
San Joaquin County	215,007	3.12	161,057	74.9 %	$54,341	19.2 %

Source: United States Census Bureau, 2010.

[a] The United States Census Bureau defines a household as a group of people, related or otherwise, living together in a dwelling unit.

[b] The United States Census Bureau defines a family as a group of two or more people who reside together and who are related by birth, marriage, or adoption.

N/A The United States Census Bureau does not have this data available.

Environmental Consequences

The proposed project would replace an existing 2-lane bridge with a 4-lane bridge to improve safety and to provide adequate local and regional access to the Port's West

Complex. The project would not require relocations of any properties. All project construction activities will occur on property owned by the Port of Stockton with the exception of one property owned by the Bogg's Family. This property is currently being utilized as part of Navy Drive as roadway. Although this area will be acquired as part of the right-of-way acquisitions process, no change in property land use is anticipated.
The nearest residential uses, the Boggs Tract neighborhood, exists approximately 1 mile east of the proposed project.

Widening of the proposed bridge may encourage truck traffic to utilize Navy Drive rather than Port of Stockton Expressway (formerly Daggett Road) which currently serves as one or two access points to the West Complex. Traffic exiting Interstate 5 currently runs through the Boggs Tract neighborhood via Fresno Avenue to reach the West Complex and widening may increase traffic through this neighborhood. However, the approved State Route 4 Crosstown Freeway Ramp Extension project would construct about a mile of elevated highway structure spanning the Boggs Tract neighborhood, eliminating the existing ramps at Fresno Avenue. This project began construction in early 2013, eliminating the issue of truck traffic traveling through the Boggs Tract neighborhood.

Based on the above discussion and analysis, the proposed project would not cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

Avoidance, Minimization, and/or Mitigation Measures

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

2.1.3. Utilities/Emergency Services

Affected Environment

WATER

Potable water for the Stockton Metropolitan Area is provided by three water suppliers: City of Stockton Municipal Utilities District; the California Water Service Company (Cal Water); and the County of San Joaquin (County) through County Maintenance Districts. The Stockton East Water District supplies treated surface water to Stockton Municipal Utilities District, Cal Water, and the County under a four-party wholesale water supply agreement. The Port of Stockton is located within the Cal Water service area. An underground water supply pipeline crosses under the San Joaquin River south of the proposed new bridge site; however, the proposed bridge location was chosen to avoid this pipeline, and it would not be affected.

SEWER

The Stockton Municipal Utility District provides wastewater (sewer) services for the City of Stockton including the project area (Port of Stockton 2004).

SOLID WASTE

Private disposal companies provide commercial solid waste collection and disposal services in the City. The Port has a contract with Delta Container for these services. Solid waste is subsequently disposed of at two private landfills on Austin Road owned by Forward Inc. Forward Inc. plans to combine the two facilities into one large landfill, which would result in increased net capacity. The landfills are not currently faced with capacity issues (Port of Stockton, 2004).

NATURAL GAS, ELECTRICITY, AND TELECOMMUNICATIONS

Pacific Gas & Electric provides natural gas and electrical services to the Port. The Port owns and operates both the electric and gas facilities that provide natural gas and electrical services to the West Complex. Electrical service is provided to the West Complex through overhead 60 kV electrical wires downstream of the existing Navy Drive Bridge that cross over the San Joaquin River. There are no high voltage electrical lines crossing the river at the location of the proposed bridge. A 4-inch high-pressure welded steel underground natural gas pipeline crosses the San Joaquin River south of the existing Navy Drive Bridge. The proposed bridge location was chosen to avoid this pipeline, and it would not be affected.

Overhead electrical lines owned by the Port are located south of the existing Navy Drive Bridge, and these would also remain.

AT&T currently supplies telecommunication services for the Port through a network of overhead distribution lines and individual service lines. Two electrical overhead spans on the east complex side carry shared telecommunications lines. These lines would need to be relocated due to the realignment of Navy Drive.

FIRE PROTECTION SERVICES

The City of Stockton Fire Department provides fire protection and maintains a hazardous materials unit for over 280,000 people within 87 square miles of the City of Stockton and contiguous areas, including Rough and Ready Island. The Port also owns and maintains a fireboat staffed with Stockton Fire Department personnel. The nearest fire station to the project site is Station 1, located approximately 2 miles to the east at 1818 Fresno Avenue.

POLICE PROTECTION SERVICES

The Port maintains an independent sworn police force to provide Port security. In addition, the City of Stockton's Police Department provides police protection services throughout the City. The closest substation is less than 5 miles from the project site on Manthey Road.

EMERGENCY MEDICAL RESPONSE

Fire stations located near the project area currently provide emergency medical service to the site. The City of Stockton is also currently served by three different ambulance companies. Three major hospitals provide medical service in Stockton: Dameron Hospital, St. Joseph's Medical Center, and the San Joaquin General Hospital (Port of Stockton, 2004).

Environmental Consequences

Minor utility infrastructure located in the project area would be relocated. Three utility poles carrying electrical lines would be relocated as part of the realignment of the Navy Drive approach. The first is located west of Navy Drive adjacent to the Stockton Police Department Training Facility. The other two poles are located north of the Stockton Police Department Training Facility between the fence line and the levee road. The exact relocation of these poles would be determined as part of the final design. A portion of the electrical lines might be moved to underground conduit within the road right of way. Any relocated poles would also be within the future road right of way. Due to the requirement for a bridge that can open, no utilities other than power for bridge lights would be supported on the bridge. Implementation of avoidance, minimization, or mitigation measures listed below would reduce potential impacts associated with utility relocation.

The proposed project includes demolition of the existing bridge. Demolition and other construction activities are expected to produce considerable amounts of used concrete, asphalt, metal, and soils that would need to be disposed of. Landfills in the project area have the capacity and the ability to accept these materials. The proposed project would not affect solid waste collection from the Port or the Stockton Police Department Training Facility as a result of the construction phase of the project. Impacts associated with solid waste would be minimal.

The existing bridge would remain open to traffic during construction of the new bridge, allowing emergency vehicles unrestricted access during construction. Two lanes of traffic would remain open at all times during construction, which is sufficient to accommodate existing traffic levels. After construction is complete, traffic operations in the project area are expected to improve due to the new 4-lane bridge. Therefore, no impacts to emergency services are expected to occur.

Avoidance, Minimization, and/or Mitigation Measures

The following measure would be required to minimize utility impacts:

- As part of the development of the final construction drawings, a utility relocation plan shall be developed that identifies all existing and proposed water lines, sewer lines, telephone, cable, gas, electric, and other services in the project area. Utility and service operators shall be notified in writing prior to construction of any utility or service relocations to ensure minimum disruption between the removal or relocation of existing lines and the installation of new lines.

2.1.4. Traffic And Transportation/Pedestrian And Bicycle Facilities

Regulatory Setting

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

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

REGIONAL TRANSPORTATION PLAN

The Regional Transportation Plan is the major planning document produced by San Joaquin Council of Governments for the San Joaquin County Region. The Regional Transportation Plan guides the region's transportation development over a 20-year period. The Regional Transportation Plan is updated every three years to reflect changes in available funding, economic activity and growth pressures of the region, and to incorporate findings from corridor studies and major investment alternatives studies. The Regional Transportation Plan covers all modes of transportation. Further, the projects included and taken as a whole must help improve air quality. The current 2011 Regional Transportation Plan was adopted in July 2010 by the San Joaquin Council of Governments Board. Navy Drive Bridge is listed for expansion and improvements in the 2011 Regional Transportation Plan.

FEDERAL TRANSPORTATION IMPROVEMENT PROGRAM

The San Joaquin Council of Governments develops and regularly updates the Federal Transportation Improvement Program. The Federal Transportation Improvement Program documents how federal funds would be expended on highway and public transportation improvements within an urban area. The Federal Transportation Improvement Program is a comprehensive multi-year transportation spending plan for the region that lists every transportation project that would receive federal funds or that is subject to a federally required action, such as a review for its impact on air quality. The projects in the Federal Transportation Improvement Program are developed by San Joaquin Council of Governments through its member agencies and in cooperation with state and federal agencies and the eight San Joaquin Valley counties. Federal Transportation Improvement Programs must "conform" to federal Clean Air Act requirements (meaning the projects, taken as a whole, must improve air quality). As the primary spending plan for the region, the Federal Transportation Improvement Program is one of the principal means of implementing the goals and priorities identified in the Regional Transportation Plan. Navy Drive Bridge is

listed for construction funding under the Highway Bridge Program in the 2013 Federal Transportation Improvement Program.

CITY OF STOCKTON GENERAL PLAN

The City of Stockton 2035 General Plan Update guides the maintenance, design, and operation of transportation, including streets and highways, within the project area. The following goals and policies are provided in the Transportation and Circulation Element:

Goal TC-1: To develop an integrated transportation system that provides for the safe and efficient movement of people and goods.

Goal TC-2: To develop a street and highway system that promotes safe, efficient and reliable movement of people and goods by multiple transportation modes and routes, and that reduces air quality impacts.

Goal TC-8: To encourage and maintain the operation of the Port of Stockton as an asset to the community and a source of jobs, while minimizing environmental impacts in accordance with California Environmental Quality Act.

Policy TC-8.2: Port Access. The City shall work to improve access to the Port while minimizing the adverse effects of Port-related traffic on surrounding neighborhoods.

REGIONAL TRAFFIC DEMAND MODELING

Using the validated San Joaquin Council of Governments/City of Stockton Travel Demand Forecasting Model, future year traffic volume forecasts were developed for Navy Drive both south and north of Washington Street.

In addition to daily volumes, AM and PM peak hour turning movement demand volumes were developed using the San Joaquin Council of Governments/City of Stockton Travel Demand Forecasting Model. The Travel Demand Forecasting Memorandum was submitted to Caltrans District 10 Travel Forecasting Branch and approved on Friday, June 22, 2011.

Affected Environment

This section is based on a technical memorandum entitled Final Traffic Operations Report prepared by Fehr & Peers, on August 5, 2011.

The project study includes applicable roadway portions within the Port of Stockton as needed to characterize the potential project effects. Specifically, the technical memorandum addresses the segment of Navy Drive involving the existing/proposed bridge and to south of Washington Street, as well as the Navy Drive/Washington Street intersection. The analysis evaluates this roadway and intersection under various improvement scenarios for a number of forecast year conditions.

Level of service is used by transportation planners/engineers as the standard measure for determining traffic congestion on roadways and intersections. Because the project area is within the jurisdiction of the City of Stockton, the project is subject to level of service standards used by the City. Accordingly, in the 2008 Stockton General Plan, the City of Stockton identified criteria for the minimum acceptable traffic operations as level of service D for both roadway segments, and signalized intersections.

The following defines level of service for both arterials (roadways) and intersections used in the calculations for the proposed project.

ARTERIAL LEVEL OF SERVICE

The primary function of an arterial road is to deliver traffic from collector roads to freeways, and between urban centers at the highest level of service possible. Navy Drive is considered an arterial road. The level of service analysis for the Navy Drive Bridge is based on capacity thresholds from the Highway Capacity Manual (Transportation Research Board, 2000) methodology as shown in Table 2-4. Based on the Highway Capacity Manual methodology, the maximum hourly directional traffic volume that a 2-lane roadway can serve is 1,500 vehicles to maintain level of service D conditions. On a daily basis, the maximum directional average daily traffic volume that a 2-lane facility can serve is 15,000 vehicles to maintain level of service D conditions.

For a 4-lane facility, the maximum hourly directional traffic volume is 2,300 vehicles to maintain level of service D conditions. On a daily basis, the maximum directional average daily traffic volume that a 4-lane facility can serve is 23,000 vehicles to maintain level of service D conditions.

Table 2-4: Arterial Level of Service Thresholds

Facility Type	Level of Service C (Directional Volume)	Level of Service D (Directional Volume)	Level of Service E (Directional Volume)
2-Lane Bridge 2-Lane Arterial	average daily traffic – 9,700 vehicles	average daily traffic – 15,000 vehicles	average daily traffic – 19,000 vehicles
4-Lane Bridge 4-Lane Arterial	average daily traffic – 17,500 vehicles	average daily traffic – 23,000 vehicles	average daily traffic – 29,000 vehicles

Source: Highway Capacity Manual (Transportation Research Board, 2000)

INTERSECTION LEVEL OF SERVICE

Level of service for intersection analysis is a description of an intersection's operation, ranging from level of service A (indicating free-flow traffic conditions with little or no delay) to level of service F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

At side-street stop-controlled intersections, the level of service rating is based on the control delay for each minor movement. Table 2-5 summarizes the delay per vehicle and corresponding level of service for unsignalized intersections.

Table 2-5: Unsignalized Intersection Level Of Service Criteria

Level Of Service	Description	Total Delay (seconds/vehicle)
A	Little or no conflicting traffic.	≤ 10
B	The approach begins to notice absence of available gaps.	> 10 to 15
C	The approach begins experiencing delay for available gaps.	> 15 to 25
D	The approach experiences queuing due to a reduction in available gaps.	> 25 to 35
E	Extensive queuing due to insufficient gaps.	> 35 to 50
F	Insufficient gaps of suitable size to allow traffic demand to cross safely through a major traffic stream.	> 50

Source: Highway Capacity Manual (Transportation Research Board, 2000)

PROJECT STUDY AREA

For traffic analysis purposes, the study area is defined by the segment of Navy Drive extending from McCloy Avenue on the north conform to the railroad underpass on the south and is within the Port of Stockton jurisdiction. Washington Street intersects Navy Drive approximately mid-way in the traffic study area.

DESCRIPTION OF ROADWAYS

Interstate 5 and Fresno Avenue serve the major north-south movements of traffic to the project site (see Figure 2-2). Washington Street, Navy Drive, and State Route 4 (Charter Way) serve the east-west flow of traffic to the site. Navy Drive serves as the eastern entry to the Port's West Complex, and McCloy Avenue provides primary access within the West Complex. The existing Navy Drive Bridge connects Navy Drive with McCloy Avenue.

Interstate 5. Nearby Interstate 5 is an eight-lane freeway that provides local, regional, and interstate access to the project area. Interchanges along Interstate 5 provide indirect access to the project site via Charter Way.

State Route 4. State Route 4 is an east-west facility that serves as both a freeway (east of Interstate 5, referred to as the Crosstown Freeway) and local roadway (west of Interstate 5, referred to as Charter Way). The Crosstown Freeway segment connects State Route 99 with Interstate 5 and terminates just west of Interstate 5 at Fresno Avenue. Charter Way is a local roadway south of the Port of Stockton connecting Interstate 5 and the City of Stockton with several communities to the west.

Washington Street. Washington Street is a two-lane east-west roadway beginning in the west at Navy Drive and terminating at Weber Avenue. Washington Street is the major east-west facility through the Port's East Complex area and the residential area of Boggs Tract.

FIGURE 2-2

Legend

Traffic Study Area

Roadway Network

N

0 1250 2500

FEET

SOURCE: Microsoft Bing Map - Aerial (2010)

P:\STO1201\Graphics\Figure 2-2.pdf (9/23/11)

Navy Drive Bridge Replacement Project

Project Area Roadways and Traffic Study Area

Navy Drive. Navy Drive is a two-lane east-west roadway that is the focus of the proposed bridge replacement project. Navy Drive intersects with Washington Street to the east of the project site. The facility serves surrounding industrial uses and connects with State Route 4/Charter Way.

Fresno Avenue. Fresno Avenue is a two-lane north-south roadway that begins just north of Washington Street and travels through Boggs Tract. The roadway serves residential uses in the Boggs Tract area and also serves as a truck route that connects State Route 4 to Washington Street and Navy Drive.

CURRENT ROADWAY AND INTERSECTION CONDITIONS

Under existing conditions, Navy Drive (from the existing bridge to the railroad underpass, south of Washington Street) operates at level of service C. Where Washington Street intersects Navy Drive, the unsignalized intersection operates at level of service B for the side-street stop controlled left-turn movement from Navy Drive towards the Port of Stockton. Overall, the intersection operates at level of service A conditions.

Under existing roadway conditions (e.g. two-lane roadway) for Year 2025 traffic forecasts, the traffic analysis indicates that Navy Drive would deteriorate to level of service D. For the unsignalized Navy Drive/Washington Street intersection, conditions would deteriorate to level of service F for Year 2025 traffic forecasts.

For a 20-year horizon (beyond completion of project construction), under existing roadway conditions (e.g. two lane roadway) and Year 2035 traffic forecasts, the traffic analysis indicates that Navy Drive would deteriorate to level of service E. For the unsignalized Navy Drive/Washington Street intersection, conditions would remain at level of service F for Year 2035 traffic forecasts.

PEDESTRIAN/BICYCLE CONDITIONS

Pedestrian and bicycle facilities are not present in the project study area, with the exception of an unused sidewalk on the east side of the existing bridge structure. Sidewalks do not on either side of the bridge on Navy Drive. The industrial character associated with the Port of Stockton is not conducive to pedestrian or bike usage due to heavy truck movements and equipment activity that occurs along Navy Drive.

Environmental Consequences

SHORT-TERM IMPACTS FROM CONSTRUCTION-RELATED ACTIVITIES

Implementation of the proposed project would require the use of vehicles to both facilitate construction activity and to bring workers to and from the project site. On average, approximately 20 additional vehicle trips per day would be expected during project construction. The eight to 10 construction workers expected on site on any average day would park their personal vehicles within the study area (staging areas) for the majority of the construction period. The Navy Drive/Washington Street intersection is currently operating at acceptable levels of service, level of service A (Fehr & Peers, 2011). The relatively minor number of vehicle trips associated with construction-related activities would not reduce the intersection or roadway level of service to unacceptable levels.

It is anticipated that most construction traffic would travel along roadways to the project site from the east. It would be expected that large construction equipment would travel along roads that are the easiest to access. Accordingly, access from Interstate 5 to eastbound Charter Way, eastbound Charter Way to northbound Fresno Avenue, and northbound Fresno Avenue to westbound Navy Drive appears to be the most direct truck route for large vehicles and heavy equipment to travel to the project site. These roadways extend through existing industrial uses and therefore would not disturb sensitive uses (e.g., residential). Alternatively, large construction equipment could utilize State Route 4 to access the site, requiring travel along residential streets through the area east of the project site known as Boggs Tract. Considerable volumes of truck traffic currently access the Port along this route. Any added construction-related traffic, albeit minor in volume, may incrementally add to the current disturbances to residents in this area.

Because construction-related traffic would be short-term, relatively minor, and spread out over the course of a workday, impacts from construction traffic would be minimal.

Construction of the new bridge would be completed in stages in order to avoid full closure of Navy Drive and avoid changes to the existing travel patterns between the West and East Complexes. The upstream half of the new Navy Drive Bridge would be completed and traffic would be directed onto the new bridge. After traffic on the existing bridge is directed onto the new bridge, demolition of the existing bridge would commence. The upstream portion of the new bridge would then be built and the bridge would be fully opened. Construction activity would result in reduced travel speeds and traffic delays through individual work zones as work proceeds on the proposed project. In addition, construction activity would likely result in reduced travel lane widths as well as periods where a flagperson is needed to control traffic in the vicinity of the project site.

Varying periods of delay would potentially occur along the length of the project site throughout the construction period. Although these types of disruptions are considered temporary in nature, they are still considered significant. Implementing the measures in the traffic control plan would reduce the impacts from traffic delays.

Pedestrians and bicyclists currently are not encouraged to use Navy Drive due to the heavy truck usage and industrial nature of the Port facilities. Nonetheless, the proposed bridge design would provide ample paved shoulder area on both sides of Navy Drive that could safely accommodate bicycle usage despite the heavy truck traffic volume. Likewise, pedestrians could also utilize the shoulder area for passage along Navy Drive. Specific bicycle and pedestrian improvements are not included in the proposed bridge design.

OPERATION-RELATED TRAFFIC IMPACTS

Operations analyses were conducted for the segment of Navy Drive on the proposed bridge structure, as well as on the segment of Navy Drive south of the bridge (south of Washington Street to the Railroad Overcrossing). Operations analyses were also conducted for the Navy Drive/Washington Street intersection. All analyses evaluated existing and forecast traffic conditions under a variety of improvement scenarios for both a 2-lane arterial (roadway) and 4-lane arterial (roadway). The results of the operations analyses are provided below.

For the project operations analyses, two project alternatives were examined for all scenarios. These were the No Build Alternative and a Build Alternative (Removable Span Bridge).

NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no construction and construction-related impacts.

Without any improvements to the existing Navy Drive Bridge and if left in its current condition, traffic congestion and unacceptable levels of service would worsen as traffic increases due to growth in the Port of Stockton and surrounding area. The Navy Drive Bridge currently does not meet safety and design standards set by Caltrans and Federal Highway Administration.

Operation-related traffic effects for the No Project Alternative are presented as Existing Conditions for the 2-lane bridge/arterial (roadway) scenario (Tables 2-7 and 2-8), or as the No Build Alternative for future year scenarios (Table 2-9).

BUILD ALTERNATIVE

Once completed, the new bridge would not generate any additional traffic. However, the project is necessary to accommodate traffic growth from the Port of Stockton's West Complex area under long-term cumulative conditions.

Based on the results of the Travel Demand Forecasting model, the directional average daily traffic volumes were determined as shown in Table 2-6 and compared to the arterial level of service thresholds.

The results of the operations analysis show that the existing 2-lane bridge would not provide sufficient capacity to serve the projected growth in traffic entering and exiting the Port of Stockton, resulting in unacceptable level of service E conditions.

Table 2-6: Navy Drive Bridge Level of Service Analysis

Scenario	Directional Average Daily Traffic Volume	2-Lane Bridge Level of Service	4-Lane Bridge Level Of Service
Existing Conditions	2,300 Vehicles	level of service C	level of service C
Construction Year 2015 Conditions	5,000 Vehicles	level of service C	level of service C
Ten Years After Construction (Year 2025) Conditions	11,500 Vehicles	level of service D	level of service C
Fifteen Years After Construction (Year 2030) Conditions	15,000 Vehicles	level of service D/E	level of service C
Design Year 2035 Conditions	18,500 Vehicles	level of service E	level of service C/D

Source: Fehr & Peers, August 2011.

The proposed 4-lane bridge would operate at level of service C/D conditions beyond Design Year 2035 Conditions. It should be noted that with a directional average daily traffic volume of 18,500 vehicles under Design Year 2035 Conditions, the proposed 4-lane bridge would only be six (6) percent above the level of service C threshold of 17,500 vehicles. The overall

conclusion of the operations analysis indicates that the proposed 4-lane bridge would include approximately 25% reserve capacity for vehicles entering and exiting the Port of Stockton beyond the Design Year 2035 forecasts prior to degrading to unacceptable level of service E conditions.

NAVY DRIVE (SOUTH OF WASHINGTON STREET) OPERATIONS ANALYSIS

Travel Demand Forecasting model results in Table 2-7 provide a comparison of average daily traffic volumes with the arterial level of service thresholds from Table 2-5.

The operations analysis shows that the existing 2-lane arterial under the railroad overcrossing would have insufficient capacity to serve the projected growth in traffic, resulting in unacceptable level of service E conditions.

Table 2-7: Navy Drive (South of Washington Street) Level of Service Analysis

Scenario	Directional average daily traffic Volume	2-Lane Arterial Level Of Service	4-Lane Arterial Level Of Service
Existing Conditions	1,000 Vehicles	level of service C	level of service C
Year 2015 Conditions	4,200 Vehicles	level of service C	level of service C
Year 2020 Conditions	8,200 Vehicles	level of service C	level of service C
Year 2025 Conditions	12,200 Vehicles	level of service D	level of service C
Year 2030 Conditions	16,200 Vehicles	level of service D	level of service C
Year 2035 Conditions	20,200 Vehicles	level of service E	level of service D

Source: Fehr & Peers, August 2011.

The results of the analysis show that the existing 2-lane roadway would continue to operate at acceptable level of service C conditions until after Year 2020. By widening Navy Drive from a 2-lane to 4-lane roadway, the primary access point to and from the Port of Stockton would continue to operate at acceptable level of service C/D conditions beyond Year 2035 Conditions.

NAVY DRIVE/WASHINGTON STREET INTERSECTION OPERATIONS ANALYSIS

Intersection levels of service analyses were conducted to determine traffic operations for 5-year increments. From Year 2015 to Year 2035, analyses were conducted for the No Build Alternative and the Build Alternative. From Year 2015 to 2035, operations analyses for the Build Alternative examined the Navy Drive /Washington Street intersection with recommended improvements to the intersection. From Year 2030 to Year 2035, the analysis also evaluates a scenario with additional improvements to the intersection including a re-alignment of Navy Drive.

Existing and proposed intersection lane configurations, peak-hour turning movement volumes, and truck percentages were used to calculate the level of service for the Navy Drive / Washington Street intersection during the AM and PM peak hours. The results of the level of service analysis are presented in Table 2-8.

Table 2-8: Navy Drive/Washington Street Intersection Level of Service Analysis

Scenario	Control	Delay (seconds?)/Level Of Service	
		AM Peak Hour	PM Peak Hour
Existing Conditions	Side-Street Stop-Controlled	6.3 / level of service A (NB Left-Turn) (1.3 / level of service A)	6.2 / level of service A (NB Left-Turn) (1.1 / level of service A)
Year 2015 No Project	Side-Street Stop-Controlled	24.9 / level of service C (NB Left-Turn) (13.0 / level of service B)	19.0 / level of service C (NB Left-Turn) (6.4 / level of service A)
Year 2015 With Improved Intersection	Signalized	13.4 / level of service B	11.0 / level of service B
Year 2020 No Project	Side-Street Stop-Controlled	**>100 / level of service F (NB Left-Turn) (>100 / level of service F)**	**>100 / level of service F (NB Left-Turn) (>100 / level of service F)**
Year 2020 With Improved Intersection	Signalized	18.5 / level of service B	13.3 / level of service B
Year 2025 No Project	Side-Street Stop-Controlled	**>100 / level of service F (NB Left-Turn) (>100 / level of service F)**	**>100 / level of service F (NB Left-Turn) (>100 / level of service F)**
Year 2025 With Improved Intersection	Signalized	14.5 / level of service B	17.0 / level of service B
Year 2030 With Improved Intersection	Signalized	**> 100 / level of service F**	**> 100 / level of service F**
Year 2030 With Improved and Re-Aligned Intersection	Signalized	18.4 / level of service C	24.8 / level of service C
Year 2035 No Project	Side-Street Stop-Controlled	**> 100 / level of service F**	**> 100 / level of service F**
Year 2035 With Improved Intersection	Signalized	**> 100 / level of service F**	**> 100 / level of service F**
Year 2035 With Improved and Re-Aligned Intersection	Signalized	45.0 / level of service D	30.1 / level of service C

Notes: The table lists the level of service and average delay (measured in seconds per vehicle) for each intersection. For side-street stop-controlled intersections, the level of service and control delay for the worst movement is shown, and the overall level of service and control delay is shown in parentheses. Bold font indicates level of service E or F conditions.

Source: Fehr & Peers, August 2011.

Figure 2-3 presents the Year 2015 AM and PM peak hour traffic volumes and proposed lane configurations at the Navy Drive/Washington Street signalized intersection. Figure 2-3 presents Year 2020 and Year 2035 AM and PM peak hour traffic volumes and proposed lane configurations at the Navy Drive/Washington Street signalized intersection, respectively.

By Year 2030, the Navy Drive/Washington Street intersection would be re-aligned. Both AM and PM peak hour traffic volumes and proposed lane configurations at the re-aligned Navy Drive/Washington Street signalized intersection are presented in Figure 2-3. Under this scenario, Navy Drive would be re-aligned as the through movement, and Washington Street would become the minor street approach. Figure 2-3 also presents the Design Year 2035 AM and PM peak hour traffic volumes and proposed lane configurations at the re-aligned Navy Drive/Washington Street signalized intersection.

During the peak hour periods, the primary results of the operations analysis for the Navy Drive/Washington Street intersection are:

- By Year 2015 the side-street stop controlled left-turn movement from Navy Drive towards the Port of Stockton would degrade to level of service C conditions. By Year 2020 Conditions, the side-street stop controlled left-turn movement from Navy Drive towards the Port of Stockton would degrade to unacceptable level of service F conditions. To correct Year 2020 level of service F conditions, the intersection improvements as shown in Figure 2-3 should be constructed by Year 2015 Conditions. With these improvements, the signalized intersection would operate at acceptable level of service B Conditions from Year 2015 to beyond Year 2025 Conditions.
- By Year 2030 Conditions, the improved intersection (as shown in Figure 2-3) would degrade to unacceptable level of service F conditions and would need to be re-constructed with the intersection improvements shown in Figure 2-3. With these additional improvements, the AM peak hour would operate at acceptable level of service C conditions under Year 2030 and acceptable level of service D conditions under Year 2035 conditions. For the PM peak hour, the intersection would operate at acceptable level of service C conditions under both Year 2030 and Year 2035 evening peak hour conditions.

It should be noted that although the intersection operates at acceptable level of service D conditions for the AM peak hour and acceptable level of service C conditions under the “Year 2035 With Improved and Re-Aligned Intersection” scenario, northbound through and northbound right-turn movements on Navy Drive would operate at level of service E for AM peak hour conditions. Likewise, the westbound left-turn movement from Washington Street and the southbound left-turn movement from Navy Drive would operate at level of service E for PM peak hour conditions.

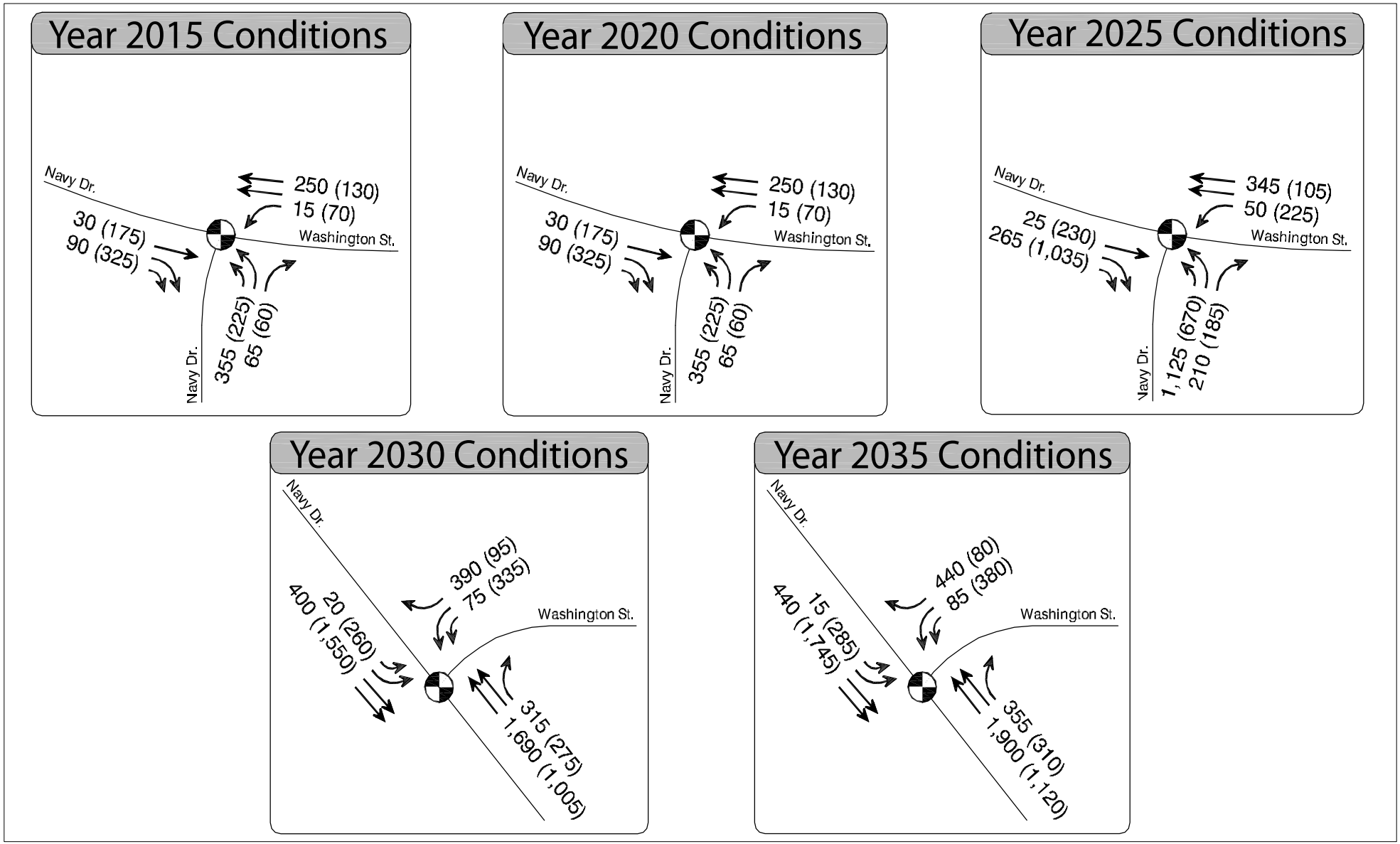

FIGURE 2-3

LEGEND

- Turn Lane
- AM (PM) Peak Hour Traffic Volume
- Study Intersection
- Traffic Signal

N

NOT TO SCALE

Navy Drive Bridge Replacement Project

Peak Hour Traffic Volumes and Lane Configurations for Navy Drive/Washington Street

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Additionally, the Crosstown Freeway Extension project would rebuild and extend the portion of State Route 4 to the west in the City of Stockton. This reduces the utility and cost-effectiveness of previously planned interim traffic circulation improvements at the intersection of Fresno Avenue and the on- and off-ramps to the Crosstown Freeway. Accordingly, this project would eliminate the off-ramp at Fresno Avenue, thus reducing the traffic that flows through Boggs Tract with a Port destination.

The proposed project improvements would improve traffic patterns and flow through the Port area providing long-term traffic service and access into the West Complex area. Accordingly, the conditions affecting business component of the Port of Stockton should improve with better access and reduced congestion. As the project essentially only serves the industrial uses associated with the Port, traffic patterns in adjacent residential uses should not be affected.

With the planned improvements in place, traffic-related impacts on the local circulation network (e.g., along Navy Drive) would be reduced.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented during construction to minimize the potential traffic congestion and delay during construction.

- The Port shall require the construction contractor to prepare and implement a Traffic Control Plan during the actual construction phase of the project. The Traffic Control Plan shall include the following:
  - a) This plan would address appropriate vehicle size and speed, travel routes, detour or lane closure plans, flagperson requirements, location of turnouts to be constructed, coordination with law enforcement and fire control agencies, coordination with Caltrans personnel (for work affecting state road rights of way), emergency access to ensure public safety, and need for traffic and speed limit signs.
  - b) The proposed bridge replacement project and roadway approaches will be constructed to accommodate four lanes of traffic. To remain consistent with the project limits, and to address traffic operations at the adjacent Washington Street and West Complex entrance intersections, the lanes will be tapered and striped to conform to the existing 3-lane section at the West Complex entrance intersection and the turning movements required at the Washington Street intersection.
- The Port of Stockton would be responsible for implementing additional improvements within the Port area. These improvements are not required for the proposed project, rather are separate projects that will be implemented by the Port. With these separate projects in place, the Navy Drive component of the circulation system in the Port of Stockton would operate with acceptable levels of service (e.g., level of service D). These improvements are as follows:
  - a) The Navy Drive/Washington Street intersection improvements (as shown in Figure 2-3) should be constructed by 2015. With these improvements, the signalized intersection would operate at acceptable level of service B conditions from 2015 to beyond 2025.
  - b) By 2030, the intersection would need to be re-constructed including re-alignment of Navy Drive as a through movement and Washington Street as the minor street

approach. With these improvements, the signalized Navy Drive/Washington Street intersection would operate at acceptable level of service C in 2030 (AM and PM peak hour conditions), acceptable level of service D conditions in 2035 (AM peak hour conditions), and acceptable level of service C in 2035 (PM peak hour conditions).

2.1.5. Visual/Aesthetics

Regulatory Setting

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

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

Affected Environment

This analysis is based on the Visual Impact Assessment (approved in June 2012) for the Navy Drive Bridge Replacement Project. As part of the visual assessment process, an initial field and photographic survey was performed on March 17, 2011.

With baseline (existing) conditions established, change to the landscape within the project area can be evaluated for its degree of impact. The degree of impact depends on both the magnitude of change in the visual resources (i.e., visual character and quality) and the predicted viewers' responses to those changes.

EXISTING VISUAL CHARACTER

The following section presents a qualitative evaluation of the visual character of the project area. Specifically, visual character and quality are defined by the Federal Highway Administration (1983) as follows:

Visual Character. Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad in themselves. A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape and resistance to a project that will contrast that character, then changes in the visual character can be evaluated.

<u>VISUAL CHARACTER OF SAN JOAQUIN COUNTY</u>

San Joaquin County occupies a central location within the San Joaquin Valley. The San Joaquin Valley is considered California's agricultural heartland. The County encompasses nearly 920,000 acres (or about 1,440 square miles) of relatively level agriculturally productive lands. The foothills of the Diablo range define the southwest corner of the County. The foothills of the Sierra Nevada extend along the County's eastern boundary.

Created by sediments that have washed out of the major rivers that drain the area, the valley is characterized by rich agricultural soils and farming activities. Fruit and nut crops,

field crops, and livestock and poultry comprise the dominant agricultural landscape across the valley. In terms of visual character the rural setting associated with these lands provides scenic value although has no official aesthetic designation.

VISUAL CHARACTER OF STOCKTON

The City of Stockton is located near the center of San Joaquin County. The urban core area of the City is characterized by a mix of heavy industrial uses with limited landscape features, older residential neighborhoods, neighborhood commercial shopping centers, and a variety of other commercial and industrial parcels. Owing to the flat topography, views within the urban center are generally limited to foreground elements such as houses, stores, factories, and streetscapes. Lands on the periphery of the City are largely agricultural and rural residential in nature. The most significant visual features within the Stockton area are the existing agricultural and rural residential landscapes. Riparian areas along the local waterways including the San Joaquin River, the Calaveras River, and the larger Delta also provide important visual elements within the Stockton area. The project area is located at the western edge of the City among industrial uses.

VISUAL CHARACTER AT AND NEAR THE NAVY DRIVE BRIDGE

The existing Navy Drive Bridge was built in 1941 and is a critical link that currently serves as the most direct route between the Port's East Complex and West Complex (Rough and Ready Island). It was constructed as a "swing" bridge, one that rotates on a central pier or support, in order to allow boats to continue to navigate this portion of the San Joaquin River. The last time the bridge opened was in 1978. The structure of the Navy Drive Bridge is known as a "through truss," which consists of two steel trusses (beams) connected across the top and bottom to create a box-like structure. Steel members connect to the trusses to create triangular- and rectangular-shaped sections. The existing bridge is 271 feet long and 47 feet wide; it has two 12-foot wide traffic lanes and a single 3.5-foot-wide pedestrian walkway on one side.

Surrounding land uses to the east include various industrial and maritime uses associated with the Port's East Complex. Land uses to the south include the Stockton Police Department Training Facility and industrial uses. Industrial and maritime uses associated with the Port's West Complex are located to the west. Lyon's Rough and Ready Golf Course (now closed), operated by the Port, is located to the north. No agricultural areas (e.g., prime or unique farmland), publicly owned recreation areas, or wildlife refuges are located within the project's construction area. The nearest residential areas, Riviera Cliffs and Boggs Tract, to the project site are located to the north and east, respectively. These residential areas are located 0.75 miles to over 1.50 miles from the project site.

VISUAL QUALITY

The following section presents a qualitative evaluation of the visual quality of the project area. Specifically, visual character and quality are defined by the Federal Highway Administration (1983) as follows:

Visual Quality. Visual quality is evaluated by identifying the vividness, intactness, and unity in the viewshed. The Federal Highway Administration states that this method should correlate with public judgments of visual quality well enough to predict those judgments.

EXISTING VISUAL QUALITY

Consistent with the Federal Highway Administration assessment conditions, the project area was evaluated for visual quality. The value of visual quality within the right-of-way and outside of the right-of-way (referred to as inside the landscape unit and outside the landscape unit, respectively) was evaluated. Three key criteria were evaluated to determine the overall visual quality: vividness, intactness, and unity, which are evaluated on a scale from one to seven (very low to very high) (See Appendix B in the Visual Impact Assessment). None of these qualities individually equate to visual quality - all three components must be high to indicate high quality.

The evaluation presents an average of visual quality by viewer for each viewpoint. For the project, area observer viewpoints were established (and correspond to viewer group viewpoints) to assist in describing the general visual quality of the project area. The visual quality of the representative viewpoints (see Figure 2-4) was determined by evaluating the existing vividness, intactness, and unity of the project area. (The Visual Impact Assessment includes the evaluation legend used for determining the ratings as part of its appendices.) Figures 2-5 – 2-7 depict the actual photographs of existing conditions from several project area viewpoints. The existing visual quality evaluation of the project area is shown in Table 2-9 below:

Table 2-9: Existing Visual Quality

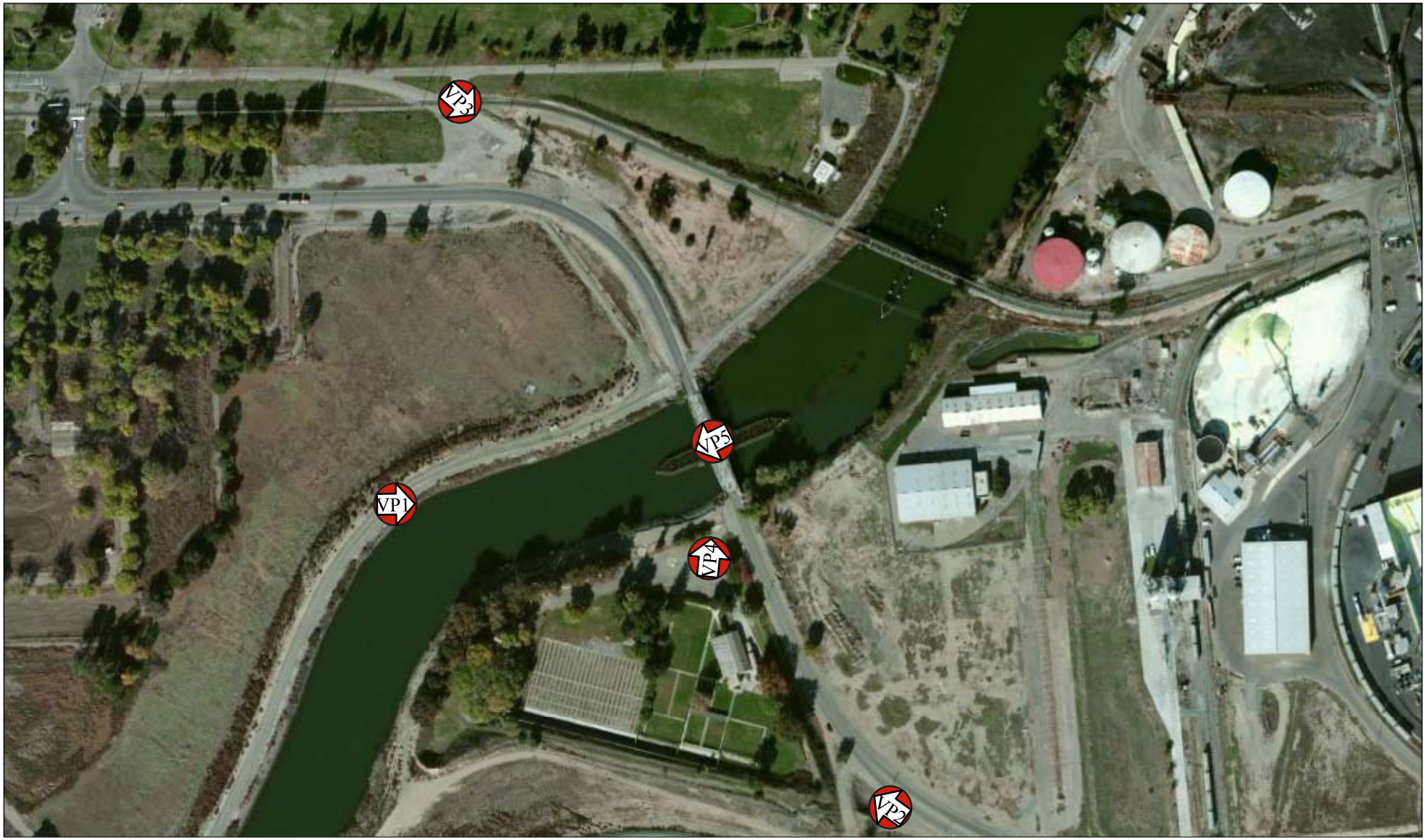
Viewpoint	View (Direction)	Visual Quality	Viewer Sensitivity
VP1	To Bridge (South)	2.16	Low
VP2	To Bridge (Northeast)	1.83	Low
VP3	To Bridge (Southeast)	1.60	Low
VP4	To Bridge (Northeast)	1.60	Medium
VP5	To Bridge (North)	1.60	Medium

VIEWSHED

The viewshed is the surface area visible from an observer's viewpoint, and the surface area from which that viewpoint can be seen. The viewshed represents the visual area that may be affected by the project. The topography around the bridge is basically flat allowing for unobstructed views due to landforms. The viewshed is therefore defined by obstructions such as vegetation, large industrial structures, and levees along the San Joaquin River.

VIEWPOINTS

Viewpoints VP1 through VP3 represent the range of views of the existing Navy Drive Bridge. VP4, taken from the Stockton Police Department Training Facility, has a partial view of the bridge but, importantly, represents a view of the south roadway approach. Viewpoint VP5 shows the viewshed as seen from the bridge itself.



LSA

FIGURE 2-4

LEGEND

VP Observer Location\Viewpoint #

N

0 150 300
FEET

SOURCE: ESRI Imagery (2010)

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Navy Drive Bridge Replacement Project

Observer/ Viewpoint Locations

VP1. From riverbank looking northeast at Navy Drive Bridge.

VP2. Looking northwest along Navy Drive at the Navy Drive Bridge.

FIGURE 2-5

Navy Drive Bridge Replacement Project

Project Area Viewpoints

SOURCE: SOURCE: ESA, 2006

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VP3. Looking southeast from Navy Drive/Washington Street intersection at the Navy Drive Bridge.

VP4. From the Stockton Police Department Training Facility looking north at Navy Drive.

FIGURE 2-6

Navy Drive Bridge Replacement Project

Project Area Viewpoints

SOURCE: SOURCE: ESA, 2006

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VP5. From Navy Drive Bridge looking southwest.

FIGURE 2-7

Navy Drive Bridge Replacement Project
Project Area Viewpoints

SOURCE: SOURCE: ESA, 2006

P:\STO1201\Graphics\IS_EA\Figure 2-7.pdf (7-14-11)

VP1. RIVERBANK

This view is from the bank of the San Joaquin River on Rough and Ready Island (Figure 2-5). Further south of this viewpoint, the bridge moves out of view as the river turns sharply south (where it divides into the San Joaquin River and Burns Cut-off). This viewpoint serves as a representative viewpoint for boats on the river itself. The river is in the foreground, with the bridge in the middleground and several East Complex structures in the background. Vividness is rated medium, due to the presence of the bridge itself. However, intactness and unity are low, due the variety of roadways, fencing, industrial structures, utility lines, and riprap (mechanically placed rock on the riverbanks for erosion control).

VP2. NAVY DRIVE/WASHINGTON STREET

The southeastern end of the viewshed is defined by the Navy Drive/Washington Street intersection. As shown in Figure 2-5, the bridge is in the middleground. The roadway and several East Complex structures (on the north side of Navy Drive) form the foreground. The palm trees on Rough and Ready Island are barely visible in the background. The industrial land uses, and lack of natural features creates a low rating for vividness, unity, and intactness.

VP3. NAVY DRIVE

Leaving Rough and Ready Island, the bridge is visible as Navy Drive turns southeast (Figure 2-6). The road is in the foreground, along with railroad tracks and parking lot. The bridge is in the middleground with East Complex structures in the background. The flat roadways and parking lot, and relative lack of vegetation or other natural features contribute to a low vividness. The relatively disorganized buildings and utility lines contribute to low unity and intactness.

VP4. STOCKTON POLICE DEPARTMENT TRAINING FACILITY

The Stockton Police Department uses property leased from the Port of Stockton as a training facility for firearms. The Navy Drive Bridge is visible when entering and leaving the facility. The Stockton Police Department Training Facility and parking lot are lower than Navy Drive, which obscures the view of the bridge itself, as shown in Figure 2-6. Vividness is rated low, due to the partial view of the roadway. The landscaping slightly improves the intactness and unity, which are rated as medium.

VP5. NAVY DRIVE BRIDGE

The view from Navy Drive Bridge is depicted in Figure 2-5. Views of the San Joaquin River are to the northeast and southwest. The railroad trestle connecting the East Complex and West Complex (Rough and Ready Island) is visible in the middleground, with the East Complex in the background, to the northeast. Rough and Ready island is visible to the southwest, in the middleground and background, with the Stockton Police Department Training Facility and the shore of the East Complex in the foreground. Navy Drive, with the West Complex checkpoint in the background, is visible traveling north on the bridge. Leaving the island, southbound, the view consists of industrial land uses in the East Complex.

Environmental Consequences

The project will have minor effects to vegetation and landforms. Since only a conceptual level of detail is available for engineering design, project impacts were estimated based on the perceived changes at each viewpoint.

VIEWER GROUPS

Views of the project area and the bridge are predominately seen by passing motorists in trucks and automobiles. They are also seen by recreational boaters traveling along this portion of the San Joaquin River and, to a lesser extent, by anglers fishing in the area, although the project area does not offer any public fishing areas. The project site and the bridge can be seen, to a lesser extent, by visitors to the Stockton Police Department Training Center, although to a lesser extent, because these users are not regular (daily or weekly) visitors to the area.

ROADWAY TRAVELERS

Viewer groups consisting of motorists or roadway travelers are generally Port staff and workers associated with the maritime and warehousing activities in the West Complex. These viewer groups are typically considered to have low visual sensitivity because visual sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (United States Fish and Wildlife Service 1974; Federal Highway Administration 1983; USSCS 1978). Roadway travelers are generally focused on traffic rather than on surrounding scenery and tend to have fleeting views of an area. According to the Traffic Operations Report (August 2011), there are approximately 2,300 average daily trips to and from the West Complex; the vast majority of these trips account for Port staff and workers associated with the maritime and warehousing activities in the West Complex. In addition, the average approach and travel time across the bridge is under 20 seconds (approximately 400 feet approach and bridge span at 35 miles per hour); therefore, views of the bridge by those making the 2,300 daily trips to and from the Port are extremely limited in duration.

RECREATIONAL USERS

Currently, navigational use along this portion of the San Joaquin River is comprised entirely of recreational boating and fishing activities from small, trailer-drawn boats. Future use is expected to be similar. Viewer groups consisting of recreational boaters generally view for an extended period and are more affected by changes in views from their vantage points. Recreational boaters traveling along this portion of the San Joaquin River typically cruise at slow speeds, participate in sightseeing or fishing activities have views of the bridge. Although boaters have a higher level of viewer sensitivity, the proposed Navy Drive Bridge would be consistent with the type of urban industrial development in the area and would not introduce a new disharmonious element into the landscape.

USERS OF THE STOCKTON POLICE DEPARTMENT TRAINING FACILITY

Users of the Stockton Police Department Training Facility see the bridge as they enter and leave the facility. Views of the bridge from the range itself are limited due to vegetation and the lower elevation of the facility. The section of Navy Drive adjacent to the range would be reconstructed. Visitors to the range are considered to have low sensitivity, as they are police officers training at the facility, and not recreational visitors. In addition, most users of the

facility are infrequent visitors. Instructors are there more frequently, but they are relatively few in number.

VIEWER RESPONSE

Viewer response is composed of two elements: viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how the public might react to visual changes brought about by a transportation project.

VIEWER SENSITIVITY AND EXPOSURE

Viewer sensitivity is defined both as the viewers' concerns for scenic quality and the viewers' responses to change in the visual resources that make up the view.

Viewer exposure is typically assessed by measuring the number of viewers exposed to the resource change, type of viewer activity, duration of their view, speed at which the viewer moves, and position of the viewer. High viewer exposure heightens the importance of early consideration of design, art, and architecture and their roles in managing the visual resource effects of a project.

The most accessible areas from which to view Navy Drive Bridge and the surrounding area are along local roadways (e.g., Navy Drive, Fyffe Avenue), from the Stockton Police Department Training Center, from a boat, or from the banks of the San Joaquin River. The project site is shielded from view from the levee surrounding Rough and Ready Island and the distance to the project site. Much of the remaining land is composed of heavy industrial uses associated with Port activities; views from these areas are not generally accessible to the public. Views from the roadway are seen in passing (transient viewers), in that viewers travel in vehicles along the bridge and the bridge approaches. Because the bridge is the sole vehicle connection point to the Port's West Complex, the vehicle mix is predominately composed of large heavy transport trucks. Access to the West Complex across the bridge is limited to the public.

Port staff and workers associated with the maritime and warehousing activities in the West Complex are the primary visitors to the area. Additional views of Navy Drive Bridge could occur as a result of recreational boaters traveling along this portion of the San Joaquin River and anglers in the area; although, the project area does not offer any public fishing areas. City staff accessing the Stockton Police Department Training Facility would also be afforded views of the bridge. Boaters and anglers could be expected to have a greater level of exposure to views offered by Navy Drive Bridge and the surrounding area, given that the use of the area is potentially less transient than those traveling over the bridge as a means of getting to work or some other recreational destination. Table 2-10 (below) shows a comparison of impacts for each viewpoint discussed in previous sections along with viewer sensitivity to those views.

Table 2-10: Potential Visual Impacts of Preferred Alternative

Viewpoint	View (Direction)	Existing Visual Quality	Proposed Visual Quality	Viewers		Degree of Change	Impact
				Sensitivity	Exposure		
VP1	To Bridge (Northeast)	2.16	2.16	H	L	M	L
VP2	To Bridge (Northwest)	1.83	1.87	L	M	M	L
VP3	To Bridge (Southeast)	1.60	1.80	L	M	H	L
VP4	To Bridge (North)	1.60	1.60	L	L	L	L
VP5	From Bridge (Southwest)	1.60	2.03	L	L	L	L

Note: H = High, M = Medium, L = Low
Quality determined by evaluating the project for vividness, intactness, and unity (See Appendix C in the Visual Impact Assessment).

SCENIC DESIGNATIONS

The proposed project is not proximate to any scenic byways or natural landmarks. Consequently, proposed improvements would have no effect on designated scenic byways, scenic rivers, or natural landmarks.

LIGHT AND GLARE

The primary sources of light and glare in the project area consist of exterior security lighting for industrial uses in the West and East Complexes. Navy Drive Bridge has existing street lighting and an illuminated checkpoint on the West Complex side.

Implementation of the proposed project would not result in a substantial change in light and glare. The project and surrounding area is already heavily traveled, and is exposed to several different sources of lighting during night time hours. New lighting facilities would be constructed to use the minimal level of luminary output necessary to properly light the bridge/roadway and would comply with Caltrans and Coast Guard requirements.

IMPACT SUMMARY

The proposed project would replace the current Navy Drive Bridge with a new bridge located approximately 80 feet upstream from the existing bridge. To accommodate the new bridge location Navy Drive would be realigned at the new bridge approaches, and the entrance to the Stockton Police Department Training Facility would be relocated to the east. Construction activities associated with the proposed project would be visible to motorists, training center users, recreational boaters and other recreational user groups in the area. Viewer groups would be subjected to visual changes associated with the proposed project, such as vegetation removal and clearing, new bridge, construction, paving, and temporary signage.

Because the project site is in a heavy industrial area within an active and expanding port setting, construction-related activities and equipment are not considered new or uncommon components of views in the area. Given the short-term nature of construction activities; overall low vividness, intactness, and unity of project site views; and viewers' relative familiarity with construction equipment and activities, the temporary presence of construction equipment associated with the proposed project would not result in a substantial disruption of the viewshed.

The proposed project is consistent with the type and scale of uses in the area and the existing roadway network. Vegetation within the construction zone would be temporarily removed; however, riparian areas would be replanted with a native plant palette. Additional replacement planting would consist of willow cuttings along disturbed bank areas to provide future shaded habitat.

Avoidance, Minimization, and/or Mitigation Measures

Due to the industrial nature of the project area, aesthetics for the new bridge and streetscape improvements are not proposed as an element of this project. The following actions have been recommended in order to minimize any minor visual impacts to landscape.

- Replacement of landscape screening on the eastern side of the Stockton Police Department Training Facility parking lot is proposed. Trees and shrubs would be planted in front of the property. The trees should be of sufficient size and type to also provide shade for the existing parking lot and visual screening for the Stockton Police Department Training Facility from Navy Drive.
- Riparian areas would be replanted with a native plant palette. Additional replacement planting would consist of willow cuttings along disturbed bank areas to provide future shaded habitat.

2.1.6. Cultural Resources

Regulatory Setting

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

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 Code of Federal Regulations 800). On January 1, 2004, a Section 106 Programmatic Agreement between the Advisory Council, the Federal Highway Administration, State Historic Preservation Officer, and Caltrans went into effect for Caltrans projects, both state and local, with Federal Highway Administration involvement. The Programmatic Agreement implements the Advisory Council's regulations, 36 Code of Federal Regulations 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The Federal Highway Administration's responsibilities under the Programmatic Agreement have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 Code of Federal Regulations 327) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the United States Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix B for specific information regarding Section 4(f).

Historical resources are considered under the California Environmental Quality Act, as well as California Public Resources Code Section 5024.1, which established the California Register of Historical Resources. California Public Resources Code Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks.

Affected Environment

Analysis in this section is based on the following technical studies:

- Finding of Effect (December 2006)
- Archaeological Survey Report (March 2007)
- Historic Resource Evaluation Report (March 2007)
- Historic Property Survey Report (March 2007)
- Memorandum of Agreement (February 2008)

- Supplemental Historic Property Survey Report (June 2012)

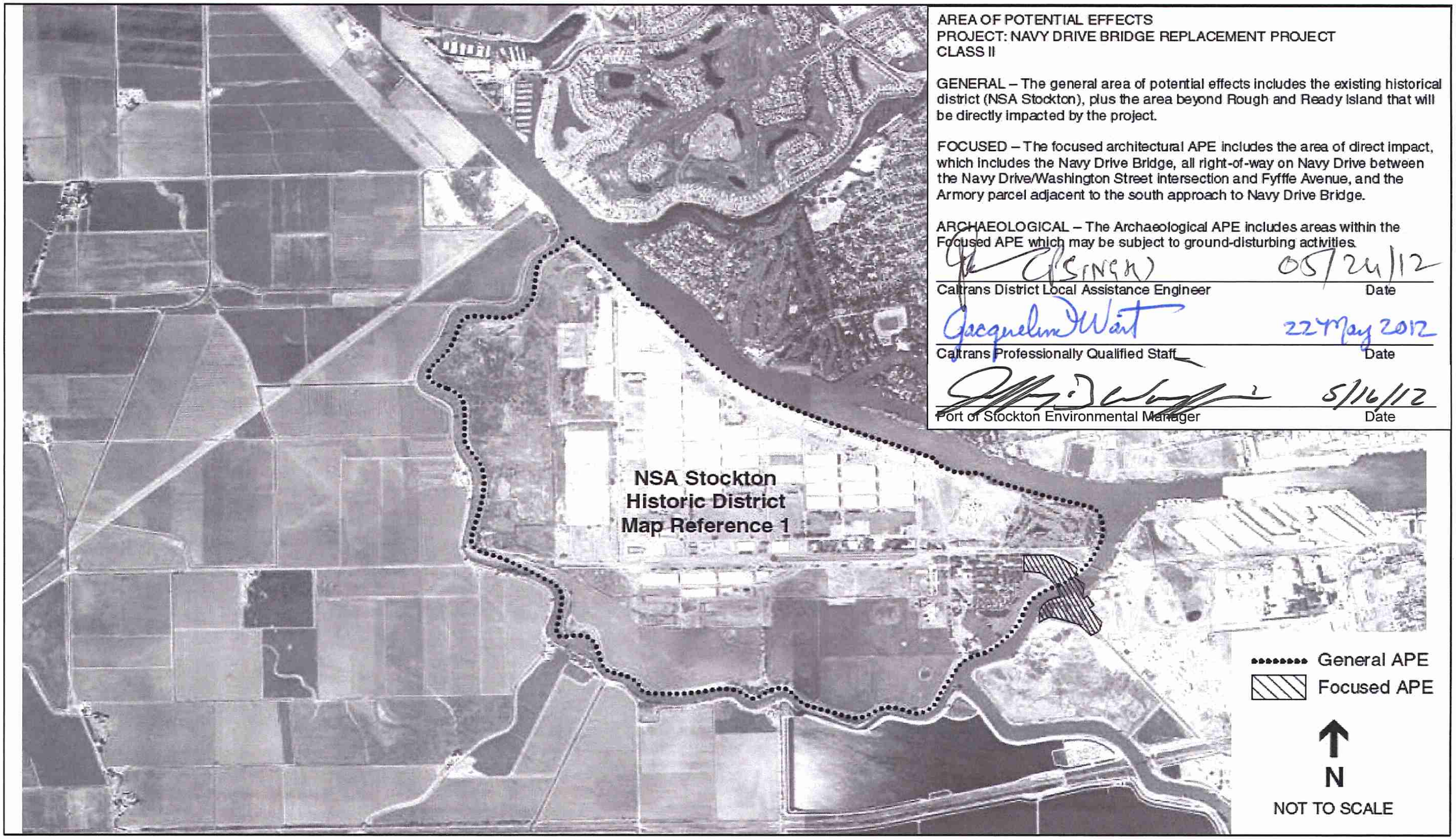
AREA OF POTENTIAL EFFECTS

The Area of Potential Effects includes the geographic area within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist, including all ground-disturbing activities, staging areas, and construction zones. This project includes the demolition of Navy Drive Bridge, a bridge that has been previously determined to contribute to the significance of an existing historic district, the Naval Supply Annex Stockton Historic District on Rough and Ready Island. In delineating the Area of Potential Effects, consideration must always be given to the undertaking's potential effects on a historic property as a whole. If any part of a property may be affected, the Area of Potential Effects would generally encompass the entire property. Therefore, the determination was made that a General Area of Potential Effects would encompass the entire Naval Supply Annex Stockton Historic District.

However, due to the relatively focused nature of the project and potential for direct impacts to only one contributing feature of the historic district, the Navy Drive Bridge, a Focused Area of Potential Effects was also established to include the areas of potential direct impacts and a small visual area around the existing and proposed bridge areas.

This determination was made because the only extant contributing elements of the District within visual range of the project area are Navy Drive Bridge and Fyffe Avenue. No extant contributing buildings are within visual range of the project area and the project area is located at the outer edge of the boundaries of the historic district. The focused Area of Potential Effects includes both an archaeological Area of Potential Effects and a slightly larger architectural Area of Potential Effects that encompasses an additional area, the armory parcel, and includes one structure, the Navy Drive Bridge). The General Area of Potential Effects and the Focused Area of Potential Effects are represented in Figure 2-8 and 2-9.

The original Area of Potential Effects map for the proposed project was approved on February 27, 2007. The Area of Potential Effects boundary has not changed since the original Historic Property Survey Report was prepared; however, to reaffirm the Area of Potential Effects due to the new removable-span bridge alternative, new Area of Potential Effects maps were prepared and approved on May 24, 2012.



Source: ESA, 2006

FIGURE 2-8

Navy Drive Bridge Replacement Project
General Area of Potential Effects

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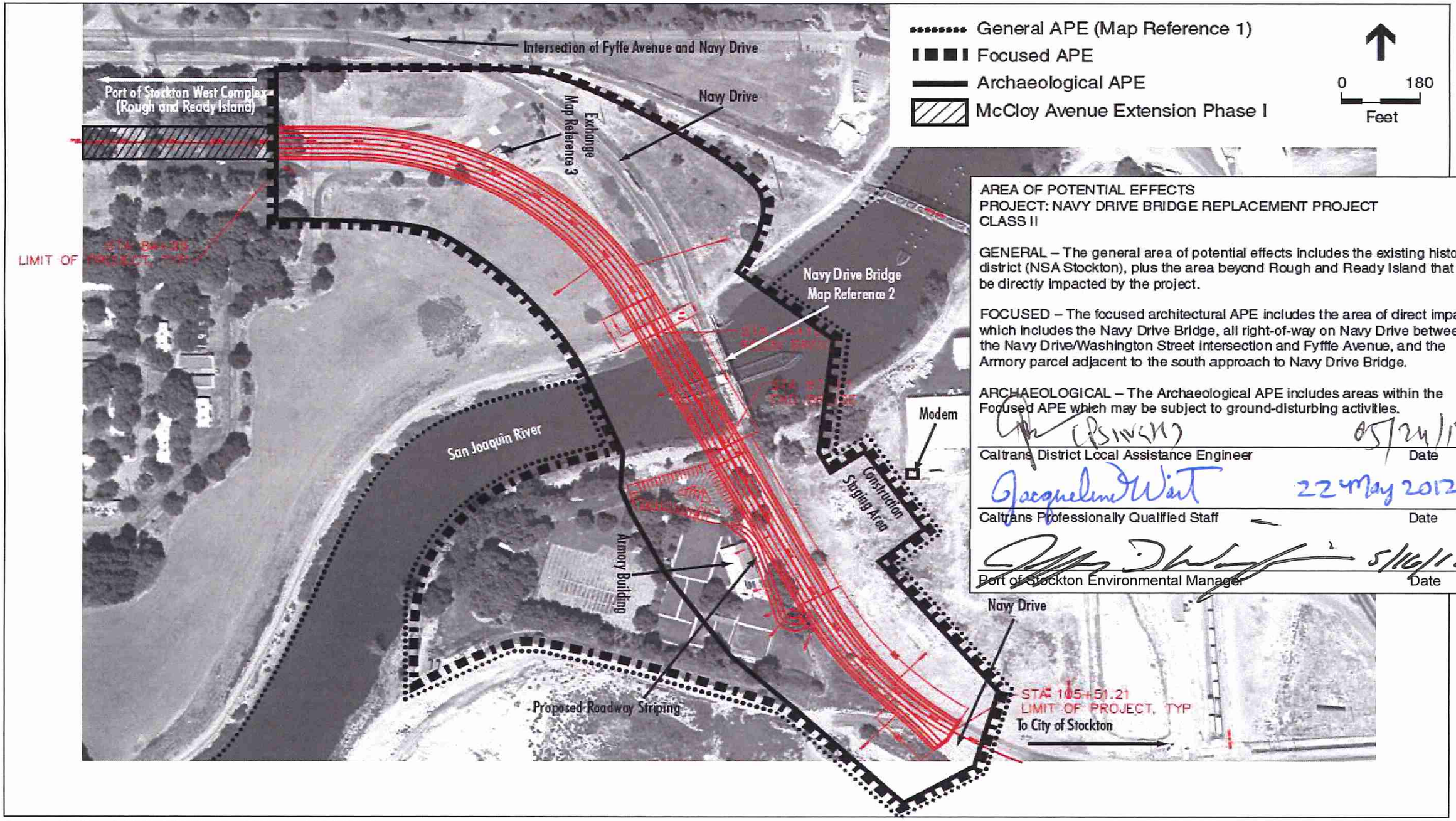

Source: Moffatt & Nichol Engineers, 2003; and ESA, 2006

FIGURE 2-9

Navy Drive Bridge Replacement Project
Focused Area of Potential Effects

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METHODOLOGY

The Focused Area of Potential Effects was surveyed on January 8, 2004 for archaeological resources. Focused surveys were completed on March 18, and March 28, 2004 for architectural resources. In addition, the staff at the Central California Information Center (CCIC) conducted a records search on December 23, 2003. The records search area included the General Area of Potential Effects and a one-mile radius. The records search included a review of:

- CCIC maps and files,
- The National Register of Historic Places,
- The California Register of Historical Resources,
- The California Inventory of Historic Resources,
- California Historical Landmarks,
- California Points of Historical Interest,
- The Historic Property Data File for San Joaquin County, and
- The Caltrans State and Local Bridge Survey.

The results of the records search indicated that Navy Drive Bridge has been previously recorded, that there is one historic district located within the General Area of Potential Effects (Navy Supply Annex Stockton Historic District), and that a segment of the Burlington Northern Santa Fe/Atchison, Topeka and Santa Fe (Burlington Northern Santa Fe/ATSF) railroad is near, but outside of the Focused Area of Potential Effects. The records search indicated that approximately 50 percent of the Focused Area of Potential Effects was previously surveyed for cultural resources. The records search indicated that neither prehistoric nor historical archaeological resources have been recorded within the General Area of Potential Effects or within a one-mile radius. Research was also performed at the Port of Stockton, the San Joaquin County Recorder's Office, and the San Joaquin County Assessor's Office. Personal interviews were conducted and several local historical societies were contacted.

The Native American Heritage Commission was originally contacted on December 22, 2003, for initial scoping efforts and asked to review their Sacred Lands files and provide a list of Native Americans that should be contacted. A letter and list of Native American Contacts was received from the Native American Heritage Commission on December 23, 2003. Katherine Erolinda Perez was the sole Native American contact identified by the Native American Heritage Commission. Ms. Perez was contacted by letter on December 23, 2003, and with a follow-up telephone conversation on December 31, 2003. Ms. Perez noted her association with Repatriation, Inc., and indicated that she believes the project area is sensitive for the presence of buried archaeological sites. She recommended that Native American monitoring should be conducted during ground-disturbing work at this location.

Ms. Perez was again contacted via scoping letter on May 30, 2006, regarding mitigation efforts associated with this project and requesting comments, if any.

As a part of the supplemental Historic Property Survey Report (2012) the Native American Heritage Commission was contacted again on June 9, 2011, and asked to review their

Sacred Lands files and provide a list of Native Americans that should be contacted. Each person on the Native American Heritage Commission list was contacted by letter.

For the 2012 Supplemental Historic Property Survey Report, letters describing the project, with maps, were sent on June 17, 2011, to individuals on the Native American Heritage Commission contacts list asking for any information or concerns they might have regarding cultural resources (please see Chapter 3 for a list of these individuals).

No responses from these individuals have been received to date.

RESOURCES IDENTIFIED IN THE AREA OF POTENTIAL EFFECTS

Naval Supply Annex Stockton Historic District

The State Historic Preservation Officer determined that the Naval Supply Annex Stockton Historic District is eligible for the National Register of Historic Places on December 4, 1996 (USN960502Z) under Criteria A and C. Its period of significance was defined as 1946 to 1994, its period of use and operation as a Navy supply depot.

Under Criterion A, Naval Supply Annex Stockton embodies a new approach to supply storage and distribution by the United States Navy. The Navy established inland depots at several locations around the United States, and a new approach to cargo handling, with the adoption of pallets and forklift trucks. Under Criterion C, Naval Supply Annex Stockton embodies better than any other supply depot the Navy's redesign of its warehouses to accommodate pallets and forklift trucks; it was the first and only complete depot built to accommodate this method of cargo handling.

The Naval Supply Annex Stockton Historic District includes 109 contributing elements, all of which were built by 1946. Twelve features were built prior to 1946; all of the post-1946 features were determined not to contribute to the significance of the district (Uribe and Associates, 1996).

Navy Drive Bridge

The Navy Drive Bridge is located at the southeast corner of the base, connecting Rough and Ready Island with the City of Stockton across the San Joaquin River. The bridge was built between 1940 and 1941 (United States Navy, 1940). When the bridge was constructed, it was referred to as the Jacobs No. 1 Drawbridge. Uribe & Associates refer to the bridge as Vehicular Bridge No. 10 in the Historic and Archaeological Resources Protection Plan (1996). In 1996, the Navy Drive Bridge was determined to be a contributor to the Naval Supply Annex Stockton Historic District (USN960502Z). The bridge is the only contributing element to the Naval Supply Annex Stockton Historic District that would be affected by the proposed project.

Navy Exchange Building

The building was constructed in 1945 and modified several times over the years. Building materials and style suggest a 1960–1970 construction date range (perhaps due to modifications). The Historic and Archaeological Resources Protection Plan for the Naval Communications Station (Uribe and Associates, 1996) indicates that the structure was built after 1945. In 1996, the Navy Exchange was formally determined to not contribute to the

Naval Supply Annex Stockton Historic District (USN960502Z). The Navy Exchange Building was demolished by the Port as part of a separate project on April 30, 2007.

Stockton Police Department Training Facility

The Armory and firing range was built in 1942 and is currently managed by the City of Stockton Police Department. According to a previous range master the building was moved to its current location in 1958 from Army land nearby. This building was not evaluated as part of the cultural resource study and was treated in accordance with Attachment 4 of the Section 106 PA (Properties Exempt from Evaluation).

Environmental Consequences

No archaeological resources were identified within or immediately adjacent to the Focused Area of Potential Effects.

This project includes the demolition of Navy Drive Bridge, a bridge that has been determined to contribute to the significance of the Naval Supply Annex Stockton Historical District on Rough and Ready Island. Avoidance is not feasible because the proposed project has been designed to meet future transportation demands and improve the safety of the bridge, which requires that the existing bridge be replaced entirely. This impact is considered less than significant after implementation of mitigation measures listed below.

Consultants for the Port prepared a Finding of Effect in 2006 and a Memorandum of Agreement in 2008. They were submitted to the State Historic Preservation Officer on April 26, 2007. The State Historic Preservation Officer concurred with the findings and terms of the Finding of Effect on February 28, 2008. The Memorandum of Agreement was fully executed on February 28, 2008 and signed by concurring parties on April 30, 2008.

The existing Navy Drive Bridge is considered a Section 4(f) property. The proposed project consists of demolishing the bridge, which constitutes “use” of a Section 4(f) property (refer to Appendix B, Programmatic Section 4(f) Evaluation). The Section 4(f) evaluation found that no feasible or prudent avoidance alternatives exist that would meet the proposed project’s purpose and need. Physical destruction of the bridge would result in an adverse effect to the Naval Supply Annex Stockton Historic District.

Avoidance, Minimization, and/or Mitigation Measures

In response to comments provided by Native American tribal organizations during consultation, the project has been modified to provide for tribal monitoring. A Native American monitor shall be present during project ground-disturbing activities to review possible archaeological materials and provide recommendations on the identification and treatment of such resources. The monitor shall provide recommendations regarding protection and ultimate disposition of the find.

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

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code

Section 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission who would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact the Caltrans District 10 Environmental Branch so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of California Public Resources Code 5097.98 are to be followed as applicable.

The following measures are required per the Memorandum of Agreement (Appendix E):

PHOTOGRAPH AND DOCUMENT THE EXISTING BRIDGE

Prior to the start of any work that could adversely affect any characteristics that qualify Navy Drive Bridge as a historic property; Caltrans shall ensure that the recording specified in this mitigation measure is completed.

1. The Port shall take large-format (4 inch by 5 inch or larger negative size) photographs showing Navy Drive Bridge in context as well as details of its historic engineering features. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record photographic specifications. Views of Navy Drive Bridge shall include:
    a. Contextual views showing the bridge in its setting;
    b. Elevation views;
    c. Views of the operator house exterior and interior;
    d. Views of the Bridge approaches and abutments; and
    e. Detail views of significant engineering and design elements.
2. The Port shall make a reasonable and good faith effort to locate historic construction drawings for the Navy Drive Bridge. If these drawings are located, the Port shall photographically reproduce plans, elevations and selected details from these drawings in accordance with Historic American Engineering Record photographic specifications. If they are legible in this format, reduced size (8 ½ inch by 11 inch) copies of construction drawings may be included as pages of the report cited in subsection 3 of this mitigation measure rather than photographed and included as photographic documentation. The Port shall promptly notify Caltrans if historic drawings for the Navy Drive Bridge cannot be located. In that event, the requirements of this paragraph shall not apply.
3. A written historical and descriptive report for the Navy Drive Bridge would be completed. This report would provide a physical description of the Navy Drive Bridge, discuss its construction and its significance under applicable National Register criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Parks Service *Historic American Engineering Record Guidelines for Preparing Written Historical and Descriptive Data* guidelines for written documentation.
4. Upon completion, archival copies of the document described under subsection 3 of this mitigation measure shall be retained by Caltrans District 10 and the Port, distributed to the Caltrans Transportation History Library in Sacramento, the California Office of Historic Preservation and offered to repositories to include the San Joaquin County Historical Society and Museum in Lodi.

IDENTIFY AND SALVAGE SUITABLE BRIDGE PARTS

The Port shall offer artifacts removed from the Navy Drive Bridge during demolition to local museums such as the San Joaquin County Historical Society and Museum, or other suitable facilities to be determined by the Port, and provide for their delivery to accepting institutions.

INSTALL BRONZE PLAQUE ON NEW BRIDGE COMMEMORATING THE OLD BRIDGE

The Port shall install informative permanent metal plaques at both ends of the replacement bridge at public locations that provide a brief history of the original Navy Drive Bridge, its engineering features and characteristics, and the reasons for its replacement. The State Historic Preservation Officer would have 30 days to review proposed plaque text before they are produced and installed.

CREATE A DISPLAY IN THE PORT OF STOCKTON ADMINISTRATION BUILDING

The Port shall mount and display a representative photograph of the Navy Drive Bridge, along with accompanying text, in a public place at the Port of Stockton. The text shall provide a brief history of the Navy Drive Bridge and its relationship to the Naval Supply Annex Stockton historic district. The State Historic Preservation Officer shall have 30 days to review proposed photograph and text before they are installed.

2.2 Physical Environment

2.2.1. Hydrology And Floodplain

Regulatory Setting

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

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

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

Affected Environment

A Hydraulic Report was prepared in May 2004 and revised in March 2008.

The San Joaquin River basin is drained by its principal stream, the San Joaquin River and by major tributaries from the Sierra Nevada range of the east side of the basin, the coast range or the West side, and the Tulare Lake basin on the south side. The east side tributaries include the Mokelumne River, Calaveras River, Cosumnes River, Littlejohns Creek, Stanislaus River, Tuolumne River, Merced River, Bear Creek, Owens Creek, Chowchilla River, Dry Creek, and Fresno River. Many of these rivers now have dams and reservoirs on them. West side tributaries include Del Puerto Creek, Los Banos Creek, and Orestimba Creek. The San Joaquin River is connected to the Tulare Lake basin through the Fresno Slough. The San Joaquin River flows through the Delta and joins the Sacramento River at the upstream end of Suisun Bay. The total drainage basin for San Joaquin River including its tributaries is about 14,000 square miles of the Central Valley.

As early as the 1910s, flood management on the San Joaquin River began in response to the damaging effect of major floods. Major flood management construction started in late 1930s. Friant Dam on the upper San Joaquin River was completed by 1949. By the end of 1970s a system of dams, levees, reservoirs, and bypasses were in place on the San Joaquin River and its tributaries.

Subsequently, the flow and water surface elevation in San Joaquin River is regulated by the system of waterway infrastructures constructed upstream of the bridge site. Historic Flood maps show no flooding in the vicinity of the Navy Drive Bridge. Figures 2-10 and 2-11 illustrate the project area's Federal Emergency Management Agency Flood Insurance Rate Maps.

Environmental Consequences

Based on the findings and information described in the Hydraulic Report prepared for the project, the proposed replacement bridge would not change the hydraulic conditions of the San Joaquin River.

Floodplain encroachment would be reduced with the proposed project. The two bents for the new bridge would result in significantly less floodplain encroachment compared to the center pier and fender of the existing bridge that would be demolished. Therefore, the new bridge would not affect the 100-year flood water surface elevation since the river bed and channel profile would not be altered.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

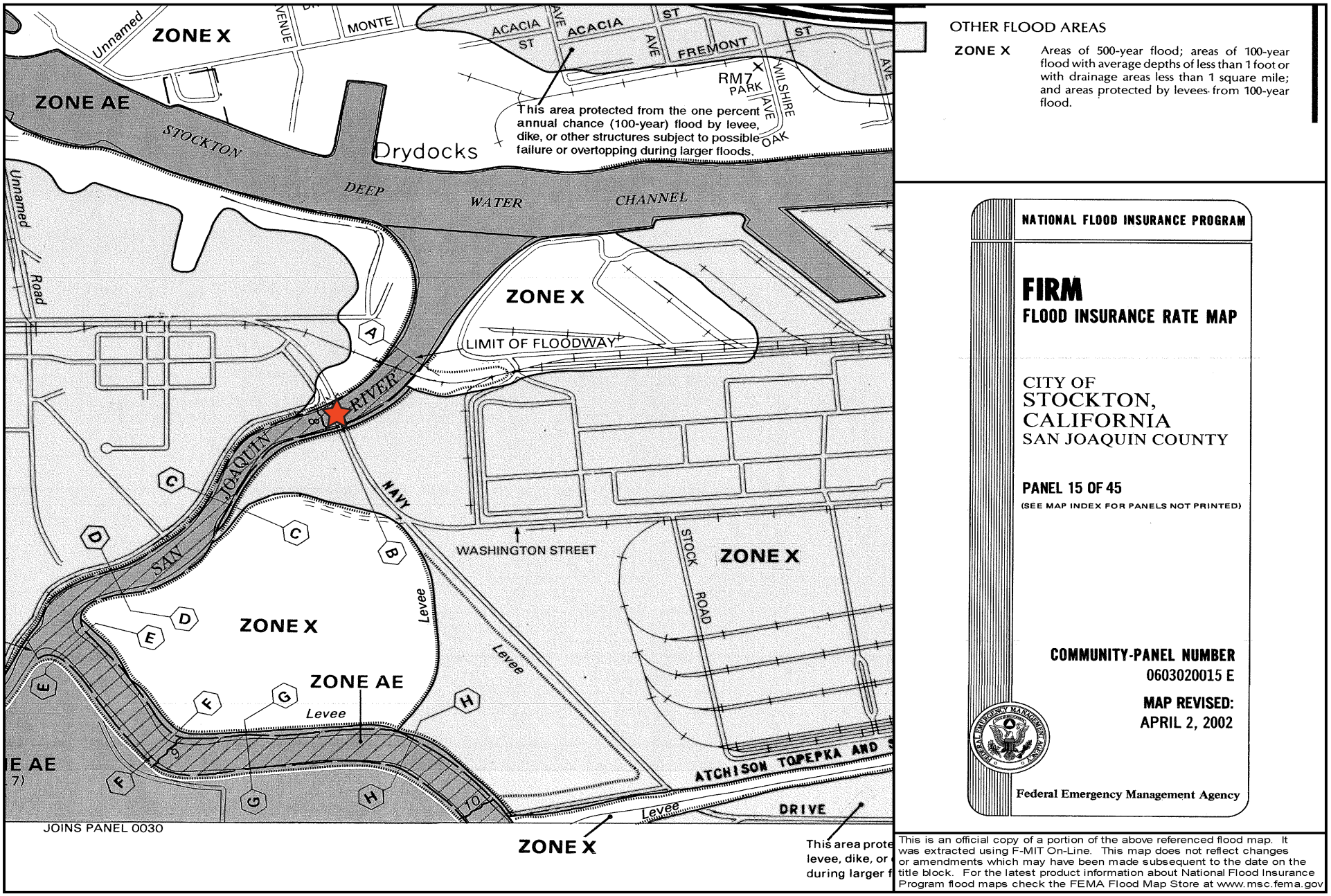

FIGURE 2-10

Legend

Project Location

Navy Drive Bridge Replacement Project

Federal Emergency Management Agency (FEMA) Map

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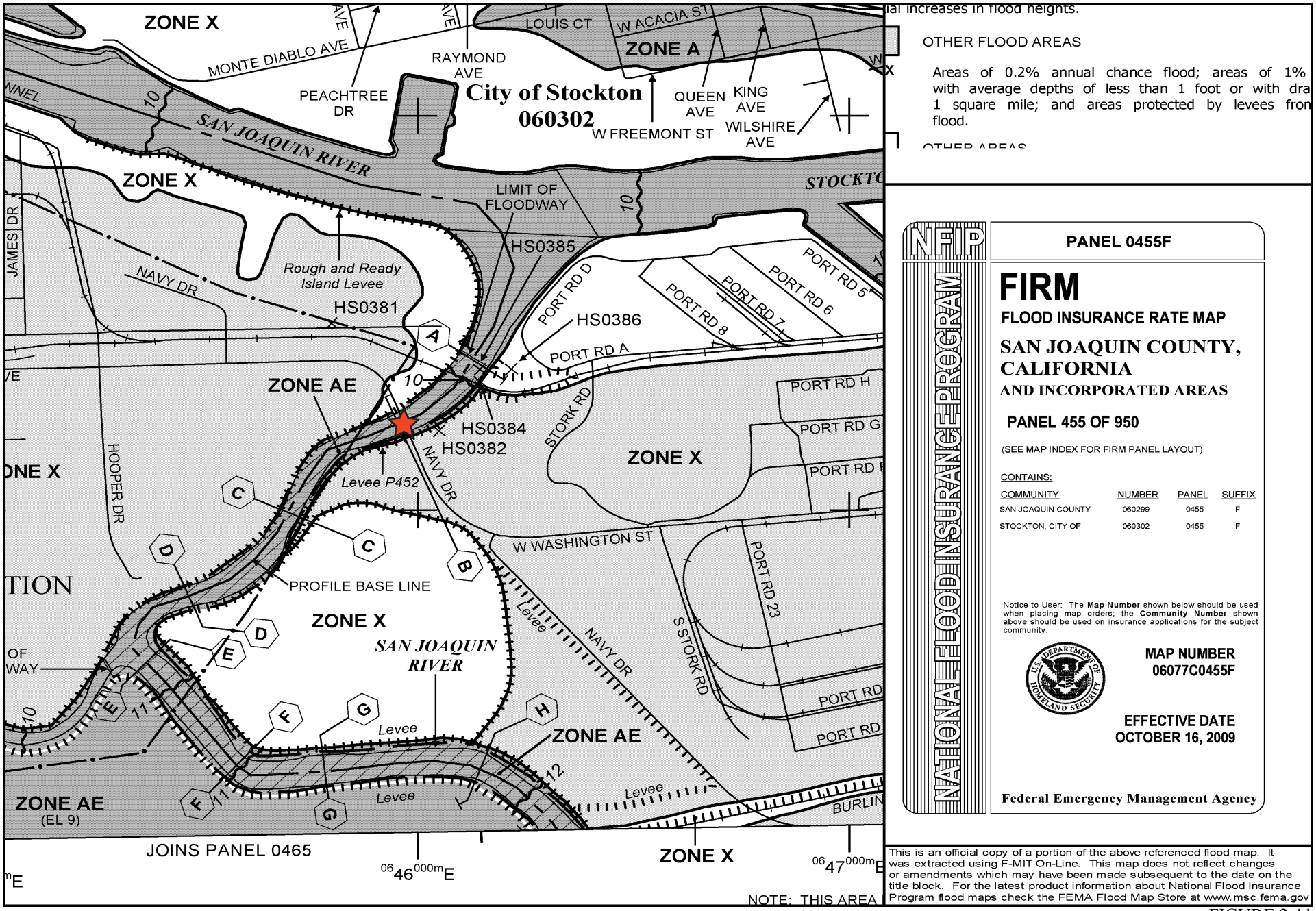


ial increases in flood heights.

OTHER FLOOD AREAS

Areas of 0.2% annual chance flood; areas of 1% with average depths of less than 1 foot or with dra 1 square mile; and areas protected by levees from flood.

OTHER AREAS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0455F

FIRM

FLOOD INSURANCE RATE MAP

SAN JOAQUIN COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 455 OF 950

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN JOAQUIN COUNTY	060299	0455	F
STOCKTON, CITY OF	060302	0455	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06077C0455F

EFFECTIVE DATE
OCTOBER 16, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 2-11

Legend

Project Location

Navy Drive Bridge Replacement Project

Federal Emergency Management Agency (FEMA) Map

2.2.2. Water Quality And Storm Water Runoff

Regulatory Setting

FEDERAL REQUIREMENTS: CLEAN WATER ACT

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System permit. Known today as the Clean Water Act, Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the National Pollutant Discharge Elimination System permit scheme. Important Clean Water Act sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which 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. (Most frequently required in tandem with a Section 404 permit request. See below.)
- Section 402 establishes the National Pollutant Discharge Elimination System, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the United States Regional Water Quality Control Boards administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the United States Army Corps of Engineers.

The objective of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

United States Army Corps of Engineers issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of United States Army Corps of Engineers Standard permits. For Standard permits, the United States Army Corps of Engineers decision to approve is based on compliance with United States Environmental Protection Agency’s Section 404 (b)(1) Guidelines (United States Environmental Protection Agency Code of Federal Regulations 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) Guidelines were developed by the United States Environmental Protection Agency in conjunction with United States Army Corps of Engineers, 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 United States Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative, to the proposed discharge that would have lesser effects on waters of the United States, and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the United States In addition every permit from the United States Army Corps of Engineers, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 Code of Federal Regulations 320.4. A discussion of the least environmentally damaging practicable alternative determination, if any, for the document is included in the Wetlands and Other Waters section.

STATE REQUIREMENTS: PORTER-COLOGNE WATER QUALITY CONTROL ACT

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

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

STATE WATER RESOURCES CONTROL BOARD AND REGIONAL WATER QUALITY CONTROL BOARDS

The State Water Resources Control Board administers water rights, water pollution control, and water quality functions throughout the state. Regional Water Quality Boards 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 (NPDES) PROGRAM

Municipal Separate Storm Sewer Systems

Section 402(p) of the Clean Water Act requires the issuance of National Pollutant Discharge Elimination System permits for five categories of storm water dischargers, including Municipal Separate Storm Sewer Systems. The United States Environmental Protection Agency defines an Municipal Separate Storm Sewer System as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. The State Water Resources Control Board has identified Caltrans as an owner/operator of a Municipal Separate Storm Sewer System by the State Water Resources Control Board. This permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The State Water Resources Control Board or the Regional Water Quality Control Boards issues National Pollutant Discharge Elimination System permits for five years, and permit requirements remain active until a new permit has been adopted.

Caltrans' Municipal Separate Storm Sewer System Permit, under revision at the time of this update, contains 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 storm water and non-storm water discharges; and
3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices and other measures.

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

Part of and appended to the Statewide Storm Water Management Plan is the Storm Water Data Report and its associated checklists. The Storm Water Data Report documents the relevant storm water design decisions made regarding project compliance with the Municipal Separate Storm Sewer System National Pollutant Discharge Elimination System permit. The preliminary information in the Storm Water Data Report prepared during the Project Initiation Document phase will be reviewed, updated, confirmed, and if required, revised in the Storm Water Data Report prepared for the later phases of the project. The information contained in the Storm Water Data Report may be used to make more informed decisions regarding the

selection of Best Management Practices and/or recommended avoidance, minimization, or mitigation measures to address water quality impacts.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the Regional Water Quality Control Boards. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project will require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Plan is necessary for projects with Disturbed Soil Area less than one acre.

Section 401 Permitting

Under Section 401 of the Clean Water Act, any project requiring a federal license or permit that may result in a discharge to a water body must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permits triggering 401 Certification are Clean Water Act Section 404 permits issued by United States Army Corps of Engineers. The 401 permit certifications are obtained from the appropriate Regional Water Quality Control Boards, dependent on the project location, and are required before United States Army Corps of Engineers issues a 404 permit.

In some cases the Regional Water Quality Control Boards may have specific concerns with discharges associated with a project. As a result, the Regional Water Quality Control Boards may issue a set of requirements known as Waste Discharge Requirements under the State Water Code that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. Waste Discharge Requirements can be issued to address both permanent and temporary discharges of a project.

Local Assistance

For local assistance "off" State Highway System transportation projects such as this one, the local agency is the owner/operator of the transportation facility; therefore, the Port is:

1. responsible for obtaining all necessary permits, agreements, and approvals from resource and regulatory agencies prior to advertisement for construction;
2. fully complying with the conditions of permits,
3. achieving all performance standards,
4. preparing all required reports, and
5. providing a copy of each permit to the Caltrans District Local Assistance office

Affected Environment

A Water Quality Assessment Report was prepared for the project in March 2012.

SURFACE WATER

The project area is located within the San Joaquin Delta Hydrologic unit. The Port's West Complex is located near the confluence of the San Joaquin and Calaveras Rivers. At 330 miles long, the San Joaquin River is the second-longest river in California. The San Joaquin River has several tributaries in the area, including French Camp Slough, Walkers Slough, and Burns Cut-Off, which bounds the Port's West Complex on the south and west. Water levels within the riverway are subject to variations in flow and tidal influence from San Francisco Bay.

Surface water quality depends primarily on the mineral composition of the soils and associated parent materials within a watershed, hydrologic characteristics, and sources of contaminants in the watershed. The project area's watershed consists primarily of commercial and residential development along with agricultural and military uses.

On November 12, 2010, Environmental Protection Agency approved California's 2008-2010 Section 303(d) list of impaired waterbodies. Environmental Protection Agency provided public notice and the opportunity for public comment on our proposed additions, which ended December 23, 2010. On October 11, 2011, Environmental Protection Agency issued its final decision regarding the waters Environmental Protection Agency added to the State's 303(d) list.

All Delta waterways, including the San Joaquin River at the site of the proposed project, have been designated as impaired under Clean Water Act Section 303(d) list for a variety of contaminants. The contaminants include (1) pesticides chlorpyrifos, dichlorodiphenyltrichloroethane, diazinon, and Group A pesticides, resulting from agricultural and urban runoff/storm sewers; (2) mercury from abandoned mine drainage; (3) electrical conductivity, resulting from agriculture; (4) organic enrichment and low dissolved oxygen, resulting from municipal point sources and urban runoff and storm sewers); and toxicity from unknown causes.

GROUNDWATER

The project is located in the San Joaquin Valley Groundwater Basin – Eastern San Joaquin Subbasin. This basin covers approximately 1,105 square miles and is bounded by the Mokelumne River on the north and northwest; San Joaquin River on the west; and Stanislaus River on the south. The Eastern San Joaquin Subbasin is bounded on the south, southwest, and west by the Modesto, Delta-Mendota, and Tracy Subbasins, respectively and on the northwest and north by the Solano, South American, and Cosumnes Subbasins.

The Solano and South American are subbasins of the Sacramento Valley Groundwater Basin.

The Eastern San Joaquin Subbasin is drained by the San Joaquin River and several of its major tributaries namely, the Stanislaus, and Calaveras, and Mokelumne Rivers. The San Joaquin River flows northward into the Sacramento and San Joaquin Delta and discharges into the San Francisco Bay. Annual precipitation within the subbasin ranges from about 11 inches in the southwest to about 25 inches in the northeast.

Water bearing formations of significance in the Eastern San Joaquin Subbasin consist of the Alluvium and Modesto/Riverbank Formations, Flood Basin Deposits, Laguna Formation, and Mehrten Formation. The Mehrten Formation is considered to be the oldest fresh water-bearing formation on the east side of the basin, even though the underlying Valley Springs Formation produces minor quantities. Information on water bearing units and groundwater conditions was taken primarily from (DWR 1967). These formations range in depth from 100 feet to well over 1,000 feet.

Groundwater quality within the basin is reported as “declining”. The degradation was particularly evident in the Stockton area where the saline front was moving eastward at a rate of 140 to 150 feet per year. Data from 1980 and 1996 indicate that the saline front has continued to migrate eastward up to about one mile beyond its 1963 extent (United States Army Corps of Engineers 2001). Large areas of elevated nitrate in groundwater exist within the subbasin located southeast of Lodi and south of Stockton and east of Manteca extending towards the San Joaquin – Stanislaus County line.

Specific information on groundwater for the project area was not investigated because the proposed project is not expected to substantially affect groundwater resources. No wells would be constructed, and construction activities would not intercept or alter groundwater recharge, discharge, or flow conditions.

Environmental Consequences

SHORT-TERM (TEMPORARY) WATER QUALITY IMPACTS

Temporary Construction-Related Water Quality Impacts of Approach Roads

Construction activities can impair water quality temporarily through the discharge into receiving waters of disturbed and eroded soil, petroleum products, and miscellaneous wastes. Soil and associated contaminants that enter stream channels can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Construction materials such as fuels, oils, paints, and concrete are potentially harmful to fish and other aquatic life if released into the environment. The extent of potential environmental effects depends on the tendency for erosion of soil types encountered, types and duration of construction activities, extent of disturbed area, timing of precipitation, proximity to receiving water bodies, and sensitivity of those water bodies to contaminants of concern.

Accidental spills of construction-related substances such as oils, fuels, and concrete can contaminate both surface water and groundwater. Recent summary reports of Caltrans water quality monitoring data from highway construction sites documents that runoff from disturbed areas can have elevated levels of suspended sediment, total phosphorus, and other inorganic constituents (California Department of Transportation 2003 a, 2003b).

Construction activities associated with the proposed project would directly disturb soils and surface drainage courses adjacent to the existing roadways. These drainage courses empty directly into the San Joaquin River. Construction activities would also occur on the banks and levees of the San Joaquin River. Potential stormwater discharges of construction-related contaminants could occur to the San Joaquin River, although the exact quantities of material excavation, grading, and general soil disturbances have not been determined at this time. This impact is considered potentially significant (pursuant to CEQA), as temporary and intermittent discharges of contaminated stormwater to the San Joaquin River could occur during construction. Implementation of minimization measure listed below would reduce these impacts.

Temporary Construction-Related Water Quality Impacts of Navy Drive Bridge Replacement Structure and Demolition of Existing Bridge

During demolition of the existing bridge and construction of new bridge, sediment re-suspension would occur as a result of the placement methodology of the in-channel Cast-In-Steel-Shell piles (e.g., vibrating, jetting, jacking or drilling the posts into place) and associated construction activities. Water quality impairment would likely include increased turbidity and decreased dissolved oxygen. Depending on the chemical characteristics and quantity of sediment, contaminants within the sediments could be released into the waterway. Also, debris could enter receiving water from construction activities.

Several mitigation measures are available that would ensure that potential impacts would be lowered below significance thresholds. The engineering constraints and hydrologic conditions at the project site would determine which of these would be implemented.

The mitigation measure or measures chosen shall achieve maximum containment of suspended sediment, represent the best available technology that is economically achievable, and conform to Basin Plan standards.

Temporary Construction-Related Impacts of Navy Drive Bridge Replacement Structure and Demolition of Existing Bridge on Delta Smelt, Central Valley Steelhead, Pacific Salmon, and North American Green Sturgeon

Sedimentation and percussive waves associated with pile driving could have a negative impact on Delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss irideus*), Chinook salmon (*Oncorhynchus tshawytscha*), and green sturgeon (*Acipenser medirostris*) , which are protected under the Endangered Species Act. Avoiding construction and demolition activities between November 1st and July 31st when the fish are potentially present in the project area would lower this impact to not likely adversely affect.

LONG-TERM (PERMANENT) WATER QUALITY IMPACTS

Permanent Changes in Local Stormwater Drainage

The proposed roadway alignments, bridge approaches, and wider bridge deck would slightly increase the amount of impervious surface in the project area. The introduction of these new impervious surfaces would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels; accelerate soil erosion and stream channel scour; and increase the transport of

pollutants to waterways. The alignments, areas of approaches, and wider bridge deck would introduce new impervious surface to the project area, although there would not be an appreciable change in the direction or routing of stormwater drainage compared to existing conditions. The East Complex alignment and approach would overlap Navy Drive the majority of this length, adding approximately 3,280 yards of impervious surface.

The length of the West Complex approach and alignment would provide a tie-in to McCloy Avenue. Implementation of Mitigation Measures listed below would reduce these impacts.

Permanent Water Quality Impacts from Changes in Stormwater Drainage

The proposed project will increase the amount of impervious paved roadway surfaces resulting in an increase of stormwater runoff generated from impervious road surface within the contributing drainage area. As described above, the increased runoff associated with road/bridge surfaces would be a small fraction of the total stormwater runoff within the drainage area. However, potential receiving waters (i.e., San Joaquin River) are close to this source of additional runoff. In addition to increased runoff, as development in the surrounding areas and use of the roadway improvements increase, greater quantities of contaminants such as petroleum products and other substances (e.g., trace metals, hazardous materials, and litter) could be deposited on the road surfaces. Minor modifications to existing facilities would be required, primarily involving contouring during grading activities to control the direction and rate of drainage to project facilities. There would be no appreciable change in the routing of storm drainage to off-site properties or receiving waters compared to existing conditions.

Contaminants in roadway runoff, if discharged untreated to receiving water bodies, can be toxic to fish and other aquatic organisms. In particular, the initial storm events occurring each fall season can transport elevated levels of contaminants that have resulted from deposition during the dry season. Increases in the total runoff volume can also accelerate soil erosion and stream channel scour and increase the transport of contaminants to waterways. Recent Caltrans water quality monitoring data confirms that stormwater runoff from highways can contain elevated levels of total suspended solids, total organic carbon, coliform bacteria, trace metals, and some organic compounds, and that runoff is significantly correlated with traffic levels (California Department of Transportation 2003a, 2003b). Caltrans data for highways with less than 60,000 Annual Average Daily Traffic volumes indicate that total organic carbon, total dissolved solids, and dissolved copper content in undiluted highway runoff can be elevated when compared to typical water quality criteria.

The existing traffic volume within the project area is about 2,300 Annual Average Daily Traffic; future projected traffic volume is about 18,500 Annual Average Daily Traffic by the year 2035. Consequently, it can be assumed that highway runoff may have similar water quality conditions as indicated by the Caltrans data for highways with less than 60,000 Annual Average Daily Traffic. The potential impact from elevated chemical constituent concentrations depends on many factors, including the level of dilution provided by receiving waters, sensitivity of specific organisms present at the time of the runoff event, and other attenuating factors such as the level of constituent removal that occurs as water flows to the receiving water. Many of the contaminants in highway runoff are known to be associated with total suspended solids transport, and reductions in particulate transport through natural settling and filtration in vegetation can reduce the constituent concentrations as well. This impact is considered to be potentially significant because temporary and intermittent stormwater discharges from project-related drainage facilities could have the potential to

reduce receiving-water quality. Implementation of Minimization Measure listed below would reduce these impacts.

BENEFICIAL USES IMPACTS

Under the guidance of the Porter-Cologne Water Quality Control Act, the Central Valley Regional Water Quality Control Board has established water quality objectives for surface and ground water in the region. These water quality objectives are listed in the Basin Plans designated for respective regions. Water quality objectives consist of both narrative and numerical goals and are established to preserve existing and potential future beneficial uses of regional water bodies. The water quality objectives must comply with the State Anti-Degradation Policy (State Board Resolution No. 68-16). The potential existing uses for the San Joaquin River are Municipal and Domestic Supply, Agricultural, Hydropower Generation, Contact Recreation and Canoeing/Rafting, Non-Contact Water Recreation, Warm and Cold Freshwater Habitat, and Wildlife Habitat. No impacts to beneficial uses associated with the San Joaquin River would occur with the proposed project.

Avoidance, Minimization, and/or Mitigation Measures

The proposed project will have less than significant impact (pursuant to CEQA) on water quality with implementation of the following avoidance, minimization, and proposed mitigation measures.

Implement Best Management Practices

Preparation and implementation of temporary Construction site Best Management Practices in compliance with the provisions of Caltrans' Statewide National Pollutant Discharge Elimination System Permit and any subsequent permit as they relate to construction activities for the project. This would include submission of a Notice of Construction to the Regional Water Quality Control Board at least 30 days before the start of construction, preparation and implementation of a Stormwater Pollution Prevention Plan, and submission of a Notice of Construction Completion to the Regional Water Quality Control Boards upon completion of construction and stabilization of the project site.

Implement Design Pollution Prevention

Incorporation of Design Pollution Prevention and Treatment Control Best Management Practices for the project in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide would be followed. This would include coordination with the Regional Water Quality Control Boards with respect to feasibility, maintenance, and monitoring of Treatment Control Best Management Practices as set forth in Caltrans' Statewide Stormwater Management Plan.

Install Sheet-Pile Cofferdam

Under this minimization measure, construction of the bridge replacement structure and demolition of the existing bridge would be hydrologically isolated from the San Joaquin River through installation of a sheet-pile cofferdam. This would ensure that activities do not result in increased turbidity or suspended solids in the San Joaquin River. Dewatering Best Management Practices must be followed. The Port or its contractor would monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor would stop work until levels are within Basin Plan limits.

Install Turbidity Curtain

A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. After applying the turbidity curtain, the Port or its contractor would monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor would stop work until levels are within Basin Plan limits. Under this minimization measure, a turbidity curtain would be used to isolate the work area.

Operate Aeration Equipment

Low dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen demanding substances into the river. The operation of aeration equipment continuously during and after construction activities should have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment.

Install Debris-Catching Devices

To prevent construction debris from entering the receiving water, the Port or its contractor would use attachments on construction equipment and covers or platforms around the construction area. Debris-catching devices must be inspected and emptied regularly and the debris stored away from the receiving water and protected until removal.

Dewatering Activities

During dewatering activities, if necessary, the provision of Order No. R8-2003-0061, National Pollutant Discharge Elimination System No. CAG998001, General Waste Discharge Requirements for Discharges to Surface Waters That Pose An Insignificant (De Minimus) Threat to Water Quality, as they relate to construction activities for the project, will be followed. This would include submission of an Notice Of Intent to the Regional Water Quality Control Boards at least three months before the start of dewatering and compliance with all applicable provision in the de minimus permit, including water-sampling, analysis, and reporting of dewatering-related discharges.

Install a Bubble Curtain

The pressure waves associated with pile driving activities are a potentially significant impact to fish in close proximity to the activity. A bubble curtain disrupts the propagation of the pressure waves to a less than significant impact to fish.

Implement Drainage Report Recommendations

The Port would prepare a drainage report (also referred to as a master drainage plan or a runoff design report) for the project area and implement the measures provided in the report. The drainage report shall be prepared by a registered civil engineer prior to site development, and shall include the following items:

- An accurate calculation of pre-project runoff conditions and post-project runoff scenarios using appropriate engineering methods. This analysis would accurately evaluate potential changes to runoff through specific design criteria. The model would account for increased surface runoff.
- An assessment of any existing drainage facilities within the project area, and an inventory of necessary upgrades, replacements, redesigns, and rehabilitation.
- A description of the proposed maintenance program for the on-site drainage system.
- Standards for drainage systems to be installed on a project-specific basis.

The drainage system shall be designed in accordance with San Joaquin County and the City of Stockton's flood control design criteria.

Implement Permanent Best Management Practices

Development and implementation of coordinated drainage features with permanent post construction Best Management Practices would minimize potential water quality impacts associated with highway runoff. The Port would be responsible for constructing permanent post construction stormwater best management practices, which would be identified and incorporated into the Storm Water Pollution Prevention Plan. The Storm Water Pollution Prevention Plan requirements would accommodate the additional drainage discharges generated by the project and avoid adverse effects such as off-site erosion, sedimentation, and water quality impairments.

Two broad categories of permanent post construction Best Management Practices and several specific types of Best Management Practices would be implemented.

- The first category consists of erosion control measures such as preservation of existing vegetation, concentrated flow conveyance systems (ditches, berms, drains, flared culvert end sections, outlet protection, and flow velocity dissipation), and slope protection measures. By controlling erosion, directing runoff through vegetation, or otherwise reducing the off-site discharge of particulate matter and sediment, the permanent erosion control measures would control off-site discharges of roadway pollutants that are associated with particulate matter. Stormwater management measures that result in runoff peak flows and volumes being similar to those under existing conditions should be designed and implemented. Any proposed stormwater management system should be designed to manage runoff volumes and peak flows from storm events up to and including the 25-year, 24-hour design storm.
- The second category of approved permanent post construction Best Management Practices consists of runoff treatment measures such as detention and infiltration basins and drain filters.

The Port would be responsible for long-term inspection and maintenance of the permanent Best Management Practices within their jurisdictional right-of-way to ensure that they are maintained in good working order.

2.2.3. Geology/Soils/Seismic/Topography

Regulatory Setting

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

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake, from young faults in and near California. The Maximum Credible Earthquake is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

City of Stockton General Plan Safety Element

The City of Stockton 2035 General Plan Update includes the following goal and policies regarding seismic and other geologic hazards (City of Stockton, 2007c):

- Goal HS-3: To protect the community from the hazards of expansive soils, seismic dangers, including threats from liquefaction potential of soils, and other geologic activity.
- Policy HS 3.1: Seismic Safety of Structures and Public Facilities. The City shall require that new structures intended for human occupancy, public facilities (i.e., treatment plants and pumping stations, major communication lines, evacuation routes, etc.) and emergency/disaster facilities (i.e. police and fire stations, etc.) are designed and constructed to minimize risk to the safety of people due to ground shaking.

Affected Environment

This analysis is based on the West Complex Development Plan Environmental Impact Report, San Joaquin County Soil Survey (Natural Resources Conservation Service, 1992; 2002), and the Preliminary Geotechnical Services Report prepared in 2003.

TOPOGRAPHY

Rough and Ready Island is located near the confluence of the San Joaquin and Calaveras Rivers. The elevation of the project area is approximately 10 feet above mean sea level. Rough and Ready Island is surrounded by a perimeter levee at a height of approximately 13 feet above mean sea level.

GEOLOGY

The Central Valley is filled with a thick sequence of sediments eroded from the Sierra Nevada range to the east. The sediments are so thick on the western edge of the Sacramento Valley that the rocks underlying the sediments have not been penetrated by borings (Hackel, 1966). Sixty thousand feet or more of these sediments, known as the Great

Valley Sequence, may have been deposited in the Stockton region from about 15 to 20 million years ago on land rather than in the sea. Prior to that time, the sediments are mostly marine. The continental deposits include increasing amounts of sediments derived from volcanic activity in the Sierra toward the end of the Tertiary period (1.5 to 65 million years ago). These middle to late Tertiary sediments form the principal ground water aquifers of the Central Valley. In this region, these sediments are estimated to be about 3,000 feet thick (Page, 1986).

During the Tertiary period, a structurally high feature known as the Stockton Arch developed, separating the southern depositional basin (the San Joaquin Basin) from the northern basin (the Sacramento basin). The pre-Quaternary (older than 1.6 million years) Stockton Fault forms the northern boundary of the Stockton Arch, which extends south to Modesto. The structural arch is higher than the surrounding region and, therefore, sediment deposition typical of this region does not overlie the Stockton Arch (Bartow, 1991).

The most recent deposits in the region are floodplain deposits, consisting of clay, silt, and some sand. Near Stockton these deposits include muck, peat, and other highly organic soils (Page, 1986).

Soils

A majority of the project area is characterized by deep, poorly drained, and fine textured soils that were formed in flood plains and contain a high percentage of organic materials (Natural Resources Conservation Service, 1992). Soil maps produced by Natural Resources Conservation Service indicate that seven soil map units are located within the project area. These soil map units include the following: Dello sand (144); Egbert mucky clay loam (152); Egbert-Urban land complex (155); Merritt silty clay loam (197); Merritt silty clay loam, occasionally flooded (198); Urban land (260); and Yellowlark gravelly loam (280). All of the soils within the project area possess a naturally high seasonal water table and are subject to prolonged saturation, due to their low landscape positions. Depth to the high water table varies from approximately 3 to 6 feet.

GEOLOGIC HAZARDS

Erosion

Erosion is the detachment and movement of soil materials through natural processes or human activities. The project site resides within a Mediterranean climate, which is exemplified by moist winters and dry summers. Therefore, during the winter the area is more prone to erosion from water, while in the summer the area is more prone to wind erosion. The project area is essentially level and covered with existing structures and/or impervious surfaces over a majority (two-thirds) of the area. This factor, in combination with a high proportion of clay in the soil surface, means that erosion is not considered a substantial limitation for new development.

Expansive Soils

Expansive soils possess a shrink-swell characteristic. Structural damage may result over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Expansive soils are largely composed of clays, which expand in volume when water is absorbed and shrink when dried. Some project site soils contain clays with a high shrink-swell potential within some portion of the soil

profile. However, in most developed areas, the layer of clay (ranging between 10 and 20 inches) has been blended into more granular soils during site excavation or buried beneath more granular soils during excavation operations to reduce the soil's overall expansiveness.

Seismicity

No known active faults (defined by the State of California as faults that show evidence of movement during the past 10,000 years) are less than 25 miles from the project area. The nearest active fault is the Greenville Fault, which is considered to be part of the San Andreas Fault system. The portion of this fault that has experienced historic displacement is located approximately 26 miles to the west of the project area (United States Navy, 1998).

Liquefaction

Liquefaction is a process whereby unconsolidated, granular, and saturated soils lose strength and fail when subjected to ground motion. An evaluation of potential for liquefaction must consider soil type, soil density, groundwater table, and the duration and intensity of shaking. The areas, which are believed to have the greatest potential for liquefaction, are those areas in which the water table is less than 20 feet below ground and the soils are predominantly clean, relatively uniform low-density sands. Clay type soils are generally not subject to liquefaction.

Based on the Preliminary Geotechnical Report, the potential for liquefaction and/or dynamic settlement at the bridge site is considered remote and should not impact the design of the proposed project. For this reason, this issue is not discussed further in the document.

Environmental Consequences

The Preliminary Geotechnical Services Report evaluated conditions in the project area in order to develop preliminary recommendations related to the geotechnical aspects of the project design and construction. The geotechnical report was developed through the review of existing geotechnical reports prepared for the area, literature relating to known geology and seismicity of the project area, and evaluation of collected data and an engineering analysis.

According to the California Geological Survey, there are no active faults in San Joaquin County; therefore, the proposed project will not be subject to impacts associated with fault rupture. However, the study area is subject to potential impacts from localized ground shaking. The most likely sources of these seismic hazards are from the San Andreas, Hayward, Calaveras, and Green Valley-Concord faults. The proposed project will be constructed to conform to the Uniform Building Code, the standard design and construction procedures of Caltrans, and the City of Stockton 2035 General Plan Update. Project impacts associated with these seismic hazards are not considered significant.

Construction associated with the proposed project has the potential to expose bare soil that would then be exposed to precipitation and subsequent entrainment in surface runoff. Construction activities involving soil disturbance, excavation, cutting/filling, and grading activities could result in increased erosion and sedimentation to surface waters. During construction and grading, erosion and sediment control measures would be conducted in accordance with City of Stockton's stormwater management requirements and Best Management Practices for the reduction of pollutants in runoff. Following construction, the Port would also be required to provide post construction Best Management Practices.

Erosion of soil materials and best management practices requirements are further discussed in the Water Quality and Stormwater Runoff section. Implementation of Mitigation Measures listed in Water Quality and Stormwater Runoff section would reduce the impact of soil erosion and sedimentation of surface waters. The project will conform to the Uniform Building Code, the standard design and construction procedures of Caltrans, and the City of Stockton 2035 General Plan Update, which require the minimization of geologic hazards. The City mandates that a site-specific geotechnical investigation be conducted to obtain City approval for new construction or for alterations of proposed buildings or other facilities within the project area. The study is required to include generally accepted and appropriate engineering techniques for determining the susceptibility of the development site to expansive soils and erosion. A licensed geotechnical engineer is required to prepare recommendations applicable to foundation design, earthwork, and site preparation prior to or during the project design phase. Recommendations are required to address site-specific, adverse soil and bedrock conditions that could hinder development. Proposed geotechnical designs must comply with applicable design criteria of the 1997 Uniform Building Code, applicable City construction and grading ordinances, and policies of the City of Stockton 2035 General Plan Update Safety Element. All geotechnical recommendations developed by the geotechnical investigation would be incorporated into the project designs. For these reasons, the proposed project would not impact geology and soils.

Avoidance, Minimization, and/or Mitigation Measures

Please refer to Avoidance, Minimization, and Mitigation Measures listed in the Water Quality and Stormwater Runoff Section.

2.2.4. Paleontology

Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 USC 431-433], Federal-Aid Highway Act of 1960 [23 USC 305]), and the Omnibus Public Land Management Act of 2009 [16 USC 470aaa]). Under California law, paleontological resources are protected by the California Environmental Quality Act.

Affected Environment

Paleontological resources are fossils or groups of fossils that are unique, unusual, rare, uncommon or important, and those that add to an existing body of knowledge in specific areas. Surface examination of a project's study area often does not reveal whether paleontological resources are present at a particular location. The potential for fossils to occur in the study area poses a concern during excavation activities associated with any project. According to the City of Stockton 2035 General Plan Update, if fossils are present in the project area, they are likely to be encountered beneath the upper 5 to 10 feet of sediment.

Environmental Consequences

This analysis is based on information provided in the West Complex Development Plan Environmental Impact Report as well as the Archaeological Survey Report prepared for the project.

According to the Draft City of Stockton 2035 General Plan Update Background Report (2004), no known paleontological resources are present in the project vicinity. However, there is always the possibility that buried fossils that were not identified during field surveys could be unearthed during project activities, causing the demolition of or substantial damage to paleontological resources. This impact is mitigated to less than significant after implementation of mitigation measure listed below.

Avoidance, Minimization, and/or Mitigation Measures

- If fossils are discovered during project construction, a qualified paleontologist would recover them. Construction work in these areas would be halted or diverted to allow recovery of fossil remains in a timely manner.

2.2.5. Hazardous Waste/Materials

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

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

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

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

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code California Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires 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 dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

Affected Environment

An Initial Site Assessment was completed July 2012 for the proposed project. The purpose of the Initial Site Assessment was to identify recognized hazardous materials or hazardous

waste that might pose a risk to human health or to the environment or in any way affect the proposed use of the project site.

The Initial Site Assessment provides historical information for the project site and adjacent properties. This included a site reconnaissance of the project site, contacting governmental regulatory agencies, and reviewing relevant database listings of hazardous material sites, waste generators, underground storage tanks, leaking underground storage tanks, and contaminated sites. Additionally, the Initial Site Assessment included a review of historical aerial photographs and topographic maps for historical uses of the project site.

An Initial Site Assessment was prepared in 2007, and an updated Initial Site Assessment was prepared in 2012, taking into consideration (1) changed conditions, if any, at the project site and adjacent properties since the completion of the 2007 assessment; and (2) a revised preferred alternative for the proposed project.

Physical testing of soil or groundwater was not within the scope of the Initial Site Assessment. This assessment did not include American Society for Testing and Materials Practice E 1527-05 considerations for the project site, such as radon, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, and indoor air quality as they are immaterial to the use of the proposed project site.

The Initial Site Assessment was the result of appropriate inquiry and is not an exhaustive assessment of the project site. As stated in the American Society for Testing and Materials Practice E 1527-05, there is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and may, in fact, be a material detriment to the orderly completion of transactions.

Environmental Consequences

ENVIRONMENTAL FINDINGS

Exposure of Individuals to Contaminated Soil and/or Ground Water

The Initial Site Assessment identified a location (former Building 16, the former Navy exchange gasoline service station) along the project route that has contaminated soil and groundwater from underground storage tanks. This location is north of the San Joaquin River and west of Navy Drive on Rough and Ready Island. Three underground fuel storage tanks, along with associated pipelines and the fuel dispenser island, were removed from the former gasoline station in September 1997 by G. R. Krause, a Navy contractor. The tanks had held leaded and unleaded gasoline. Groundwater flow at this location varies from a west-northwest to west-southwest direction.

Groundwater monitoring wells were located on the site by the Navy in August 1999 where samples have been collected and analyzed for four quarterly sampling rounds. Based on the monitoring at these wells, there appeared to be two distinct, localized plumes with concentrations of petroleum hydrocarbons as gasoline and Methyl Tertiary Butyl Ether. The up-gradient to cross-gradient margins of the co-mingled Methyl Tertiary Butyl Ethel plumes have been well delineated. Groundwater monitoring continued at this site until January 2007 when the wells were abandoned in place to make way for the construction of the extension of McCloy Avenue.

In April 2007, the Port installed five monitoring wells to replace the four Navy wells and quarterly groundwater monitoring began in May 2007 to November 2008. Based on the results of the groundwater monitoring, there have been no measurable concentrations of Total Recoverable Petroleum Hydrocarbons gasoline or benzene, toluene, ethyl benzene, and xylenes above laboratory reporting limits, measurable concentrations of Methyl Tertiary Butyl Ethel continue to be contained within the site boundary and concentrations are steadily decreasing over time. The Port has requested from the Regional Water Quality Control Board that groundwater monitoring at the site be discontinued and that no further actions are required. Approval of the Port's request is pending in conjunction with the closure of other sites at the Port.

Construction workers and others who routinely visit the area may be exposed to elevated levels of lead and other heavy metals resulting from Aerially Deposited Lead and the prior use of lead/heavy metals in lane striping and roadway marking materials such as Lead-based paint and thermoplastic material. Because of the area's former military uses and the current industrial nature of the area, the potential does exist for previously unidentified soil and/or groundwater contamination to be encountered during project site preparation and construction activities. Encountering contaminated soil and groundwater without taking proper precautions could result in the exposure of construction workers and consequently result in associated significant adverse health effects.

Exposure of Individuals to Asbestos-Containing Material and Lead-Based Paint/Other Heavy Metals

The Navy Drive Bridge and its operating house (see Figure 2-16) would be demolished as part of the project. The existing pavement with lane striping and road markings would also be removed. Indiscriminate and unmitigated demolition of structures containing asbestos materials and lead-based paint and removal of pavement with markings could create friable asbestos, lead paint chips, and lead/heavy metal dust that could expose construction workers to such material, travel offsite, and present an inhalation hazard for the surrounding public. In addition, collection and disposal of asbestos and lead paint debris by untrained personnel could similarly result in asbestos and lead paint dust emissions offsite. Both asbestos-containing materials and lead-based paint have been verified to be present on Navy Drive Bridge or its associated structures.

Exposure of Individuals to Polychlorinated Biphenyls

Transformers on the East Complex side of the project site are owned by Pacific Gas & Electric Company. They were observed to be in good condition (not leaking). Since the ban on the use of polychlorinated biphenyls as dielectric fluid in transformers came into effect, owners of transformers such as electric utility companies have made a concerted effort to replace them. According to Pacific Gas and Electric, there are a total of nine transformers located nearest to the bridge, five of which were manufactured in 1997, three manufactured in 1971, and one manufactured in 1970. Pacific Gas and Electric verified that the 1997 and 1970 transformers have dielectric fluid that has less than 50 parts per million polychlorinated biphenyls. However, records for the three 1971 transformers do not indicate status with regards to polychlorinated biphenyls. These particular transformers are located directly across from the Stockton Police Department. It is likely that the three pole-mounted transformers owned by Pacific Gas and Electric located near the bridge would need to be removed and relocated to make way for the wider bridge and road. Since these are owned by Pacific Gas and Electric, they would be responsible for their removal and relocation or replacement.

Exposure of Individuals to Treated Wood Waste

The timber fender system located around the central pier of the existing bridge and the bridge piles consist of wood treated with preservative such as tar and creosote (see Figure 2-12). The fender system would be demolished and removed from the site by pulling the piles, snapping them off just below the mudline, or cutting them off just below the mudline by divers using underwater chain saws. Potential exposure to creosote, which is known to have toxic and carcinogenic effects, may occur if the treated wood waste is not handled and disposed of properly.

Regulatory Agencies/Owner Outreach and Consultation

Regulatory agencies involved in hazardous waste management and/or site contamination were not contacted at the request of the Port of Stockton. The Port is awaiting closure on a number of sites, including a site within the project area.

However a search of applicable regulatory agency lists and standard environmental record sources for locations of potential concern was conducted. The Initial Site Assessment contains a copy of the database search report. Included in the database search report are unmapped sites or non-geocoded sites (could not be mapped for various reasons such as incomplete address or erroneous address). There is one unmapped site (unknown address) which is a site that is listed in the Native American Consultation Database within the project site zip code. The database identifies consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations.

The database search did not identify any recognized environmental conditions at the project site or target property. However, several recognized environmental conditions were identified within the minimum search distances required per American Society for Testing and Materials Practice Standard Practice E 1527-05. There are no sites with potential recognized environmental conditions within 0.12 mile of the project site.

Within 0.25 mile of the project site, there are six sites with recognized environmental conditions located southeast of the project site. These sites are located between 0.20 and 0.25 mile of the project site. These recognized environmental conditions include five spill sites, three Leaking Underground Storage Tanks, six Underground Storage Tanks, and three hazardous waste generators. The spill sites are open investigations, although two are currently inactive. Of the three Leaking Underground Storage Tank sites, one is closed and there is no action on the other two sites where the leaks were discovered during tank closure activities in 1992 and 1994.

Within 0.5 mile of the project site, there are six sites with recognized environmental conditions. One site, the former Naval Communications Station at Rough and Ready Island located 0.48 northwest of the project site, has 61 Leaking Underground Storage Tanks. There are four other Leaking Underground Storage Tank sites and these sites have been closed. A historical solid waste facility is located 0.37 mile southeast of the project site.

There are two sites with recognized environmental conditions within one mile of the project site. One site, located 0.64 mile southeast of the project site is suspected of having soil contamination and has been referred to the Regional Water Quality Control Board.

The other site, located 0.7 mile southeast of the project site, was a part of Naval Communications Station and is currently under remedial investigation.

Bridge Control House

Bridge Fender

FIGURE 2-12

Navy Drive Bridge Replacement Project

Bridge Control House and Timber Fender

SOURCE: ESA (2004)

P:\PRC1002\Graphics\IS_EA\Figure 2-12.pdf (9-6-12)

Recognized environmental conditions and associated investigations at nearby sites identified above would continue to be managed by their respective property owners and are not anticipated to be affected by the construction and operation of the proposed project. Likewise, any ongoing remediation and cleanup at the recognized environmental conditions identified above are not expected to affect the construction and operation of the proposed project.

Several reports were provided by the owner (Port of Stockton) in support of hazardous material review for this project, including:

Pre-Demolition Hazardous Materials Survey for Building 16, November 2006

The Port of Stockton provided a copy of the Pre-Demolition Hazardous Materials Survey report for Building 16 (the old gas station/Navy Exchange building) that was located north of the San Joaquin River and west of Navy Drive on Rough and Ready Island within the current limits of the Navy Drive Bridge Replacement Project. Asbestos was found in several building materials. Lead in paint was found only on the exterior south wall that was painted white. Polychlorinated biphenyls were presumed in all the 30 fluorescent lighting ballasts as they were not labeled. Thermostats that may contain mercury were not observed. Building 16 was demolished by the Port of Stockton previously as part of a separate project.

Building 16 Former Underground Storage Tanks – Ground Water Monitoring and Closure Report, 2nd Half 2008, January 2009

Three underground fuel storage tanks (which held leaded and unleaded gasoline), along with associated pipelines and a fuel dispenser island, were removed from the former site of Building 16 in September 1997 by a Navy contractor. Conclusions and findings related to ground water contamination at the site include the following:

- There have been no measurable concentrations of Total Recoverable Petroleum Hydrocarbons gasoline or benzene, toluene, ethyl benzene, and xylenes above laboratory reporting limits in the year and a half of ground water quality monitoring in the five wells.
- The extent of Methyl Tertiary Butyl Ethel in ground water is adequately monitored by the existing monitoring wells. Measurable concentrations of Methyl Tertiary Butyl Ethel continue to be contained within the site boundary.
- Concentrations of Methyl Tertiary Butyl Ethel above water quality limits remain limited to within approximately 100 feet of the former underground storage tanks.
- Methyl Tertiary Butyl Ethel concentrations in ground water within four of the five monitoring wells are steadily decreasing over time and continue to be non-detectable at the farthest down gradient well. The data is consistent with a diminishing Methyl Tertiary Butyl Ethel plume footprint.

Finally, the report recommended discontinuing ground water quality monitoring at the site and determining that no further actions are required.

Conclusions

Based on the fact that ground water and soils monitoring is still ongoing as well as the fact that known contamination exists in the project area, there is a potential for the project to encounter contaminated water and aerially deposited lead with the build alternative.

The Navy Drive Bridge and its operating house would be demolished as part of the project. The existing pavement with lane striping and road markings would also be removed. As such, there is a potential for the project to encounter asbestos containing materials, lead-based paint, and thermoplastic striping with the build alternative.

It is likely that the three pole-mounted transformers owned by Pacific Gas and Electric located near the bridge would need to be removed and relocated to make way for the wider bridge and road. As such, there is a potential for the project to encounter polychlorinated biphenyls with the build alternative.

The timber fender system located around the central pier of the existing bridge and the bridge piles consist of wood treated with preservative such as tar and creosote. This material would need to be demolished as part of the proposed project. As such, there is a potential for the project to encounter creosote with the build alternative.

No further investigation or monitoring is required.

Avoidance, Minimization, and/or Mitigation Measures

Measures to Avoid and Minimize the Exposure of Individuals to Contaminated Soil and/or Groundwater

There is documented soil and groundwater contamination at the location of the former gasoline station, which is within the project study area. The extent of groundwater contamination and the migration of contaminants in the groundwater have been fully defined, have been determined to be contained within the site, and contaminant concentrations have been decreasing over time. It is recommended that the Port consult with the Regional Water Quality Control Board to determine if precautions need to be taken or if state agency personnel need to be at the site when construction activities associated with ground disturbance begin. If dewatering is needed, the Regional Water Quality Control Board would need to be consulted for any special requirements. It is also recommended that before construction along the proposed roadway alignment begins, soil and groundwater samples be collected at the former gasoline station to at least the depth of the proposed excavation. These samples should be analyzed for the contaminants of concern identified for this site. A contingency plan should be developed to dispose of any contaminated soil or groundwater.

The proposed project would place the roadway approaches on new alignments and subsequent new fill. Therefore excess soil is not likely. The final roadway alignment and quantities would be determined after approval of the preferred alternative, in the final design phase. In those areas where minor excavation is required, the Port would conduct aerially deposited lead sampling to determine actual aerially deposited lead concentrations. Lead concentrations at the project site would then be compared to the California Human Health Screening Levels for lead for commercial/industrial use (3,500 milligrams per kilogram). Based on the levels of lead determined in the soil, the Port would account for all potential human exposure pathways and scenarios and the protection of nearby groundwater,

terrestrial and aquatic resources, including erosion of contaminated soil and subsequent runoff. Based on the results of the lead analysis and human health risk assessments, the Port would seek the approval of California Environmental Protection Agency/Regional Water Quality Control Board for the reuse of lead-contaminated soils generated from the project within the project area in accordance with criteria that safely encapsulates the soil based on the levels of lead to preclude exposure of individuals to elevated levels of lead. Applicable requirements of California Environmental Protection Agency/Regional Water Quality Control Board would be implemented by the Port, particularly those relating to burial areas, soil covers, location in relation to groundwater/water table elevation, erosion control, and others.

If reuse is not possible, the Port would ensure that the lead-contaminated soil would be managed as hazardous waste and disposed in a Class 1 landfill. Detailed specifications would be included in the contractor package, specifying mitigation required to minimize and/or avoid human health risks. These specifications would support the project cost estimates and contractor's bid. If heavy metals are also found in the soils, the Port would ensure that the soils would be managed in accordance with applicable federal and state regulations for hazardous waste. As the variance only applies to lead from aerially deposited lead, burial within the project site of heavy metal-contaminated soil would not be allowed.

In addition, if contaminated soil and/or groundwater are encountered or suspected contamination is encountered in other areas of the project site during construction, it is recommended that work is suspended in the suspected area of contamination and the type and extent of the contamination be identified. If necessary, a remediation plan shall be implemented in conjunction with continued project construction.

Measures to Avoid and Minimize Exposure of Individuals to Asbestos-Containing Material and Lead-Based Paint/Other Heavy Metals

The Port shall ensure, through contract requirements, that work plans address procedures for the safe removal and proper disposal of materials contaminated with asbestos and lead-based paint. The demolition of the structures shall comply with the United States Environmental Protection Agencies National Emissions Standards for Hazardous Air Pollutants and the San Joaquin Valley Unified Air Pollution Control District rules and regulations regarding asbestos. The demolition of the structures shall also comply with the California Department of Health Services recommendations and California Occupational Safety and Health Agency requirements regarding lead-related construction work by all construction contractors and workers.

To comply with California Occupational Safety and Health Agency and Department of Health Services requirements, workers must be protected when lead is present in any concentration. A Lead Compliance Plan for worker protection shall be prepared and implemented during pavement removal, soil excavation, and/or demolition of structures containing lead-based paint. The Lead Compliance Plan would be part of construction specification requirements for the project.

To avoid generating dust containing lead-based paint and thermoplastic material from striping and markings, the Port would ensure that existing pavement would be carefully removed in large pieces to keep the striping and markings intact to the maximum extent possible.

The United States Environmental Protection Agency regulates asbestos as a hazardous air pollutant under the National Emissions Standards for Hazardous Air Pollutants. The

asbestos National Emissions Standards for Hazardous Air Pollutants regulations impose procedures for demolition and renovation activities involving regulated Asbestos Containing Materials (friable asbestos and forms of asbestos that may become friable during renovation and handling). The asbestos National Emissions Standards for Hazardous Air Pollutants regulations also impose additional restrictions on asbestos waste disposal, requiring generators and transporters of Asbestos Containing Materials to maintain waste shipment records. The California Air Resources Board enforces National Emissions Standards for Hazardous Air Pollutants regulations through the air districts. The San Joaquin Valley Air Pollution Control District should be contacted to obtain a copy of its rules and regulations regarding asbestos. An asbestos consultant performing asbestos-related work must have a valid license issued by the California Contractor's State License Board and be certified by the California Occupational Safety and Health Agency.

Detailed specifications would be included in the contractor package, specifying mitigation required to minimize and/or avoid human health risks. These specifications would support the project cost estimates and contractor's bid.

Measures to Avoid and Minimize Exposure of Individuals to Polychlorinated Biphenyls

The Port shall coordinate with Pacific Gas and Electric for the removal and replacement of the transformers. Pacific Gas and Electric would be responsible for complying with all applicable federal and state environmental and worker exposure regulations during the removal and replacement/relocation of the transformers.

Measures to Avoid and Minimize Exposure of Individuals to Treated Wood Waste

In July 2007, the Department of Toxic Substances Control adopted regulations that would allow flexibility in the management and disposal of treated wood waste. Treated wood waste would no longer need to be sampled and analyzed prior to disposal and may be disposed in a composite-lined portion of a solid waste landfill unit that meets all requirements applicable to disposal of municipal solid waste in California and that is regulated by waste discharge requirements issued for discharges of designated waste or treated wood waste. The Port would ensure that the demolished fender system and piles would be removed and disposed at a Regional Water Quality Control Board-certified treated wood waste landfill. The contractors bid package would include this information to adequately address the potential hazards.

2.2.7. Air Quality

Regulatory Setting

The Federal Clean Air Act as amended in 1990 is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency and California Air Resources Board, set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards. National Ambient Air Quality Standards and State ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller – PM_{10} and particles of 2.5 micrometers and smaller – $PM_{2.5}$), lead (Pb), and sulfur dioxide (SO_2). In addition, State standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The National Ambient Air Quality Standards and State standards are set at a level that protects public health with a margin of safety, and are subject to periodic review and revision. Both State and Federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics within their general definition.

Federal and State air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act and the California Environmental Quality Act. In addition to this type of environmental analysis, a parallel “Conformity” requirement under the Federal Clean Air Act also applies.

Federal Clean Air Act Section 176(c) prohibits the United States Department of Transportation and other Federal agencies from funding, authorizing, or approving plans, programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of Clean Air Act requirements related to the National Ambient Air Quality Standards. “Transportation Conformity” takes place on two levels: the regional, or planning and programming, level, and the project level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the National Ambient Air Quality Standards, and only for the specific National Ambient Air Quality Standards that are or were violated. United States Environmental Protection Agency regulations at 40 Code of Federal Regulations 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas sulfur dioxide (SO_2). California has attainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO_2, and also has a nonattainment area for lead (Pb). However, lead is not currently required by the Federal Clean Air Act to be covered in transportation conformity analysis. Regional conformity is based on Regional Transportation Plans and Federal Transportation Improvement Programs that include all of the transportation projects planned for a region over a period of at least 20 years for the Regional Transportation Plan) and 4 years (for the Federal Transportation Improvement Program). Regional Transportation Plan and Federal Transportation Improvement Program conformity is based on use of travel demand and air quality models to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that requirements of the Clean Air Act and the State Implementation Plan are met. If the conformity analysis is

successful, the Metropolitan Planning Organization, Federal Highway Administration, and Federal Transit Administration, make determinations that the Regional Transportation Plan and Federal Transportation Improvement Program are in conformity with the State Implementation Plan for achieving the goals of the Federal Clean Air Act. Otherwise, the projects in the Regional Transportation Plan and/or Federal Transportation Improvement Program must be modified until conformity is attained. If the design concept, scope, and "open to traffic" schedule of a proposed transportation project are the same as described in the Regional Transportation Plan and Federal Transportation Improvement Program, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

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

Affected Environment

An Air Quality Study was prepared and approved for the project in June 2012.

Meteorology

A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. The proposed project is located in the San Joaquin Valley Air Basin, which is comprised of approximately 25,000 square miles and covers all of seven counties including Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the western portion of an eighth, Kern. The San Joaquin Valley Air Basin is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the San Joaquin Valley Air Basin would simulate a "bowl" opening only to the north. These topographic features restrict air movement through and out of the basin.

Although marine air generally flows into the basin from the San Joaquin River Delta, the Coast Range hinders wind access into the San Joaquin Valley Air Basin from the west, the Tehachapi Mountains prevent southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow, which becomes blocked vertically by high barometric pressure over the San Joaquin Valley

Air Basin. As a result, the San Joaquin Valley Air Basin is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet).

Air Pollution Constituents

Pursuant to the federal Clean Air Act of 1970, the United States Environmental Protection Agency established national ambient air quality standards. The National Ambient Air Quality Standards were established for major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health. The National Ambient Air Quality Standards are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The criteria pollutants are ozone (O_3), carbon monoxide (CO), suspended particulate matter (less than 10 microns [PM_{10}] and less than 2.5 microns [$PM_{2.5}$]), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The Environmental Protection Agency established new national air quality standards for ground-level ozone and for fine particulate matter ($PM_{2.5}$) in 1997. The primary standards for these pollutants are shown in Table 2-11, and the health effects from exposure to the criteria pollutants are described later in this section.

Table 2-11: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]		Federal Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	No federal standard	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO_2)[h]	Annual Arithmetic Mean	0.03 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	53 ppb (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	None	

Pollutant	Averaging Time	California Standards[a]		Federal Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]
Lead (Pb) [j,k]	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3 (for certain areas)[k]	Same as Primary Standard	
	Rolling 3-month average[i]	–		0.15 µg/m^3		
Sulfur Dioxide (SO_2)[i]	24-Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[i]	–	Ultraviolet Flourescence; Spectrophoto-metry (Pararosaniline Method)
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	–	
	Annual Arithmetic Mean	-		0.030 ppm (for certain areas)[i]	-	
Visibility-Reducing Particles[l]	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[j]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact United States Environmental Protection Agency for further clarification and current federal policies.

[c] Concentration expressed first in units in which it was promulgated.

[d] Any equivalent procedure, which can be shown to the satisfaction of the California Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[g] Reference method as described by the Environmental Protection Agency. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the Environmental Protection Agency.
[h] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
[i] On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standards to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
[j] The California Air Resources Board has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
[k] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 ug/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
[l] In 1989, the California Air Resources Board converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.
µg/m3 = micrograms per cubic meter
ppm = parts per million
ppm = parts per billion
Source: California Air Resources Board, February 7, 2012.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality regulating agencies. Data collected at permanent monitoring stations are used by the Environmental Protection Agency to identify regions as “attainment” or “nonattainment,” depending on whether the regions met the requirements stated in the primary National Ambient Air Quality Standards. Nonattainment areas are imposed with additional restrictions as required by the Environmental Protection Agency. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the state on a pollutant by pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the National Ambient Air Quality Standards. The San Joaquin Valley Air Basin’s attainment status for each of the criteria pollutants is listed in Table 2-12.

Table 2-12: San Joaquin Valley Air Basin Attainment Status for Criteria Pollutants

Pollutant	Federal Standards	State Standards
Ozone - 1 hour	No Federal Standard[a]	Nonattainment/Severe
Ozone - 8 hour	Nonattainment/Extreme[b]	Nonattainment
PM_{10}	Attainment[c]	Nonattainment
$PM_{2.5}$	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

[a] Effective June 15, 2005, Environmental Protection Agency revoked the federal 1-hour ozone standard, including associated designations and classifications. Environmental Protection Agency had previously classified the San Joaquin Valley Air Basin as extreme nonattainment for this standard. Environmental Protection Agency approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment area continue to apply to the San Joaquin Valley Air Basin.
[b] Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, Environmental Protection Agency approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010)
[c] On September 25, 2008, Environmental Protection Agency redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard and approved the PM10 Maintenance Plan.
[d] The Valley is designated nonattainment for the 1997 PM2.5 National Ambient Air Quality Standards. Environmental Protection Agency designated the Valley as nonattainment for the 2006 PM2.5 standards on November 13, 2009 (effective December 14, 2009).
Source: San Joaquin Valley Air Pollution Control District, 2011. Website: www.valleyair.org/. Accessed: November 4, 2011.

Local Air Quality

The project is located within jurisdiction of the San Joaquin Valley Air Pollution Control District. The San Joaquin Valley Air Pollution Control District monitors air quality at several locations within the San Joaquin Valley. The closest multi-pollutant monitoring site that has data available for most pollutants is located in Stockton (Hazelton Street site), and its air quality trends are representative of the ambient air quality in the project area. The nearest sensitive receptors are residences located on Monte Diablo Avenue approximately 3,200 feet north of the project site.

The three pollutants known to exceed State and federal standards in the project area are regional pollutants. Ozone, PM10 and $PM_{2.5}$ are regional emissions and are not determined by proximity to individual sources, but show a relative uniformity over a region. Thus, the data shown in Table 2-13 for these pollutants provide a good characterization of levels of these pollutants within the project site. The pollutants monitored are CO, O_3, PM_{10}, $PM_{2.5}$, and NO_2. Table 2-13 summarizes exceedances of State and federal standards at this monitoring site during the period 2008 through 2011. It should be noted than an exceedance is not necessarily a violation.

The data indicate that PM10 levels exceeded the State standard 8 times in 2008, 3 times in 2009, 1 time in 2010, and 4 times in 2011. The federal PM10 standard was not exceeded

during the four year period. $PM_{2.5}$ levels exceeded the State standard in 2008 and 2009, and the federal 24-hour standard was exceeded in 2008, 2009, 2010, and 2011 Eight-hour ozone levels exceeded both State and federal standards in the years 2008, 2009 and 2010. Table 2-13 indicates that CO and NO_2 levels are well below relevant State and federal standards.

Table 2-13: Exceedences of State and Federal Air Quality Standards at Stockton (Hazelton Street) Monitoring Site

Pollutant	Standard	2008	2009	2010	2011
Carbon Monoxide (CO)					
Maximum 1-hour concentration (ppm)		3.4	3.4	2.8	3.2
Number of days exceeded:	State: > 20 ppm	0	0	0	0
	Federal: > 35 ppm	0	0	0	0
Maximum 8-hour concentration (ppm)		1.86	2.29	1.60	2.13
Number of days exceeded:	State: > 9 ppm	0	0	0	0
	Federal: > 9 ppm	0	0	0	0
Ozone (O_3)					
Maximum 1-hour concentration (ppm)		0.105	0.116	0.120	0.089
Number of days exceeded:	State: > 0.09 ppm	2	2	2	0
Maximum 8-hour concentration (ppm)		0.091	0.096	0.095	0.068
Number of days exceeded:	State: > 0.07 ppm	7	4	3	0
	Federal: > 0.075 ppm	4	2	2	0
Coarse Particulates (PM_{10})					
Maximum 24-hour concentration ($\mu g/m^3$)		105.0	58.8	55.4	70.1
Number of days exceeded:	State: > 50 $\mu g/m^3$	8	3	1	4
	Federal: > 150 $\mu g/m^3$	0	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		31.1	23.6	19.9	24.1
Exceeded for the year:	State: > 20 $\mu g/m^3$	Yes	Yes	No	Yes
Fine Particulates ($PM_{2.5}$)					
98th Percentile 24-hour concentration ($\mu g/m^3$)		81.2	48.4	41.0	60
Exceeded 98th Percentile:	Federal: > 35 $\mu g/m^3$	Yes	Yes	Yes	Yes
Annual arithmetic average concentration ($\mu g/m^3$)		14.4	13.4	10.9	11.3
Exceeded for the year:	State: > 12 $\mu g/m^3$	Yes	Yes	No	No
	Federal: > 15 $\mu g/m^3$	No	No	No	No
Nitrogen Dioxide (NO_2)					
Maximum 1 hour concentration (ppm)		0.076	0.068	0.082	0.062
Number of days exceeded:	State: > 0.18 ppm	0	0	0	0
Annual arithmetic average concentration (ppm)		0.017	0.015	0.014	0.015
Exceeded for the year:	Federal: > 0.053 ppm	No	No	No	No
Sulfur Dioxide (SO_2)					
Maximum 1-hour concentration (ppm)		ND	ND	ND	ND
Number of days exceeded:	State: > 0.25 ppm	ND	ND	ND	ND
Maximum 3-hour concentration (ppm)		ND	ND	ND	ND
Number of days exceeded:	Federal: > 0.5 ppm	ND	ND	ND	ND
Maximum 24-hour concentration (ppm)		ND	ND	ND	ND
Number of days exceeded:	State: > 0.04 ppm	ND	ND	ND	ND

ND = No data. There was insufficient (or no) data to determine the value.
ppm = parts per million
µg/m3 = micrograms per cubic meter
Source: California Air Resources Board, 2011. Website: www.arb.ca.gov/adam/welcome.html. Accessed: February 28, 2013.

Regional Air Quality Plans

The 1976 Lewis Air Quality Management Act established the San Joaquin Valley Air Pollution Control District and other air districts throughout the State. The Federal Clean Air Act Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

California Air Resources Board coordinates and oversees both State and federal air pollution control programs in California. California Air Resources Board oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan for federal Environmental Protection Agency approval. California Air Resources Board maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by California Air Resources Board to classify air basins as “attainment” or “nonattainment” with respect to each pollutant and to monitor progress in attaining air quality standards. California Air Resources Board has divided the State into 15 air basins. Significant authority for air quality control within the air basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

The California Clean Air Act provides the San Joaquin Valley Air Pollution Control District with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, at a mall, and on highways. As a state agency, California Air Resources Board regulates motor vehicles and fuels for their emissions.

Regional Air Quality Management Plan

The San Joaquin Valley Air Pollution Control District is responsible for formulating and implementing Attainment Demonstration Plans for the Air Basin. The latest plans address several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. These Attainment Demonstration Plans are consistent with and build upon the approaches taken in previous documents for the attainment of the federal ozone air quality standard:

- The 2007 PM_{10} Maintenance Plan was adopted by the San Joaquin Valley Air Pollution Control District in September 2007 and was approved by California Air Resources Board in October 2007. On September 25, 2008, Environmental Protection Agency redesignated the San Joaquin Valley to attainment for the PM_{10} National Ambient Air Quality Standards and approved the PM_{10} Maintenance Plan.
- The San Joaquin Valley Air Pollution Control District adopted the 2008 $PM_{2.5}$ Plan on April 30, 2008 to assure attaining all of the state and federal standards. California Air Resources Board submitted the 2008 $PM_{2.5}$ Plan to Environmental Protection Agency on June 30, 2008.
- California Air Resources Board submitted the 2004 Extreme Ozone Attainment Demonstration Plan to Environmental Protection Agency on November, 2004. On March 8, 2010 Environmental Protection Agency approved the 2004 Extreme Ozone Attainment Plan for 1-hour ozone.

- The San Joaquin Valley Air Pollution Control District adopted the 2007 Ozone Plan on April 30, 2007 to assure attainment of the federal 8-hour ozone standard. California Air Resources Board approved the 2007 Ozone Plan on June 14, 2007.

Environmental Consequences

CARBON MONOXIDE HOT SPOTS

Caltrans has developed a Transportation Project-Level Carbon Monoxide Protocol (Protocol) for assessing CO impacts of transportation projects. The procedures and guidelines comply with the following regulations without imposing additional requirements: Section 176(c) of the 1990 Clean Air Act Amendments, federal conformity rules, State and local adoptions of the federal conformity rules, the National Environmental Policy Act, and the California Environmental Quality Act requirements [California Code of Regulations Title 21 Section 1509.3(25)].

Two conformity-requirement decision flow charts are provided in the Protocol and are provided as Appendix A. An explanatory discussion of the steps (as identified in Figure 1 of the Protocol, Requirements for New Projects) used to determine the conformity requirements that apply to new projects is provided below.

3.1.1 Is the project exempt from all emissions analyses? (See Table 1 of Protocol.) NO. The proposed project is not exempt from all emissions analyses.

3.1.2 Is the project exempt from regional emissions analysis? (See Table 2 of Protocol.) NO. The proposed project is not one of the types of projects listed as exempt from regional emissions analysis per Code of Federal Regulations 93.127. The proposed project is not exempt from regional emissions analysis.

3.1.3 Is the project locally defined as regionally significant? YES. Through implementation of the proposed project, the number of lanes on Navy Drive Bridge would be increased. The project is defined as regionally significant.

3.1.4 Is the project in a federal attainment area? YES.

3.1.4a Is the project in a California attainment area? YES.

3.1.9 Examine local impacts. (Proceed to Section 4.)

Section 4 of the Protocol assesses local analysis. Assessment of the project's effect on localized ambient air quality is based on analysis of CO and PM_{10} emissions, with the focus on CO. Localized emissions of CO and PM_{10} may increase with implementation of the proposed project. CO is used as an indicator of a project's direct and indirect impact on local air quality, because CO does not readily disperse in the local environment in cool weather when the wind is fairly still. As stated in the Protocol, the determination of project-level CO impacts should be carried out according to the Local Analysis flow chart shown in Figure 2 of the Protocol. The following discussion provides explanatory remarks for every step of the local analysis.

Level 1:

4.1.1 Is the project in a CO nonattainment area? NO. The project site is located in a federal attainment area.

4.1.2 Was the area redesignated as "attainment" after the 1990 Clean Air Act? YES. Environmental Protection Agency proposed approved the maintenance plans and redesignation request in 1998.

4.1.3 Has "continued attainment" been verified with the local Air District, if appropriate? YES. The Stockton Urbanized Area continues to be in attainment for CO.

Level 7:

4.7.1 Does the project worsen air quality? NO. The following criteria were used to determine whether the project is likely to worsen air quality:

a. *Project does not significantly increase the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant.*

   The percentage of vehicles operating in cold start mode is expected to be the same for the project area under the Build Alternative. It is anticipated that all vehicles in the project area are in a fully warmed-up mode. Therefore, this condition is met.

b. *Project does not significantly increase traffic volumes. Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is a corresponding reduction in average speeds.*

   As indicated in Table 2-14, traffic volumes on Navy Drive Bridge do not change as a result of the project. They are the same under a 2-Lane Bridge (No Build Alternative) and a 4-Lane Bridge (proposed Build Alternative). The proposed project is a bridge replacement project that also does not increase average daily traffic. Also, there is no reduction in average speeds; the proposed Build Alternative is expected to increase average speeds and reduce delay. Therefore, this condition is met.

Table 2-14: Level of Service Traffic Data for Navy Drive Bridge

Scenario	Directional Average Daily Traffic Volume	2-Lane Bridge Level Of Service	4-Lane Bridge Level Of Service
Existing Conditions	2,300 Vehicles	level of service C	level of service C
Construction Year 2015 Conditions	5,000 Vehicles	level of service C	level of service C
Design Year 2035 Conditions	18,500 Vehicles	level of service E	level of service C/D

Source: Fehr & Peers, July 2011.

c. *Project improves traffic flow. For uninterrupted roadway segments, higher average speeds (up to 50 miles per hour) should be regarded as an improvement in traffic flow. For intersection segments, higher average speeds and a decrease in average delay should be considered an improvement in traffic flow.*

   As shown in Table 2-14, the project would improve the traffic flow and reduce delay by improving the level of service under the design year (2035) conditions. Therefore, this criterion is met.

The CO Protocol indicates that further analysis is not necessary. Therefore, a detailed hotspot analysis is not required.

Interagency Consultation

The Interagency Consultation process was originally conducted for the project in December 2006. The Port of Stockton determined that the proposed project was not a project of air quality concern (POAQC), and concurrence in this determination was given by Environmental Protection Agency via email on January 5, 2007 and by the Federal Highway Administration, also in January 2007. An Air Quality Study was subsequently approved in March 2008.

A revised Air Quality Study was necessary due to changes in the underlying traffic data and studies that occurred after March 2008; and was approved based on the previously-approved Interagency Consultation. The project's open to traffic date has been moved out by the Port of Stockton to fiscal year 2014/2015. This move required an amendment to the current Federal Transportation Improvement Program which was found to conform on December 13, 2012. The existing Interagency Consultation memo and concurrences are used for this document. However, once the new Interagency Consultation memo has been prepared by the Port and circulated by the San Joaquin Council of Governments to Interagency Consultation partners (including Environmental Protection Agency and Caltrans) for concurrence it will be incorporated into the environmental document. The new Interagency Consultation process must be completed before approval of the Final Environmental Document. An Air Quality Conformity Analysis would also be submitted to Federal Highway Administration for a conformity determination prior to Final Environmental Document approval.

Short-Term Impacts

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include CO, NO_X volatile organic compounds (VOCs), directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and toxic air contaminants such as diesel exhaust particulate matter.

Anticipated project-related construction emissions are presented for the entire construction period, which is 15 months. As indicated in Table 2-15, even when using total emissions for the 15 month period, none of the construction emissions estimates exceed San Joaquin Valley Air Pollution Control District recommended annual thresholds, even for a construction period of 15 months when compared to a 12 moth threshold. Therefore, the project would not result in significant annual regional construction emissions.

Table 2-15: Anticipated Project-Related Construction Emissions

	ROG	CO	NO_X	Exhaust PM_{10}	Fugitive Dust PM_{10}	Total PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$	Total $PM_{2.5}$
Total (tons/construction period)	0.6	3.4	3.2	0.1	0.6	0.7	0.1	0.1	0.2
San Joaquin Valley Air Pollution Control District Annual Thresholds	10.0	NA	10.0	NA	BMP	BMP	NA	NA	NA
Exceed Threshold?	**No**	**NA**	**No**	**NA**	**No**	**No**	**No**	**NA**	**NA**

Notes:
BMP = construction best management practices, comply with San Joaquin Valley Air Pollution Control District Regulation VIII
NA = Not Applicable
Some totals may vary slightly due to rounding.
Emission estimates include a 33 percent reduction for NO_X and PM exhaust.
Source: LSA Associates, Inc., June 2012.

Long-Term Impacts

Mobile Source Air Toxics

Under the project Build Alternative, it is expected that there would be similar or lower mobile source air toxic emissions in the study area relative to the No Build Alternative due to improvements in the Level of Service. On a regional basis, the Environmental Protection Agency's vehicle and fuel regulations, coupled with fleet turnover, would over time cause substantial reductions that, in almost all cases, would cause region wide mobile source air toxic levels to be substantially lower than they are today.

Conformity Analysis

Conformity determinations require the analysis of direct and indirect emissions associated with the proposed project and their comparison to the No Build condition. If the total of direct and indirect emissions from the project reaches or exceeds the regionally significant thresholds, the Lead Agency must perform a conformity determination to demonstrate the positive conformity of the federal action.

As stated previously, the proposed project is expected to improve traffic flow and reduce delay and congestion. No significant hot spots for CO, $PM_{2.5}$, or PM_{10} would occur as a result of the proposed project.

The project is in the 2011 Regional Transportation Plan/2013 Federal Transportation Improvement Project, project number SJ07-3034. Regional $PM_{2.5}$ and PM_{10} State Implementation Plan budget compliance was accounted for during the current approved Regional Transportation Plan and Federal Transportation Improvement Program conformity determination. Therefore, the proposed project is in conformance with the State Implementation Plan.

Climate Change

Climate change is analyzed at the end of this chapter. Neither the United States Environmental Protection Agency (U.S. EPA) nor FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process– from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process would facilitate decision-making and improve efficiency at the program level, and would inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in a separate California Environmental Quality Act (CEQA) discussion at the end of this chapter and may be used to inform the National Environmental Policy Act (NEPA) decision.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would reduce or minimize air pollutant emissions associated with construction activities:

- To reduce fugitive dust emissions the construction contractor would adhere to the requirements of San Joaquin Valley Air Pollution Control District Regulation VIII.
- The construction contractor shall comply with Caltrans' Standard Specifications in Section 14-9 (2010).
  a) Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
  b) Section 14-9.03 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.

Consistent with Regulation VIII, Fugitive PM_{10} Prohibitions of the San Joaquin Valley Air Pollution Control District, the following controls are required to be implemented at all construction sites and as specifications for the project:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.

- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Any site with 150 or more vehicle trips per day shall prevent carryout and track out.

Construction of the project requires the implementation of control measures set forth under Regulation VIII. The following additional control measures would further reduce construction emissions and should be implemented with the project:

- Limit traffic speeds on unpaved roads to 15 miles per hour;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent;
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
- Install wind breaks at windward side(s) of construction area;
- Suspend excavation and grading activity when winds exceed 20 miles per hour (regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation); and
- Limit area excavation, grading, and other construction activity at any one time.
- The following construction equipment control measures would reduce construction exhaust emissions:
- Properly and routinely maintain all construction equipment, as recommended by the manufacturer manuals, to control exhaust emissions;
- Shut down equipment when not in use for extended periods of time to reduce emissions associated with idling emissions;
- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use; and
- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways.

Compliance with the above standard measures would lessen the fugitive dust (PM10) and regional emission impact during construction.

2.2.8. Noise

Regulatory Setting

The National Environmental Policy Act of 1969 and the California Environmental Quality Act provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between National Environmental Policy Act and California Environmental Quality Act.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

California Environmental Quality Act requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under California Environmental Quality Act, then California Environmental Quality Act dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the National Environmental Policy Act-23 Code of Federal Regulations 772 noise analysis; please see Chapter 4 of this document for further information on noise analysis under California Environmental Quality Act.

NATIONAL ENVIRONMENTAL POLICY ACT AND 23 CODE OF FEDERAL REGULATIONS 772

For highway transportation projects with Federal Highway Administration (and Caltrans, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 Code of Federal Regulations 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria that are used to determine when a noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the noise abatement criteria for residences (67 dBA) is lower than the noise abatement criteria for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the National Environmental Policy Act-23 Code of Federal Regulations 772 analysis.

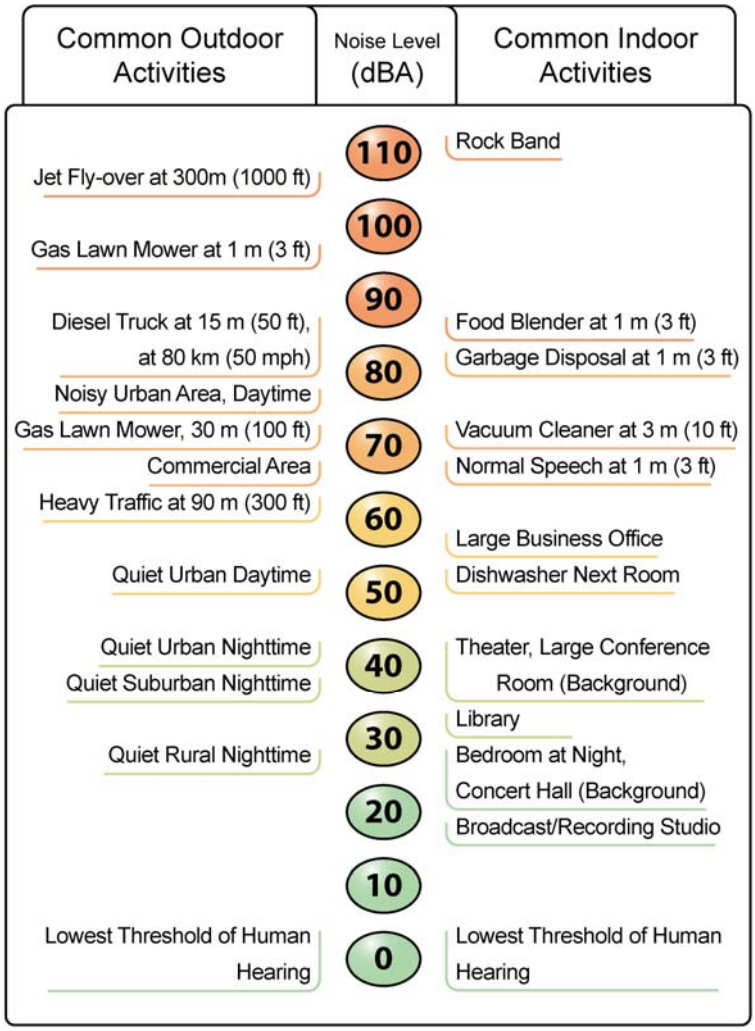
Table 2-16: Federal Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A-Weighted Noise Level, Leq(h)	Description of activity category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No noise abatement criteria—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No noise abatement criteria—reporting only	Undeveloped lands that are not permitted.

[1] Includes undeveloped lands permitted for this activity category.

Figure 2-13 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.

Figure 2-13: Noise Levels of Common Activities



In accordance with the Caltrans' Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the noise abatement criteria. Approaching the noise abatement criteria is defined as coming within 1 dBA of the noise abatement criteria.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 7 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in

determining whether a proposed noise abatement measure is reasonable include: residents acceptance and the cost per benefited residence.

Affected Environment

The following analysis is based on the Noise Study Report approved May 2012.

The existing noise environment in the project area is dominated by traffic noise from vehicular traffic on Navy Drive. Noise monitors were placed in strategic location around the project area to obtain the existing noise levels as seen in Figure 2-14. The result indicate that existing ambient noise levels at modeled sensitive receptors along the project alignment range from 52 A-weighted decibel to 56 A-weighted decibel equivalent continuous noise level.

Land uses were also assessed to identify where noise impacts would potentially occur uses in this area include institutional uses and vacant land. Institutional and vacant land uses are located similar in elevation with Navy Drive. The institutional open space area (former United States Navy golf course) is no longer used for outdoor recreational activities and was evaluated under Activity Category F for documentation purposes only. One (1) vacant land area was evaluated under Activity Category G for documentation purposes only. Other land uses in this area include the City of Stockton Police Department Training Facility and industrial uses. Land uses are located similar in elevation with Navy Drive. There is an existing 5 foot high berm located between Navy Drive and the City of Stockton Police Department Training Facility. It should be noted that the City of Stockton Police Department Training Facility is zoned as industrial in the Stockton General Plan. However, the City of Stockton Police Department Training Facility contains an outdoor active use area (outdoor training facilities) and was evaluated under Activity Category E, which has an exterior Noise Abatement Criteria of 72 equivalent continuous noise levels measured in A-weighted decibels. Noise Abatement Criteria specified in 23 Code of Federal Regulations 772, or a predicted noise level substantially exceeds the existing noise level (a “substantial” noise increase). One (1) industrial land use was evaluated under Activity Category F for documentation purposes only.

The results of the existing traffic noise modeling are shown in Table 2-17. Currently, of the four (4) modeled receptor locations, none approach or exceed the Noise Abatement Criteria.

Table 2-17: Existing Traffic Noise Levels

Receptor No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Criteria	Existing Peak Noise Level (dBA L_{eq})[1]
R-1/ST-1	Navy Drive	Stockton Police Department Training Facility	1	E(72)	56
R-2/ST-2	Fyffe Avenue	Institutional Open Space	1	F	52
R-3	Navy Drive	Vacant Land	1	G	52
R-4	Stork Road	Industrial	1	F	53

Source: Navy Drive Bridge Replacement Project Noise Study Report, May 2012.
[1] dBA Leq = equivalent continuous noise level measured in A-weighted decibels

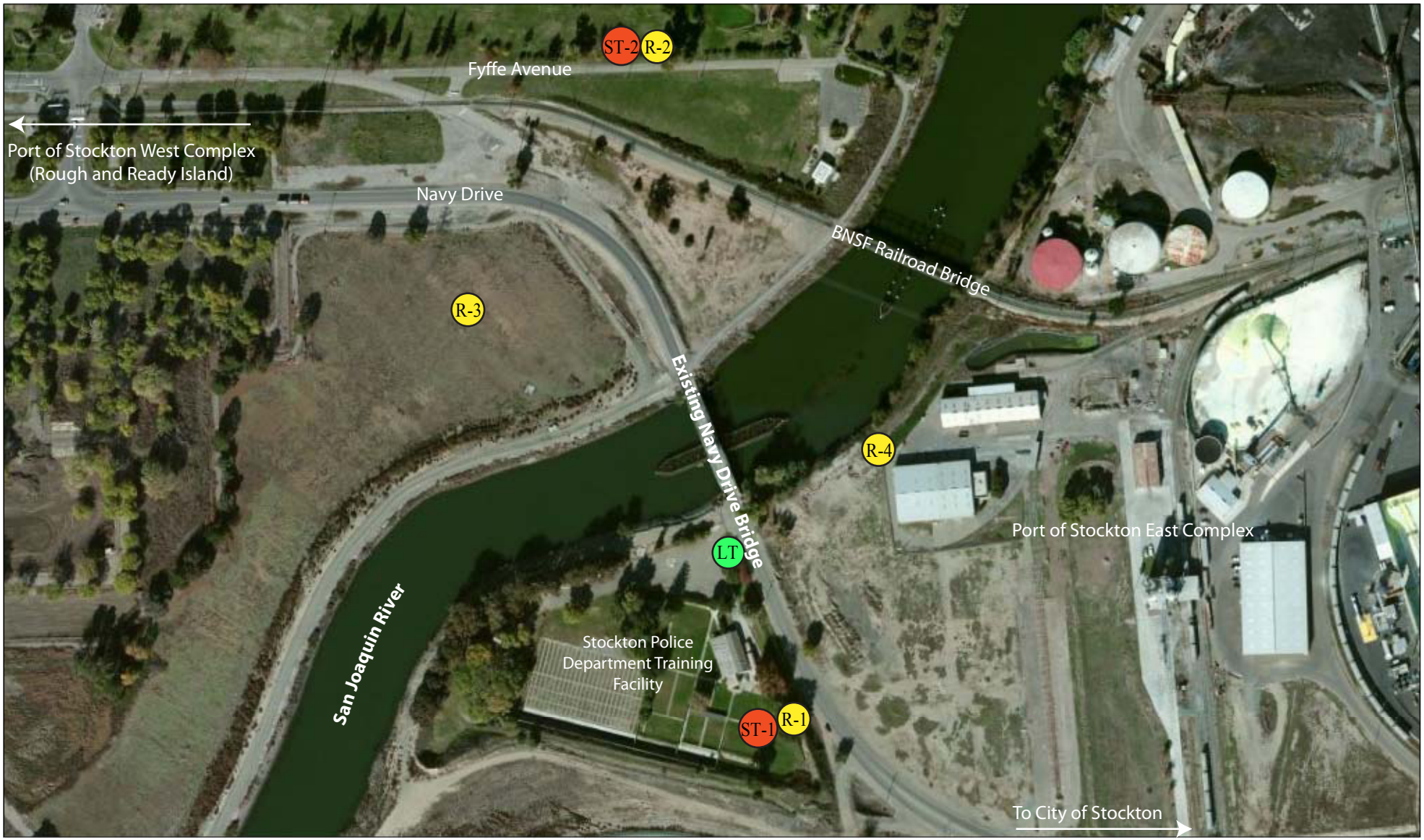


FIGURE 2-14

LEGEND

ST-1 Noise Monitoring Locations

LT Long-Term (24-Hour) Monitoring Location

R-1 Modeled Receptor Locations

N

0 150 300
FEET

SOURCE: ESRI Imagery (2010)

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Navy Drive Bridge Replacement Project

Monitored and Modeled Receptor Locations

Environmental Consequences

OPERATIONAL IMPACTS

The proposed project is considered a Type 1 project because it would use federal funds to replace the existing two-lane swing bridge with a new four-lane removable span bridge on a slightly different alignment. A noise analysis is required for all Type 1 projects.

A noise study was conducted to determine the future traffic noise impacts at receptors in the vicinity of the proposed project. Potential long term noise impacts associated with project operations are solely from traffic noise. Traffic noise was evaluated for the worst-case traffic condition. Using coordinates obtained from the topographic maps, four (4) receptor locations associated with existing institutional open space, industrial, vacant land, and the Stockton Police Department Training Facility were evaluated in the model.

Future traffic noise levels at all four (4) receptor locations were modeled with existing building barriers using either the worst-case traffic operations (prior to speed degradation) or the future peak-hour traffic volumes, whichever was lower. The worst-case traffic condition is assumed to be level of service D/E, which corresponds to an hourly directional volume of 1,500 vehicles on a 2-lane facility (Future No Build) and 2,300 vehicles on a 4-lane facility (Future Build). Design year (2035) p.m. peak-hour traffic volumes were obtained from the Future Conditions Analysis prepared by Fehr & Peers (Fehr & Peers, 2011). Table 2-19 shows the existing, Future No Build, and Future Build traffic noise level results. The modeled future noise levels with the project were compared to the modeled existing peak noise levels from Traffic Noise Model 2.5 to determine whether a substantial noise increase would occur. Traffic Noise Model 2.5 performs a noise analysis with predicts traffic noise levels using traffic characteristics that would yield the worst hourly traffic noise impact for the design year. The modeled future noise levels for Future Build were also compared to the Noise Abatement Criteria under Activity Category E to determine whether a traffic noise impact would occur. There are no noise impact criteria for land uses associated with Activity Categories F and G.

Traffic noise impacts occur when either of the following occurs: (1) if the traffic noise level at a sensitive receptor location is predicted to “approach or exceed” its Noise Abatement Criteria, or (2) if the predicted traffic noise level is 12 A-weighted decibels or more over its corresponding modeled existing peak noise level at the sensitive receptor locations analyzed. When traffic noise impacts occur, noise abatement measures must be considered. As shown in Table 2-18, Receptor R-1 would not approach or exceed the Noise Abatement Criteria under Activity Category E and would not experience a substantial noise increase of 12 A-weighted decibels or more. Also, noise levels for Receptors R-2 through R-4 were only reported because they are land uses associated with Activity Categories F and G and have no impact criteria.

The closest receptor is located approximately 100 feet (City of Stockton Police Department Training Facility) from the proposed project. The Noise Abatement Criteria for the location of the project in relationship to the closest receptor (City of Stockton Police Department Training Facility) does not require noise abatement for this receptor location.

Table 2-18: Predicted Traffic Noise Levels

Receptor No.	Location	Type of Land Use	Existing Peak Noise Level (dBA L_{eq})[1]	Future No Build (dBA L_{eq})[1]	Future Build (dBA L_{eq})[1]	Change from Existing to Future Build Level (dBA L_{eq})[1]	Noise Abatement Criteria	Impact Type
R-1/ST-1	Navy Drive	Stockton Police Department Training Facility	56	66	68	11.4	E(72)	--
R-2/ST-2	Fyffe Avenue	Institutional Open Space	52	62	60	7.5	F	--
R-3	Navy Drive	Vacant Land	52	63	69	16.3	G	--
R-4	Stork Road	Industrial	53	63	63	10.3	F	--

Source: Navy Drive Bridge Replacement Project Noise Study Report, May 2012.
[1] dBA Leq = equivalent continuous sound level measured in A-weighted decibels

Construction Impacts

Two (2) types of short term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site and would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. A high single event noise exposure potential at a maximum noise level of 87 A-weighted decibels from trucks passing at 50 feet would exist. However, the projected construction traffic would be minimal when compared to existing traffic volumes on Navy Drive and other affected streets, and its associated long term noise level change would not be perceptible. Therefore, short term construction related worker commutes and equipment transport noise impacts would be less than substantial.

The second type of short term noise impact is related to noise generated during roadway and bridge construction. Construction is performed in discrete steps, each of which has its own mix of equipment and consequently its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase.
Table 2-19 lists typical construction equipment maximum noise level recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Table 2-19: Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA L_{max} at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA L_{max} at 50 feet)
Pile drivers	81–96	93
Rock drills	83–99	96
Jackhammers	75–85	82
Pneumatic tools	78–88	85
Pumps	74–84	80
Scrapers	83–91	87
Haul trucks	83–94	88
Cranes	79–86	82
Portable generators	71–87	80
Rollers	75–82	80
Dozers	77–90	85
Tractors	77–82	80
Front-end loaders	77–90	86
Hydraulic backhoe	81–90	86
Hydraulic excavators	81–90	86
Graders	79–89	86
Air compressors	76–89	86
Trucks	81–87	86

Source: Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek & Newman, 1987).
dBA = A-weighted decibels
feet = feet
Lmax = maximum instantaneous sound level

The outdoor use area of the City of Stockton Police Department Training Facility is the only sensitive receptor in the project area. Typical noise levels at 50 feet from an active construction area range up to maximum noise level of 90 A-weighted decibels during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is typically earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings. The proposed project would also require the use of pile driving to drive Cast-In-Steel-Shell piles for the bridge foundation. While pile driving activity has the potential to generate higher noise levels at 50 feet from bridge foundation construction, it is anticipated that due to the closer proximity of the City of Stockton Police Department Training Facility to proposed earthmoving activity than to proposed pile driving activity, noise from proposed earthmoving activity would be greater at this receptor. Accordingly, the focus of this analysis is on noise levels generated by earthmoving activity.

Construction of the proposed project is expected to require the use of excavators, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated between maximum noise level of 79 and 89 A-weighted decibels at a distance of 50 feet from the active construction area for the grading phase. As seen in Table 2-19, the maximum noise level generated by each excavator is assumed to be approximately maximum noise level of 86 A-weighted decibels at 50 feet from the

earthmover in operation. Each bulldozer would generate approximately maximum noise level of 85 A-weighted decibels at 50 feet. The maximum noise level generated by water trucks and pickup trucks is maximum noise level of approximately 86 A-weighted decibels at 50 feet from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 A-weighted decibels. Each piece of construction equipment operates as an individual point source.

Receptors located near the proposed project may be subject to short-term noise impact as a result of noise generated by the construction activities. The worst case composite noise level at a distance of 50 feet from an active construction area during construction phase would be 90 A-weighted decibels for the maximum noise level.

California Environmental Quality Act Noise Analysis

A noise impact is considered where noise impacts are predicted in areas of frequent human use that would benefit from lower noise levels. The proposed project is not located in areas of frequent human use and not located near any sensitive receptors. Therefore, under California Environmental Quality Act, no significant noise impact would occur as a result of the project and no mitigation is required.

Avoidance, Minimization, and/or Abatement Measures

In accordance with 23 Code of Federal Regulations 772 (13)(c), noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. As no traffic noise impacts are anticipated, no noise avoidance, minimization and/or abatement measures are required.

Construction

As discussed above, the closest sensitive receptor location is the outdoor use area of the City of Stockton Police Department Training Facility located approximately 100 feet from the project construction areas. Therefore, this receptor location may be subject to short term noise reaching the maximum noise level of 84 A-weighted decibels generated by construction activities along the project alignment. Compliance with the construction hours specified in the City's Municipal Code and Caltrans' Standard Special Provisions would be required to minimize construction noise impacts on sensitive land uses adjacent to the project site. Construction noise is regulated by Caltrans' Standard Specifications in Section 14-8.02, "Noise Control," and also by Caltrans' Standard Special Provisions S5 310, "Noise Control." Noise control shall conform to the provisions in Section 14-8.02 and the Caltrans' Standard Special Provisions in S5-310. The noise level from the Contractor's operations, between the hours of 7:00 p.m. and 7:00 a.m., shall not exceed 86 A-weighted decibels at a distance of 50 feet. Work shall not be allowed on Sundays, unless specifically permitted by contract. The Contractor should use an alternative warning method instead of a sound signal unless required by safety laws. In addition, the Contractor shall equip all internal combustion engines with the manufacturer-recommended muffler and shall not operate any internal combustion engine on the job site without the appropriate muffler.

2.3 Biological Environment

2.3.1. Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, fish passage, and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section. Wetlands and other waters are also discussed below in the following section.

Affected Environment

A Natural Environment Study was originally prepared in May 2007 and approved on August 30, 2007. A Biological Assessment was prepared in September 2007 and approved on September 24, 2007. A new Natural Environment Study was prepared for the project in March 2012 and approved on June 4, 2012.

Per the Natural Environment Study, a reconnaissance survey of the Biological Study Area was conducted on December 17, 2003. Field reconnaissance was conducted by walking the entire Biological Study Area and evaluating the potential for regionally occurring sensitive habitats (including jurisdictional waters of the United States) and special-status species to occur within the Biological Study Area. Additionally, a second reconnaissance survey was conducted on April 20, 2006 using updated species location information in the California Natural Diversity Database and California Native Plant Society electronic inventory. Plant communities and habitats were recorded onto a rectified aerial photograph.

Natural Communities found within the Biological Study Area include annual grassland/fallow agriculture, development/roadways, landscaped/maintained, riverine (perennial channel), riparian scrub, exposed riverbank, exotic riparian, cottonwood riparian, and willow riparian. These are further described below. The area is surrounded by development and the overall disturbed nature of the site explains the lack of native vegetation and habitats. The majority of the study area has been significantly altered by levee and road construction and maintenance, agriculture, facilities and infrastructure construction and maintenance, and equipment storage. Industrial areas are adjacent to the southeast boundary of the Biological Study Area. A constructed wooden support feature in the river protrudes both upstream and downstream from under Navy Drive Bridge and functions as a debris shield. Plant communities and habitats delineated within the Biological Study Area are depicted in Figure 2-15 and acreages are listed in Table 2-20.

Table 2-20: Plant Community and Habitat Areas Within the Biological Study Area

Plant Community/Habitat Type	Area (acres)	Percentage of Biological Study Area
Annual Grassland/Fallow Field	9.58	41.74
Development/Roadways	6.75	29.41
Landscaped/Maintained	3.47	15.12
Riverine (Perennial Channel)	2.49	10.85
Riparian Scrub	0.40	1.74
Exposed River Bank	0.12	0.52
Exotic Riparian	0.08	0.35
Cottonwood Riparian	0.03	0.13
Willow Riparian	0.03	0.13

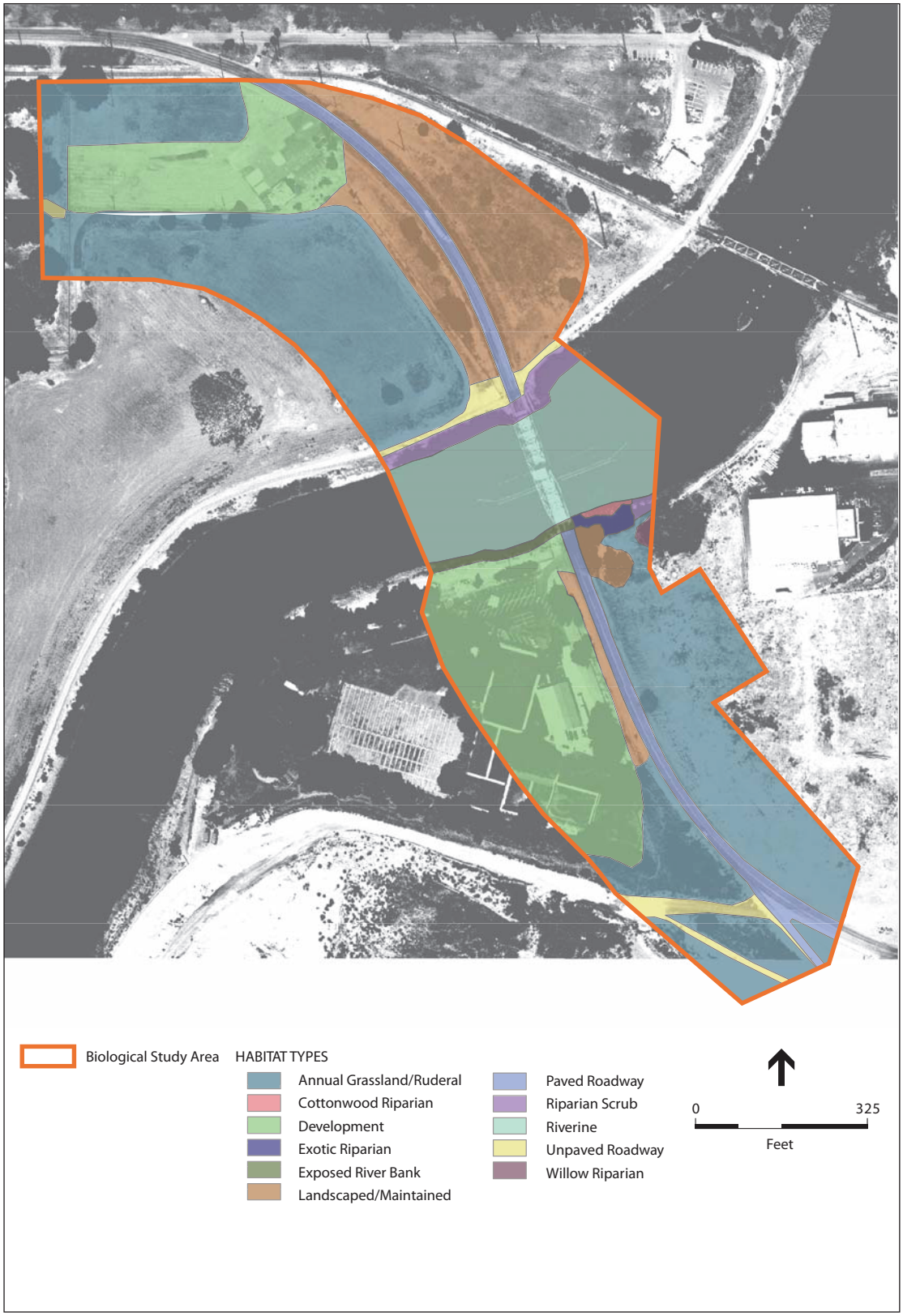

FIGURE 2-15

Navy Drive Bridge Replacement Project

Plant Communities and Habitat Types in the Biological Study Area

SOURCE: SOURCE: Moffatt & Nichol Engineers, 2003; and ESA, 2007

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Annual Grassland/Fallow Agricultural Field

Annual grassland is the most extensive habitat type within the Biological Study Area. These grassland areas have been subject to past disturbances, including grading and agricultural use, and are dominated by non-native annual grasses and forbs. In the Biological Study Area, disturbed annual grassland occurs north of the San Joaquin River on the west side of Navy Drive and south of the river adjacent to both sides of the Navy Drive.

A retired agricultural field lies north of the San Joaquin River, in the northwest portion of the Biological Study Area. Although the field is currently fallow, past crops may have included wheat, sorghum, alfalfa, corn, and barley. It also appears that the grassland south of the river on the eastern side of Navy Drive has been leveled and disked in the past. These graded fields are now dominated by non-native annual grasses and forbs, including some invasive species. Dominant plant species include foxtail barley (*Hordeum marinum*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), filaree (*Erodium* spp.), shortpod mustard (*Hirschfeldia incana*), yellow starthistle (*Centaurea solstitialis*), and hoary cress (*Cardaria draba*).

Annual grassland and fallow field habitat may be used by a variety of common wildlife, such as killdeer (*Charadrius vociferus*), American crow (*Corvus brachyrhynchos*), American pipit (*Anthus rubescens*), savannah sparrow (*Passerculus sandwichensis*), American kestrel (*Falco sparverius*), California ground squirrel (*Spermophilus beecheyi*), and raccoon (*Procyon lotor*). Fallow fields and grasslands also provide foraging habitat for sensitive wildlife species, including Swainson's hawk (*Buteo swainsoni*) and burrowing owls (*Athene cunicularia*). No evidence of burrowing owls was identified within the Biological Study Area; however, several small mammal burrows were observed within the disturbed grassland and fallow agricultural areas, and many of them appeared to be occupied by lizards. Burrows may also exist in grassland or agricultural areas adjacent to the Biological Study Area.

Development/Roadways

Developed land or urban areas occur throughout the Biological Study Area, north, and south of the San Joaquin River. The Stockton Police Department Training Facility, Navy Drive, and other paved and unpaved roadways are located south of the river, and the naval exchange building and associated paved and gravel parking lot occurs in the northern portion of the Biological Study Area. Industrial areas along the Biological Study Area's eastern boundary are characterized by buildings, roads, railroad lines, and other infrastructure, which correspond to urban habitat. These areas either lack vegetation, except for scattered patches of ruderal, non-native species, or are landscaped with ornamental species.

Common birds such as house finch (*Carpodacus mexicanus*) build their nests on buildings, bridges, and other man-made structures. Others such as black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), and barn swallow (*Hirundo rustica*) also use constructed features, especially near water. Both cliff swallows and barn swallows were noted in the Biological Study Area, and active cliff swallows were observed underneath the existing Navy Drive Bridge.

Landscaped/Maintained

The landscaped area between Navy Drive and Fyffe Avenue, north of the river, is characterized by mature ornamental trees and shrubs and a barren understory. Ornamentals in this area include palms, oleander (*Nerium oleander*), and eucalyptus

(*Eucalyptus globulus*). The adjacent road edge is maintained turf grass. Along the western edge of Navy Drive, north of the river, the roadway is landscaped with iceplant (*Carpobrotus edulis*), turf grass, and several palms.

The City of Stockton Police Department Training Facility is landscaped with ornamental trees such as eucalyptus, cork oak (*Quercus suber*), pin oak (*Quercus paulustris*), and juniper (*Juniperus* sp.). Along Navy Drive between the firing range and the roadway are several landscaped trees and shrubs including crepe myrtle (*Lagerstroemia indica*) and crab apple (*Malus* sp.). Along the eastern side of Navy Drive, across from the firing range entrance, there are several large cottonwoods (*Populus fremontii*) lining the roadway, which appear to have been planted. The understories of these landscaped areas are maintained by mowing or herbicide application, are barren, or are dominated by non-native grasses and forbs. Common species found in a few unmaintained areas include ripgut brome, filaree, rattail fescue (*Vulpia myuros*), common fiddleneck (*Amsinkia menziesii*), and cut-leaved geranium (*Geranium cicutarium*).

Common wildlife species that often use landscaped areas include rock dove (*Columba livia*), American crow, northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), and house finch. A few sensitive wildlife species, such as burrowing owl, may also be attracted to landscaped areas.

Riverine (Perennial Drainage)

Riverine habitat within the Biological Study Area forms and connects to larger portions of the Delta in part via the Stockton Deep Water Ship Channel, which provides a migration corridor for anadromous fish such as Chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead (*Oncorhynchus mykiss*). Green sturgeon (*Acipenser medirostris*) potentially may be found migrating through, or resting and rearing in, the Biological Study Area year-round. Within the Biological Study Area, there is no potential spawning habitat for these anadromous species. The San Joaquin River was historically an important spawning area for Chinook salmon, but the construction of Friant Dam in 1946 obstructed that run; however, occasional spawning may occur in years of high runoff. The Stockton Deep Water Ship Channel is dredged and used as a shipping channel allowing large hauling vessels access to the Port from the open sea. Earthen and armored levees line either side of the Stockton Deep Water Ship Channel.

Within the riverine habitat in the Biological Study Area, there is a small area of instream riparian wetlands. These wetlands were identified during a wetland delineation as possible jurisdictional waters of the United States.

Increased summer water temperatures caused by a lack of bank shading (loss of riparian habitat) and reduced flows associated with upstream water diversions have resulted in lower water quality conditions and unfavorable habitat conditions for several species of native fish in the San Joaquin River system. Consequently, the mainstream San Joaquin River is characterized by a high percentage of introduced species tolerant of these environmental conditions, particularly the fathead minnow (*Pimephales promelas*), red shiner (*Cypriella lutrensis*), threadfin shad (*Dorosoma pretenense*), and inland silverside (*Menidia beryllina*) (Dubrovsky 1998). Other exotic predatory species such as largemouth bass (*Micropteras salmoides*), smallmouth bass (*Micropteras dolomieu*), and catfish (*Ameiurus catus*) inhabit the mainstem, feeding upon and displacing juvenile salmonids and other migratory and resident native fish species including California roach (*Lavinia symmetricus*), Sacramento squawfish (*Ptychocheilus grandis*), river lamprey (*Lampetra ayresi*), hardhead

(*Mylopharodon conocephalus*), delta smelt (*Hypomesus transpacificus*), hitch (*Lavinia exilicauda*), Sacramento splittail (*Pogonichthys macrolepidotus*), and Pacific lamprey (*Lampetra tridentata*).

The connectivity between the Delta and its associated waterways (both large and small) facilitates the transmission of other aquatic organisms between these areas. San Francisco Bay and the Delta were recognized in 1995 as the aquatic ecosystem most invaded by non-native aquatic species. Within some regions of San Francisco Bay, 100 percent of the common species are non-native. Methods of introducing non-native aquatic species include intentional and accidental release from captivity or cultivation and the discharge of ballast water. Ships take on ballast water from ports or open water outside the region, which facilitates the transport and introduction of non-native aquatic species when that water is released. These non-native species can become established in new ecosystems, where they may displace native species and cause significant ecological and economic damage. Two common examples of non-native aquatic species include water hyacinth (*Eichhornia crassipes*) and Chinese mitten crab (*Eriocheir sinensis*).

Riparian Scrub

Vegetation along the upper levee banks in the Biological Study Area is maintained and provides patchy cover interspersed by barren, gravelly substrates. Non-native species occurring sporadically in these areas include bur clover (*Medicago* sp.), filaree, yellow starthistle, ripgut brome, and milk thistle (*Silybum marianum*). A linear strip of riparian scrub habitat occurs along most of the steep levee banks and is characterized by dense thickets of Himalayan blackberry (*Rubus discolor*) and California rose (*Rosa californica*). Directly adjacent to the bridge, on the north side of the river, vegetation is maintained and established trees, including box elder (*Acer negundo*) and the non-native edible fig (*Ficus carica*) are shrubby in appearance due to ongoing maintenance practices.

Riparian scrub provides forage and cover for reptiles, such as lizards and common garter snakes (*Thamnophis sirtalis*), as well as some birds, including northern mockingbird, western scrub jay (*Aphelocoma californica*), various blackbirds, and California towhee (*Pipilo crissalis*). Small mammals such as voles and mice may also use this habitat. Very dense thickets of vegetation, such as blackberry or tules (*Scirpus* sp.), may support tri-colored blackbird (*Agelaius tricolor*), a sensitive wildlife species.

Exposed River Bank

The river bank on the west side of Navy Drive and south of the river is mostly barren, with patchy vegetation. Species observed in this area include cork oak, sedge (*Carex* sp.), mugwort (*Artemesia douglasiana*), short-pod mustard, and spreading rush (*Juncus patens*), the majority of which is established along the lower portion of the levee adjacent to the river's edge.

Small mammals such as ground squirrel may burrow into exposed river banks, and create habitat for common garter snakes, lizards, and even sensitive species such as burrowing owl. Western pond turtle (*Actinemn marmorata*) may also use these exposed areas for basking.

Exotic Riparian

A small grove of non-native acacia (*Acacia* sp.) and tree of heaven (*Ailanthus altissima*) occurs immediately west of Navy Drive along the south bank of the river. These trees are established from the top of the levee to the river's edge. The understory is mostly barren with the exception of some vegetation that has established along the edge of the river. Dominant understory species along the edge of the river include ripgut brome, Himalayan blackberry, mugwort, and spreading rush.

Exotic riparian may support similar species as found in riparian areas dominated by native vegetation. Common wildlife species in this habitat include a variety of birds, amphibians, and reptiles. Hawks and owls may also nest in exotic trees.

Cottonwood Riparian

One mature cottonwood tree is established along the bank of the river, adjacent to the grove of exotic trees. This habitat is degraded by the established exotics and lacks a true understory. Along the edge of the river are a few native riparian species including spreading rush and Kellog's sedge (*Carex lenticularis* var. *lipocarpa*). Other species established on the edge of the river include barnyard grass (*Echinocloa crus-gali*) and annual non-native grassland species.

Cottonwood riparian may support a diversity of aquatic and terrestrial invertebrates, amphibians and reptiles, and birds such as warblers, flycatchers, and woodpeckers such as the northern flicker (*Colaptes auratus*). Small mammals using this habitat may include shrews, voles, bats, and mice; and coyote (*Canis latrans*), grey fox (*Urocyon cinereoargenteus*), skunks (*Mephitis mephitis*), and raccoons (*Procyon lotor*) may also forage in this habitat. Raptors may nest in the larger riparian trees and shrubs, and may include great-horned owl (*Bubo virginianus*), white-tailed kite (*Elanus leucurus*), red-tailed hawks (*Buteo jamaicensus*), and Swainson's hawk.

Willow Riparian

A remnant patch of willow riparian forest habitat dominated by large, mature Goodding's willow (*Salix gooddingii*) occurs on the south side of the south shore levee, east of Navy Drive. The understory of the willow riparian woodland is characterized by a dense cover of debris and brambles with scattered milkthistle and stinging nettle (*Urtica dioica* ssp. *holosericea*). This wetland area is likely supported by water seeping under the levee, and is potentially jurisdictional.

Willow riparian habitats may support a similar suite of species as found in riparian scrub communities. Birds and reptiles often use shrubs for forage and cover. Species commonly found in this habitat include flycatchers, various blackbirds, and California towhee.

Environmental Consequences

Impacts to the habitats addressed above were calculated and are presented in Table 2-21.

Table 2-21: Temporary and Permanent Habitat Impacts

Community Type	Permanent Effects		Temporary Effects[b]	
	Area (acres)[a]	% Habitat[c]	Area (acres)	% Habitat
Annual Grassland/Fallow Field	1.48	15.4	3.36	35.05
Development/Roadways	1.73	25.60	0.10	1.47
Landscaped/Maintained	0.20	5.71	0.20	5.71
Riverine (Perennial Channel)	0.003	0.10	--	--
Riparian Scrub	--	--	0.05	12.50
Exposed River Bank	--	--	0.01	8.00
Exotic Riparian	--	--	--	--
Cottonwood Riparian	--	--	--	--
Willow Riparian	--	--	--	--

[a] This estimate is rounded off to the nearest 0.01 acres to account for errors in map transfers and copy distortion
[b] Temporary impacts include acreage outside of the construction footprint; permanent impacts include acreage within the construction footprint (i.e., piers and abutments)
[c] The number in this column represents the percentage of the habitat type within the Biological Study Area that would be affected

As shown on Table 2-21, six habitat types would be subject to temporary or permanent impacts. The annual grassland, exposed river bank, development/roadways, and landscaped/maintained communities in the project area are all considered disturbed habitats and provide low habitat value for wildlife.

However, the riverine habitat present in the Biological Study Area is within critical habitat for Delta smelt and Central Valley Distinct Population Segment (DPS) of steelhead, as well as essential fish habitat (EFH) for Pacific salmon. The riverine habitat in the project site is considered a habitat of special concern.

Existing conditions for all the habitat types, with the exception of riverine, that would be impacted by the proposed project are highly disturbed and fragmented. The riverine habitat is the only non-fragmented natural community within the BSA that supports quality habitat and movement corridors for local fish and wildlife. However, the project would result in an overall net gain to riverine habitat. Project impacts would not affect the function and values of any of these communities.

Avoidance, Minimization, and/or Mitigation Measures

1. The removal or disturbance of riparian vegetation would be minimized to the greatest extent practicable. Any stream banks disturbed during construction would be returned to their preconstruction conditions and lost riparian vegetation would be

replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

2. The implementation of best management practices (BMPs) would substantially decrease construction-related erosion and the potential for discharge of sediments into the San Joaquin River. Typical measures include erecting silt fencing and placing hay bales and straw wattles around construction areas to reduce offsite sedimentation. Implementation of the project would also require approval of a site-specific Storm Water Pollution Prevention Plan (SWPPP) that provides additional effective measures to protect water quality, including a hazardous spill prevention plan and erosion prevention techniques.
3. Implementation of the project would include the placement of 10 piers within the river bed resulting in the displacement of approximately 0.003 acre of riverine habitat. However, placement of the new bridge supports would replace the concrete support structure that displaces approximately 0.016 acre of the original river bed. Thus, the project would result in an overall net gain in riverine habitat of 0.013 acre compared to the existing conditions.
4. During in-stream construction activities, no fill material, including concrete, would be allowed to enter the water column and channel disturbance shall be kept to a minimum.
5. All in-stream work would be conducted between August 1 and October 31.

2.3.2. Wetlands And Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act [Clean Water Act(33 USC 1344)] is the primary law regulating wetlands and surface waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States (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 Clean Water Act, 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 Clean Water Act.

Section 404 of the Clean Water Act 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 United States Army Corps of Engineers with oversight by the United States Environmental Protection Agency.

United States Army Corps of Engineers issues two types of 404 permits: Standard and General permits. Nationwide permits, a type of General permit, are issued to authorize a variety of minor project activities with no more than minimal effects. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the United States Army Corps of Engineers Standard permits. For Standard permits, the United States Army Corps of Engineers decision to approve is based on compliance with United States Environmental Protection Agency's Section 404(b)(1) Guidelines (United States Environmental Protection Agency 40 Code of Federal Regulations Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the United States Environmental Protection Agency in conjunction with United States Army Corps of Engineers, 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 United States Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects on waters of the United States, and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration (Federal Highway Administration) 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.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Wildlife, the State Water Resources Control Board and the Regional Water Quality Control Boards. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or Tahoe Regional Planning Agency) may also

be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that would substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify California Department of Fish and Wildlife before beginning construction. If California Department of Fish and Wildlife determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement would be required. California Department of Fish and Wildlife 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 United States Army Corps of Engineers may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the California Department of Fish and Wildlife.

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

Affected Environment

A Natural Environment Study was originally prepared in May 2007 and approved on August 30, 2007. A Biological Assessment was prepared in September 2007 and approved on September 24, 2007. A new Natural Environment Study was prepared for the project in March 2012 and approved on June 4, 2012.

The Biological Study Area is in Stockton, in the northern portion of the San Joaquin Valley. The Biological Study Area includes an area around Navy Drive Bridge, which spans a portion of the San Joaquin River and links Rough and Ready Island (the Port's West Complex) with its East Complex. This portion of the San Joaquin River lies between its confluence with the Burns Cut Off and the Stockton Deep Water Ship Channel. The Stockton Deep Water Ship Channel is a maintained portion of the San Joaquin River that begins in San Francisco Bay and terminates at the East Complex.

The San Joaquin River is one of the two major rivers that flow directly into the northern portion of San Francisco Bay. The headwaters of the San Joaquin River flow from the slopes of Mt. Goddard in Kings Canyon National Park in a northwesterly direction and then southwest out of the Sierra Nevada. Behind Friant Dam, a facility operated by the United States Bureau of Reclamation, the river forms Millerton Lake, which is a popular recreation spot. Below Friant Dam, the river flows northeasterly through the Central Valley before joining the Sacramento River to form the Delta. The San Joaquin River is a major component of the Delta, providing a perennial flow of water and a variety of natural aquatic environments including riverine and estuarine habitats.

Historically, the San Joaquin River has been a diverse and productive natural environment supporting a complex network of creeks, sloughs, rivers, lakes, ponds, and wetlands. Populations of fish and wildlife occurred in the perpetually flooded tule marshes, seasonal wetlands, riparian forests, oak woodlands, and upland prairies associated with the Delta. Human-induced alterations began in the late 1800s, when water diversions associated with increasing agricultural use depleted stream flows and native vegetation. Today, the lands surrounding the San Joaquin River constitute the largest contiguous block of irrigated land in California and water diversions that support both agricultural activities and increasing urban development diminish water supply for both habitats and wildlife associated with the river.

For example, water storage and diversion projects have reduced or eliminated stream flows and affected local water tables, resulting in a loss of woody riparian habitat along portions of the river. This loss or fragmentation of riparian habitat contributes to diminishing water quality and shaded riverine habitat, which can result in impacts to local fish and wildlife populations in addition to affecting overall species diversity. Additionally, flood control operations continue to alter wetland and stream networks through riprap bank stabilization and levee development and maintenance.

Approximately 3.0 acres of the San Joaquin River and 0.03 acres of instream riparian habitat were identified during a preliminary wetland delineation of the Biological Study Area conducted in April 2004. Instream riparian habitat includes all riparian habitat types identified within the river levees (e.g., cottonwood riparian, exotic riparian and riparian scrub)Caltrans coordinated with the ACOE in March 2013 regarding the process for verifying the delineation. Marc Fugler of the ACOE recommended that Caltans submit a Preliminary JD for the project. In addition, approximately 0.18 acres of willow riparian habitat was identified south of the south shore levee, for a total of 3.21 acres of jurisdictional waters of the United States within an approximately 25-acres study area (Figure 2-16).

Jurisdictional features within the Biological Study Area, consisting of both wetland and non-wetland waters of the United States, includes the San Joaquin River, its instream riparian habitat, and the adjacent willow riparian habitat. Wetlands identified in the study area consist of the cottonwood and willow riparian habitat only. The remaining riparian areas, riverine and exposed riverine bank habitats were delineated as non-wetland waters.

Environmental Consequences

Only one build alternative is being evaluated in this document. However, as discussed in Section 1.3, several alternatives were considered but withdrawn during the preliminary planning stages.

As described above in Section 2.3.1 Natural Communities, the reach of the San Joaquin River in the Biological Study Area is provides open water habitat (riverine) and adjacent riparian habitat (e.g., willow riparian). These communities provide habitat for wildlife occurring in the vicinity. However, the Biological Study Area is surrounded by development, resulting in generally disturbed conditions and overall lower habitat value for wildlife.

Implementation of the project will include the placement of 10 piers within the river bed, resulting in the displacement of approximately 126 square feet, or 0.003 acres, of river bed. However, the new bridge supports would replace the concrete support structure that currently displaces approximately 707 square feet, or 0.016 acres, of the original river bed. No compensatory mitigation for impacts to waters of the United States is being proposed at this time, as the project will result in an overall net gain in riverine habitat of 581 square feet, or 0.013 acre, and improve natural hydrology compared to the existing conditions.

This section of the San Joaquin River is characterized by steep, exposed banks and non-native dominated riparian scrub. Approximately 0.06 acres of exposed river bank and non-native riparian scrub would by temporarily disturbed. Impacts to jurisdictional waters are shown in Figure 2-17 and in Table 2-22.

LEGEND

FIGURE 2-16

Biological Study Area

Wetland Habitat Types

Cottonwood Riparian

Willow Riparian

Non-Wetland Waters Habitat Types

Exotic Riparian

Exposed River Bank

Riparian Scrub

Riverine

0 150 300
FEET

SOURCE: San Joaquin County NAIP (2005)

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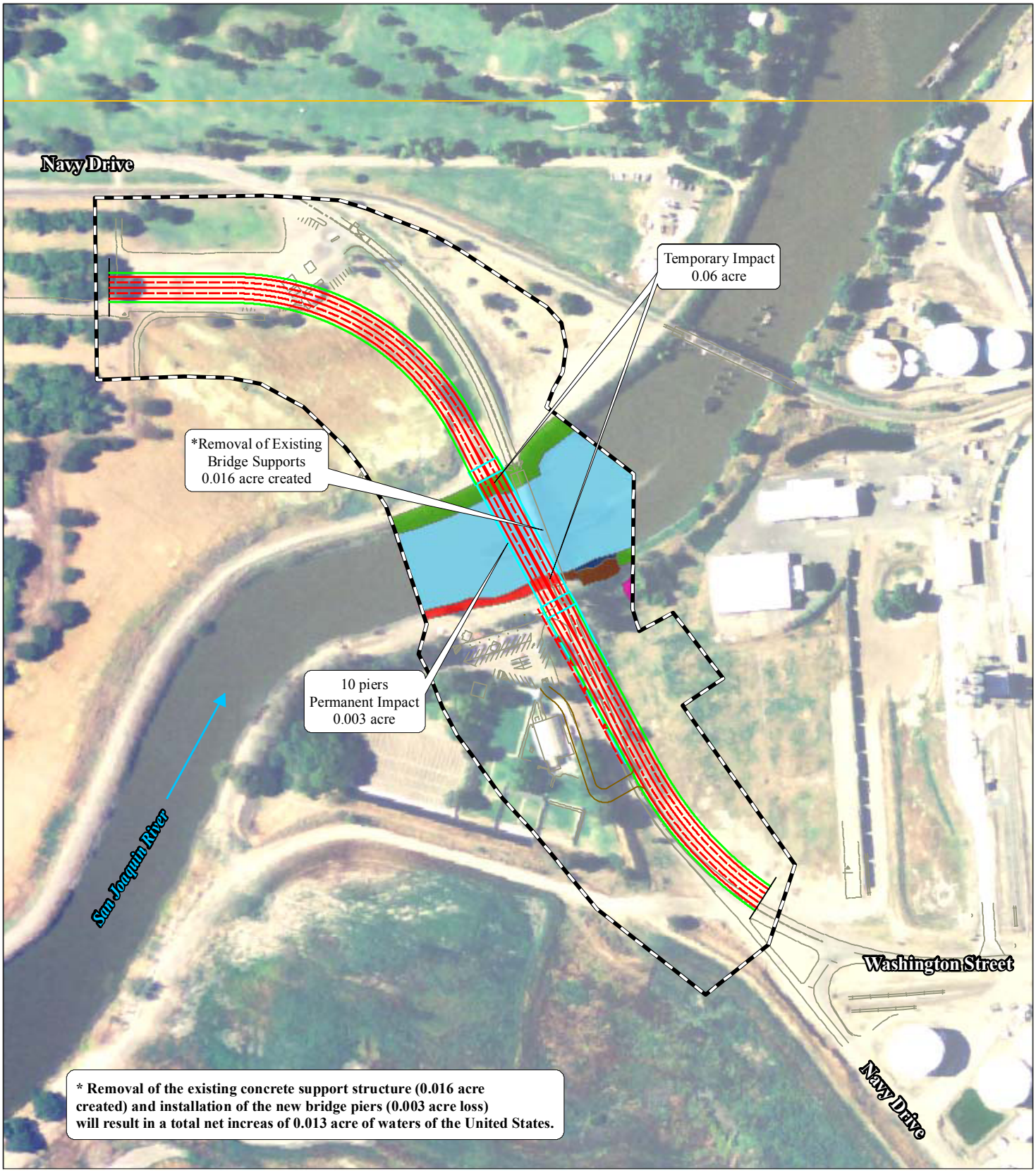
Navy Drive Bridge Replacement Project

Potential Jurisdictional Waters



LEGEND

Biological Study Area

Wetland Habitat Types

Cottonwood Riparian

Willow Riparian

Non-Wetland Waters Habitat Types

Exotic Riparian

Exposed River Bank

Riparian Scrub

Riverine

N

0 150 300

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SOURCE: San Joaquin County NAIP (2005)

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FIGURE 2-17

Navy Drive Bridge Replacement Project

Impacts to Potential Jurisdictional Waters

Table 2-22: Impacts to Potential Jurisdictional Waters (Acres)

Potential Jurisdictional Waters	Type of Effect	
Waters of the United States	Permanent	Temporary
Wetlands	0.000	0.000
Non-Wetland Waters	0.003	0.060
Total	**0.003**	**0.060**

Potential impacts to the river would be considered minimal with the incorporation of the avoidance and minimization efforts described below that restore affected portions of the riverbank to their preconstruction conditions. Additionally, the project would result in a post-project net increase of 0.013 acres of jurisdictional waters as a result of removal of the existing bridge concrete supports. No compensatory mitigation is proposed.

The project is likely to require an Army Corps of Engineers Nationwide Permit, a California Department of Fish and Wildlife Lake and Streambed Alteration Agreement, and a Water Quality Certification from the Regional Water Quality Control Board.

Avoidance, Minimization, and/or Mitigation Measures

A revegetation plan for river bank/riparian areas temporarily disturbed during construction would be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Approximately 0.06 acres of the riverbank and non-native riparian scrub temporarily impacted by construction of the new bridge shall be reseeded and replanted with native riparian vegetation.

The willow riparian habitat adjacent to the south levee would be fenced off 10 feet beyond the trees drip line to prevent disturbance during construction.

Measures consistent with the current Caltrans' Construction Site Best Management Practices Manual (including the Storm Water Pollution Prevention Plan and Water Pollution Control Plan Manuals) shall be implemented to minimize effects to the San Joaquin River resulting from erosion, siltation, etc. during construction. These measures include erecting silt fencing and the placement of hay bales around the construction site to reduce offsite sedimentation. Implementation of the project would also require the issuance of an approved Storm Water Pollution Prevention Plan.

All instream work would be conducted between August 1 and October 31.

2.3.3. Plant Species

Regulatory Setting

The United States Fish and Wildlife Service and California Department of Fish and Wildlife 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 and/or the California Endangered Species Act. 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 California Department of Fish and Wildlife species of special concern, United States Fish and Wildlife Service candidate species, and California Native Plant Society rare and endangered plants.

The regulatory requirements for Federal Endangered Species Act can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 Code of Federal Regulations Part 402. The regulatory requirements for California Endangered Species Act 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, Public Resources Code, Sections 2100-21177.

Affected Environment

A Natural Environment Study was originally prepared in May 2007 and approved on August 30, 2007. A Biological Assessment was prepared in September 2007 and approved on September 24, 2007. A new Natural Environment Study was prepared for the project in March 2012 and approved on June 4, 2012.

Habitat in the Biological Study Area provides potential habitat for three special-status plant species that occur in riparian scrub habitats. While this habitat is considered marginal because the riparian scrub habitat is often dominated by the non-native species Himalayan blackberry, is on steep slopes, and is likely maintained periodically, it may support the following species: slough thistle (*Cirsium crassicaule*), Mason’s lilaeopsis (*Lilaeopsis masonii*), and Delta mudwort (*Limosella subulata*).

Slough Thistle

Slough thistle (*Cirsium crassicaule*) is an annual or biennial herb in the sunflower family (*Asteraceae*) that is considered rare, threatened, or endangered in California and elsewhere, and seriously endangered in California by California Native Plant Society (List 1B). The species is known to occur in the San Joaquin Valley region of California. Plants range in height from 3 – 10 feet and have one stem arising from a leafy basal rosette that is often branched in the upper segment and covered in soft, cobwebby hairs. The leaves are also covered in cobwebby hairs and the leaf margins are lobed and spiny. The species blooms from May through August and produces numerous small pale rose, purple or white flowers. Slough thistle occurs in chenopod scrub, marshes and swamps along sloughs and

rivers, and riparian scrub habitats at elevations ranging from 10 – 300 feet. The species is known to occur in Kern, Kings, and San Joaquin counties. One occurrence that is presumed extant is mapped along the San Joaquin River in the Vernalis 7.5-minute quadrangle, which is approximately 20 miles upstream (south) of the Biological Study Area.

Slough thistle was not observed during the April 2006 survey, but there is potential that this species could occur along the edges of the San Joaquin River in the riparian scrub habitat. The species would not have been identifiable (i.e., flowering) during the April 2006 survey.

Mason's Lilaeopsis

Mason's lilaeopsis (*Lilaeopsis masonii*) is a rhizomatous perennial herb in the carrot family (*Apiaceae*). Mason's lilaeopsis was listed by the state as Rare in 1979, and it is considered rare, threatened, or endangered in California and elsewhere and seriously endangered in California by California Native Plant Society (List 1B). This small plant generally grows prostrate and produces solitary to tufted leaves. Its cylindrical, thread-like leaves are short and segmented. Flowering occurs from April to November and plants produce simple, open umbels with tiny white or maroon flowers. Plants become dormant in winter, persisting only as rhizomes below the soil surface. Many populations of this species are ephemeral, and they generally colonize newly deposited or exposed sediments. Mason's lilaeopsis occurs on tidally influenced mudflats and mud-banks of sloughs and rivers, freshwater and brackish marsh, and riparian scrub. The species typically grows in saturated clay substrates that are inundated by tidal action or waves on a regular basis. Mason's lilaeopsis occurs in the Sacramento-San Joaquin River Delta and sloughs, Suisun Marsh and Lower Napa River. The closest known occurrence is recorded approximately 3.1 miles north of the Biological Study Area along Fourteen Mile Slough in the Lodi South 7.5-minute quadrangle.

Mason's lilaeopsis was not observed during the April 2006 survey, but there is potential that this species could occur along the edges of the San Joaquin River in the riparian scrub habitat. The species would not have been observable during the April 2006 survey due to the high level of water within the San Joaquin River.

Delta Mudwort

Delta mudwort is a stoloniferous perennial herb in the figwort family (*Scrophulariaceae*) that is considered rare, threatened, or endangered in California by California Native Plant Society (List 2.1). The species has no federal or state listing status. Delta mudwort grows in muddy or sandy intertidal flats in freshwater and brackish marsh and riparian scrub communities below elevations of 10 feet. This species is tolerant of complete submergence under high tides. It is often associated with the special-status plant Mason's lilaeopsis. Within California, Delta mudwort is restricted to the Deltaic region of the Central Valley in Contra Costa, Sacramento, San Joaquin, and Solano counties. Outside of California, it is known to occur in Oregon, southern British Columbia, and along the East Coast (Hickman, 1993). According to Hickman (1993), Delta mudwort is not native to California. California Native Plant Society (2006) considers it native but in need of further study.

Delta Mudwort was not observed during the April 2006 survey, but there is potential that this species could occur along the edges of the San Joaquin River in the riparian scrub habitat. The species would not have been identifiable during the April 2006 survey.

Environmental Consequences

Slough thistle has 19 occurrences listed in the California Natural Diversity Database , and only one of these is listed in San Joaquin County and presumed extant. The species is threatened by recreation, agriculture, grazing, competition with invasive, non-native species, hydrological alterations, channel maintenance, and development. The construction of the new bridge would result in the temporary disturbance of 0.05 acres of riparian scrub habitat that could potentially support slough thistle. Implementation of avoidance measures listed below would reduce this potential impact to less than significant.

Mason's lilaeopsis has 195 presumed extant occurrences listed in the California Natural Diversity Database, and 51 of these are listed in San Joaquin County. The species is threatened by erosion, channel and bank stabilization, levee maintenance and construction, flood control projects, development, channel widening, dredging, recreation, agriculture, and competition with non-native water hyacinth. The construction of the new bridge would result in the temporary disturbance of 0.05 acres of riparian scrub habitat that could potentially support Mason's lilaeopsis. Implementation of avoidance measures listed below would reduce this potential impact to less than significant.

There are 42 extant occurrences of Delta mudwort in the state, with 13 presumed extant occurrences in San Joaquin County. The closest occurrence to the Biological Study Area is reported from Victoria Canal in the Holt 7.5-minute quadrangle, which is approximately 15 miles southeast of the project site. The construction of the new bridge would result in the temporary disturbance of 0.05 acres of riparian scrub habitat that could potentially support Delta mudwort. Implementation of avoidance measures listed below would reduce this potential impact to less than significant.

Avoidance, Minimization, and/or Mitigation Measures

Before construction-related activities begin, a qualified botanist shall survey the Biological Study Area (San Joaquin River levee) for special-status plant species including slough thistle, Mason's lilaeopsis, and Delta mugwort during their blooming period(s) and using established California Department of Fish and Wildlife protocols. If any special-status plant species are detected within the construction zone, California Department of Fish and Wildlife shall be contacted and further avoidance or mitigation techniques would be developed.

2.3.4. Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The United States Fish and Wildlife Service, the National Marine Fisheries Service and the California Department of Fish and Wildlife 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 state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the section below. All other special-status animal species are discussed here, including California Department of Fish and Wildlife fully protected species and species of special concern, and United States Fish and Wildlife Service or National Marine Fisheries Service 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 Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

Affected Environment

A Natural Environment Study was originally prepared in May 2007 and approved on August 30, 2007. A Biological Assessment was prepared in September 2007 and approved on September 24, 2007. A new Natural Environment Study was prepared for the project in March 2012 and approved on June 4, 2012.

Pacific Pond Turtle

The Pacific pond turtle is a State Species of Concern; it has no federal status. The Pacific pond turtle ranges from western Washington State south to northwestern Baja California. Two subspecies occur in California: the north Pacific pond turtle (*A.m. marmorata*); and the south Pacific pond turtle (*A.m. pallida*). The Biological Study Area is within the range of intergradation between the two subspecies. The pond turtle is a highly aquatic species, found in ponds, marshes, rivers, streams, lakes, creeks, and irrigation ditches throughout central and coastal California up to 6,000 feet in elevation. Suitable habitat typically includes aquatic areas with rocky or muddy bottoms, aquatic vegetation and basking habitat (e.g., logs, rocks, rip-rap). Eggs are laid at upland sites such as sandy banks or grassy open fields, from April through August.

Though no Pacific pond turtles were observed during the April 2006 survey, the exposed riverbank provides suitable basking habitat and this species could be present in the Biological Study Area.

Burrowing Owl

Within California's Central Valley, the burrowing owl is a year-round resident of open spaces such as grasslands and agricultural fields. Nests are generally found in the abandoned burrows of small mammals such as ground squirrels; however, they may also dig their own burrows in soft soil. Burrowing owls occasionally use culverts and other human-made structures. Breeding activity peaks from April to May, but can begin as early as March and continue until August. Burrowing owls forage on insects and small mammals and would also consume reptiles, birds, and carrion. The primary threat to burrowing owl populations is the loss of habitat (e.g., conversion of grasslands and agricultural fields to other uses). The poisoning of ground squirrels also contributes to loss of suitable habitat. A site should be assumed active if it has been occupied by at least one burrowing owl within the last three years. The nearest and most recent reported active burrowing owl burrow is an occurrence dated from 2006, approximately 2.0 miles southeast of the Biological Study Area, as reported from the California Natural Diversity Database. There are several other nests in the vicinity that have been active in previous years.

Open grassland areas in the Biological Study Area provide potential habitat for burrowing owls, especially in areas with a low frequency of disturbance. Although no evidence of burrowing owls was identified during the field reconnaissance conducted in April 2006, several small mammal burrows were observed within the disturbed grassland and fallow agricultural areas. Burrowing owls may establish residency within these or other small mammal burrows before the start of construction-related activities.

Nesting Raptors

Swainson's hawk is a long-distance migrant species. Central Valley populations winter primarily in Mexico and arrive at their Central Valley breeding grounds in mid-March to early April. Nests are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. Egg laying generally occurs in April and young are present in May and June. Most young have fledged the nest by the end of July and are relatively independent of parental protection; however, fledged young remain with their parents until they depart in the fall for migration. Migration to the wintering grounds generally occurs around September; however, some individuals or small groups may winter in California. The California Natural Diversity Database holds 7 records for nesting Swainson's hawks within 2.5 miles of the Biological Study Area. Four of the records are from 2000, and one is from 2002. The closest record is dated 1998, and is from approximately 0.5 miles west of the Biological Study Area.

The white-tailed kite is State listed as fully protected; it has no formal federal status. White-tailed kites nest and forage in a variety of settings. They hunt over grassland, savanna, cultivated fields, marshes, and riparian woodland. They are also commonly observed foraging along freeway medians and edges. Kites prey primarily on voles and other small rodents, but also eat birds, snakes, lizards, frogs, and large insects.

White-tailed kites build stick nests in the tops of trees, preferentially near an open foraging area. They typically forage within 0.5 miles of the nest during breeding season, which extends from February through October. Pairs are monogamous and may produce a second clutch when prey is abundant.

Though not migratory, white-tailed kites may roam widely when prey is scarce. Communal roosting is common during the nonbreeding season. The California Natural Diversity

Database holds one record for white-tailed kite within the two-quad area searched. The record is dated 2005, and is from approximately 4.5 miles east of the Biological Study Area.

No active raptor nests were observed within the Biological Study Area during the April 2006 site visit. Trees present in the Biological Study Area may represent suitable nesting habitat for raptors, and additional trees that may provide potential raptor nesting sites are located within 500 feet of the Biological Study Area. Furthermore, several raptors, including Swainson's hawks, were observed in the vicinity of the project site and may have the opportunity to establish nesting sites in trees within the Biological Study Area during the period between the preparation of this report and the start of construction-related activities.

Nesting Songbirds

Cliff swallows were actively nesting on the existing Navy Drive Bridge during the April 2006 survey. The removal of the bridge would adversely affect the nesting swallows. These nests are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code.

Environmental Consequences

Pacific Pond Turtle

The construction of the new bridge would result in the temporary disturbance of 0.01 acres of exposed riverbank that could provide habitat for the Pacific pond turtle. Implementation of avoidance and minimization measures listed below would reduce potential impacts to Pacific pond turtles to less than significant.

Burrowing Owl

Implementation of the project would permanently impact approximately 1.48 acres and temporarily impact 3.36 acres of annual grassland, which includes fallow agricultural fields. Although no evidence of burrowing owls was identified within these habitats, several small mammal burrows were observed within the disturbed grassland and fallow agricultural areas. Protocol-level surveys for burrowing owl have not yet been conducted and burrowing owls may have the opportunity to establish residency within these or other small mammal burrows prior to the start of construction-related activities. Consequently, the project may affect burrowing owls. Implementation of avoidance, minimization, and mitigation measures listed below would reduce potential impacts to burrowing owls to less than significant.

Nesting Raptors

The project would permanently impact approximately 1.48 acres and temporarily impact 3.36 acres of annual grassland, which includes fallow agricultural fields. This habitat serves as foraging grounds for many raptor species, but is of low quality and is considered regionally abundant. Biologists conducting reconnaissance surveys of the Biological Study Area in April 2006 did not observe any active nest sites. However, several raptors were observed in the vicinity, and it is possible for raptors to establish nesting sites on trees within the Biological Study Area during the period between the survey and the start of construction-related activities. Impacts to raptor species resulting from a loss of nesting habitat would be reduced with implementation of the avoidance measures identified below. However, the project may still adversely affect nesting raptors and/or foraging habitat.

Nesting Songbirds

Construction of the project would likely require the destruction of cliff swallow nests while they are being constructed. Destruction of nests would follow measures prescribed in the California Department of Fish and Wildlife Streambed Alteration Agreement as described below.

Avoidance, Minimization, and/or Mitigation Measures

Pacific Pond Turtle

Pacific pond turtles, if present in the Biological Study Area, could be adversely affected by construction activities. The following measure would reduce any potential impacts to Pacific pond turtles:

1. Preconstruction surveys for Pacific pond turtles shall be performed by a qualified biologist within 30 days of the start of construction to identify any turtles or active nests within the Biological Study Area. If nests are found, exclusion zones shall be established (as determined by a qualified biologist in consultation with the California Department of Fish and Wildlife) and construction-related activities shall be prohibited within the exclusion zones. Monitoring of any active nests once per week during construction shall be required as long as the nests are active. Any turtles found in the work area shall be relocated to an appropriate area by a qualified biologist prior to the start of construction.
2. Environmentally sensitive area fencing shall be installed along the edge of the work limits in the California annual grassland community. Environmentally sensitive area fencing shall consist of orange construction fencing (or equivalent) and shall be maintained in good condition until construction is complete.

Burrowing Owl

Prior to construction, a qualified wildlife biologist shall survey suitable habitat within 500 feet of the project impact zone (the project footprint and staging areas) (California Department of Fish and Wildlife 1995). Within the Biological Study Area the San Joaquin River levee and grassland areas may be habitat for burrowing owls.

The following measures would be implemented to avoid impacts:

1. Pre-construction surveys of suitable habitat will be conducted within 30 days prior to construction to ensure no additional owls have begun nesting within the construction impact area or buffer zone. If ground disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be re-surveyed. Pre-construction surveys for burrowing owl may be combined with raptor surveys (see Swainson's hawk below).
2. If possible, the project shall avoid impacts to burrowing owl by ensuring that no disturbance occurs within 160 feet of occupied burrows during the nonbreeding season (September 1 – January 31) or within 250 feet during the breeding season (February 1 – August 31), and that at least 6.5 acres of foraging habitat is permanently preserved around the occupied burrow for each pair or single unpaired resident bird. The configuration of the habitat preservation plan must be approved by California Department of Fish and Wildlife.

3. If the no disturbance buffers described in measure 2 cannot be implemented prior to construction, burrowing owls would be passively relocated during the non-breeding season per California Department of Fish and Wildlife guidelines. In addition, if sufficient foraging habitat cannot be preserved on site, as described in measure 2, foraging habitat will be permanently preserved off-site and adjacent to occupied habitat at rate of 6.5 acres for every pair or single unpaired owls that are removed, unless another rate is established through consultation with California Department of Fish and Wildlife. If destruction of occupied burrows cannot be avoided, then existing burrows shall be enhanced or new burrows created on the protected lands site at a rate per California Department of Fish and Wildlife guidelines. California Department of Fish and Wildlife shall be contacted prior to passive removal and requested to approve the relocation plan.

Nesting Raptors

A review of the bridge design drawings indicates that most mature trees found within the Biological Study Area would be avoided during the project's construction phase. Table 2-23, below, lists mature trees that would likely be removed during project construction.

Table 2-23: Mature Trees Potentially Removed During Project Construction

Species	Location	Total Number	Diameter @ Breast Height (inches)	Local Tree Ordinance (Stockton General Plan)	Replacement Ratios
Fremont cottonwood	Planted along east side of Navy Drive, south of the river	3	35, 20, 50	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Acacia sp. (Acacia)	Ornamental established on east side of Navy Drive, in riparian zone, south of the river.	7	8, 7, 5, 5, 5, 5, 18	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species. Additionally, this tree is a non-native, invasive species.
Tree of heaven	Ornamental established on east side of Navy Drive, in riparian zone south of the river.	1	10	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species. Additionally, this tree is a non-native, invasive species.
Cork oak	Planted along west side of Navy Drive in the Stockton Police Department Training Facility and farther south along edge of Biological Study Area.	3	20, 10, 14	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.

Species	Location	Total Number	Diameter @ Breast Height (inches)	Local Tree Ordinance (Stockton General Plan)	Replacement Ratios
Malus sp. (Crab apple)	Planted along west side of Navy Drive adjacent to the Stockton Police Department Training Facility	1	27	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Pin oak	Planted along west side of Navy Drive in the Stockton Police Department Training Facility.	3	25, 20, 23	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Eucalyptus	Planted along west side of Navy Drive in the Stockton Police Department Training Facility.	1	35	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Unknown ornamental (no leaves or fruiting bodies present during April 2006 survey)	Ornamental established on east side of Navy Drive, near southern edge of Biological Study Area.	1 with 3 trunks	12, 1, 16	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.

The following measures would be implemented to avoid impacts to Swainson's hawk, white-tailed kite, and other raptors:

1. If construction activities would occur between March 15 and September 1, preconstruction surveys of suitable habitat will be conducted according to the California Department of Fish and Wildlife's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California within 30 days prior to construction to ensure no Swainson's hawks or other raptors have begun nesting within the construction impact area. The area surveyed shall include the construction impact area and a ¼-mile buffer zone for Swainson's hawk (and a 500-foot buffer zone for other raptors), where accessible. This buffer distance is appropriate for Swainson's hawk nests located in areas with urban development or where disturbance is regular. If construction activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be re-surveyed. Preconstruction surveys for raptors may be combined with burrowing owl surveys (see burrowing owl above).
2. If an active Swainson's hawk nest is found within ¼-mile of the construction impact area (or within 500 feet for other raptors) during the breeding season, then no construction activities shall be permitted within these buffers. These buffers may be reduced only by the City of Stockton, who may consult with California Department of Fish and Wildlife to make sure a reduced buffer will not harm the nest. If a buffer is reduced, then a qualified wildlife biologist (see definition in burrowing owl section) will be retained to monitor the nest and the behavior of the nesting birds. If the biologist determines that the project has potential to disturb nesting activities, then construction within the buffer shall be suspended until the young have fledged, as determined by a qualified biologist. California Department of Fish and Wildlife shall be notified if construction causes a nest to fail.

3. Trees that must be removed would be removed during the non-breeding season, between October 1 and February 1. (See Table 2-23)

If, after the implementation of the avoidance and minimization measures discussed above, impacts to Swainson's hawk are unavoidable, then California Department of Fish and Wildlife shall be contacted and mitigation techniques would likely be required and may include the suspension of construction activities within a certain distance of the active nest until after the young have fledged from the nest. Because less than 5 acres of Swainson's hawk foraging habitat would be permanently impacted and the habitat is surrounded by existing urban development, the loss of Swainson's hawk foraging habitat is minimal and no compensation is recommended by California Department of Fish and Wildlife unless the foraging habitat is within ¼-mile of an active nest site. If an active Swainson's hawk nest site occurs with ¼-mile of the foraging habitat, then this loss of foraging habitat must be compensated according to California Department of Fish and Wildlife guidelines. The mitigation ratio is 1:1 or 0.5:1, depending on how the land is preserved.

Nesting Songbirds

An assessment of existing cliff swallow nests would be conducted and the results described in the California Department of Fish and Wildlife Streambed Alteration Agreement application. All avoidance measures required as part of this permit will be implemented. Such measures may include removal of the existing nests during the non-breeding season prior to construction, and/or preventing the swallows from nesting in that location (using exclusion methods such as netting).

2.3.5. Threatened And Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 USC Section 1531, et seq. See also 50 Code of Federal Regulations Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the United States Fish and Wildlife Service and the National Marine Fisheries Service to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an Incidental Take statement. Section 3 of Federal Endangered Species Act defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act, California Fish and Game Code, Section 2050, et seq. California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife is the agency responsible for implementing California Endangered Species Act. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." California Endangered Species Act allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by California Department of Fish and Wildlife. For species listed under both Federal Endangered Species Act and California Endangered Species Act requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, California Department of Fish and Wildlife may also authorize impacts to California Endangered Species Act species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

A Natural Environment Study was originally prepared in May 2007 and approved on August 30, 2007. A Biological Assessment was prepared in September 2007 and approved on September 24, 2007. A new Natural Environment Study was prepared for the project in March 2012 and approved on June 4, 2012.

Consultation

The following is a summary of the federal consultation process for the project. The steps in the process include the following:

- informal consultation with the United States Fish and Wildlife Service to establish a list of target species; list updated on March 1, 2013
- preparation of a Biological Assessment to determine the project's potential to adversely affect listed species;
- coordination between state and federal biological resource agencies to assess impacts and proposed mitigation; and
- development of appropriate mitigation for all significant impacts on federally listed species.

Caltrans submitted requests for formal Section 7 consultation to the United States Fish and Wildlife Service and the National Marine Fisheries Service on October 1, 2007. The requests were accompanied by a Biological Assessment, prepared September 2007. United States Fish and Wildlife Service issued its Biological Opinion on May 12, 2008, which determined that the project is not likely to jeopardize the continued existence of the delta smelt, and would not adversely affect the riparian brush rabbit. National Marine Fisheries issued its Biological Opinion on August 12, 2008, which determined that the project would not jeopardize the continued existence of Central Valley steelhead, Pacific salmon, or North American green sturgeon.

During preparation of the Biological Assessment, Endangered Species Act Section 9 "take" prohibitions for the southern Distinct Population Segment of North American green sturgeon (green sturgeon) were not in effect because a Section 4(d) rule had not been issued by National Marine Fisheries Service. Similarly, critical habitat was not designated nor proposed for the southern Distinct Population Segment of green sturgeon. As green sturgeon were known to occur within the project area, potential effects to this species were addressed in the Biological Assessment but not potential effects to green sturgeon critical habitat, because critical habitat was not designated until November 9, 2009. Consultation with National Marine Fisheries would be initiated in pursuit of a "not likely to adversely modify" finding for effects to green sturgeon critical habitat. The consultation process must be finalized prior to approval of the final environmental document.

Delta Smelt

Delta smelt (*Hypomesus transpacificus*) is a federal and State threatened species. Delta smelt generally inhabit the lower reaches of the Sacramento River downstream of Isleton, the San Joaquin River downstream of Mossdale, and the Delta including Suisun Bay (Hanson 2002). Delta smelt are a relatively small species (2 to 3 inches long) that typically have an annual lifecycle, although some individuals may live up to two years. Prior to spawning, adult delta smelt tend to migrate upstream into the lower reaches of the Sacramento and San Joaquin River systems, where spawning occurs from approximately February through June, with the greatest spawning activity occurring in April and May. Females deposit adhesive eggs on substrates such as gravel, rock, and submerged vegetation. Eggs hatch in approximately two weeks, when planktonic larvae are passively dispersed downstream by river flow. Larval and juvenile delta smelt rear within the estuarine portions of the Delta for a period of approximately six to nine months before beginning their

upstream spawning movement into freshwater areas of the lower rivers. Delta smelt larvae, which passively drift with water currents, are vulnerable to entrainment at water diversion locations. Freshwater flows set an upper limit to delta stock recruitment within the year. The reversal of water flows (upstream flow) in the lower San Joaquin River during the egg and larval stages probably is the major cause of density-independent mortality. Higher volumes of freshwater outflows are associated with a larger adult smelt population due to higher plant and animal biomasses at all aquatic trophic levels.

Within the Biological Study Area, river banks are steep and not likely to offer the shallow edge waters preferred by smelt during spawning (high spring flows). Delta smelt prefer the sloughs and shallow edge waters located within the upper Delta. Suitable spawning habitat for this species does not occur within the Biological Study Area

Central Valley Steelhead

The Central Valley steelhead (*Oncorhynchus mykiss irideus*) is a federally threatened species; it has no State status. The Sacramento and San Joaquin Rivers offer the only steelhead migration routes to the smaller drainages of the Sierra Nevada and southern Cascade Mountains. Information on migration and spawning tendencies of steelhead is difficult to determine due to the low abundance of spawners and the high flows and turbid waters during the winter spawning periods. National Marine Fisheries Service reports limited data on the recent abundance of this fish species (Busby 1996). However, using information from reservoir counts, hatchery returns, and past spawning surveys, its total present run size is probably less than 10,000 fish (Busby 1996). The most widespread run type of steelhead occurs in the winter (ocean–maturing). Winter steelhead can be found in essentially all coastal rivers in California, while summer steelhead are far less common. In California, both winter and summer steelhead generally begin spawning in December. Central Valley steelhead are reported to begin upstream migration into the American, Feather, Yuba, and Mokelumne Rivers from August through October, depending upon water temperature, weather conditions, and river flows. Peak migration occurs in November and December (California Department of Fish and Wildlife 1991; CALFED 2001). Steelhead eggs are smaller than Chinook salmon eggs, and juveniles typically rear longer in upstream tributaries than Chinook salmon. At temperatures of 55°F, incubation takes approximately 25 days (Barnhart 1991). With spawning peaks occurring in January and February, emergence can occur from January through May. It appears that Central Valley steelhead spend less time in the ocean, as escapement data is dominated by three-year-old spawners. Evidence on Central Valley steelhead using the San Joaquin River for upstream migration and its use of freshwater tributaries is based on a small remnant run in the Stanislaus River, observations in the Tuolumne River in 1993, and recent large rainbow trout (possibly steelhead) observations at Merced River Hatchery (McEwan 1996; Busby1996).

Critical habitat was designated for Central Valley steelhead on September 2, 2005. The reach of the San Joaquin River within the BSA is within designated critical habitat for Central Valley steelhead. Primary constituent elements for Central Valley steelhead in the subject reach of the San Joaquin River are limited to the water column for movement, protection, and foraging. The river bottom is not suitable for spawning or incubation, and the adjacent riparian zone is too sparse to provide sufficient shade for thermoregulation.

Central Valley Fall/Late Fall Run Chinook Salmon

The Central Valley fall/late fall-run chinook salmon (*Oncorhynchus tshawytscha*) is a federal candidate for listing and a California Species of Concern. Chinook salmon runs (fall-run, late

fall-run, winter-run, and spring-run) are named for the season when upstream spawning migration occurs and are defined by the combined timing of adult migration, the amount of time juveniles reside in a stream, and the time of year the smolts migrate out to sea. Timing of adult upstream migration varies within individual runs, depending upon the region. Fall-run Chinook salmon typically spawn from late October through December, leaving the Pacific Ocean from late July through August. Fall-run salmon generally start migrating from the ocean and begin spawning in the tributaries of the San Joaquin River during the early fall, when water temperature begin to cool. Fall-run spawning occurs within the first 20 river miles below the first major dams and reservoirs on the Merced, Tuolumne, and Stanislaus Rivers during October, November, and December.

Green Sturgeon

Green sturgeon (*Acipenser medirostris*) is a federally threatened species and a California Species of Concern, Green sturgeon are the most broadly distributed, wide ranging, and most marine-oriented species of the sturgeon family. Green sturgeon are believed to spend the majority of their lives in nearshore oceanic waters, bays, and estuaries. Early life-history stages (less than 4 years old) reside in fresh water, with adults returning to freshwater to spawn when they are more than 15 years of age and more than 4 feet in length. The range of the federally-listed threatened southern Distinct Population Segment of the species includes coastal areas south of the Eel River and the Central Valley. The Sacramento River is currently the only known spawning site for the southern Distinct Population Segment. During the late summer and early fall, subadults and non-spawning adult green sturgeon can frequently be found aggregating in estuaries along the Pacific coast, including San Francisco and San Pablo Bays. Green sturgeon presence in the Delta could occur during all times of the year, as juveniles may reside there during their first few years of growth. Adults are likely to be present in the winter and early spring as they move through the Delta towards their spawning grounds in the upper Sacramento River watershed. Peak spawning is believed to occur between April and June in deep, turbulent, mainstem channels over large cobble and rocky substrates with crevices and interstices. Following spawning, the fish would pass through the Delta again on their way back to the ocean, but the duration and timing of this event is not well understood in the Sacramento River system.

Critical habitat for green sturgeon was designated November 9, 2009, and includes (relative to this project) the reach of the San Joaquin River within the BSA. Similar to Central Valley steelhead, primary constituent elements for green sturgeon in the subject reach of the San Joaquin River are limited to the water column for movement, protection, and foraging. The river bottom is not suitable for spawning or incubation, and the adjacent riparian zone is too sparse to provide sufficient shade for thermoregulation.

Environmental Consequences

Delta Smelt

Pier installation associated with construction of the new bridge will permanently displace 0.003 acres of riverine habitat not suitable for delta smelt spawning. However, 0.016 acres of riverine habitat currently displaced by the footing of the existing bridge will be regained when it is demolished. Approximately 0.06 acres of the river bank (both riparian scrub and exposed bank) will be temporarily disturbed, but these areas will be revegetated.

Although the San Joaquin River within the Biological Study Area does not provide suitable spawning habitat for delta smelt, the movement of equipment and other construction-related

activities within the river channel may disrupt the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles

In a May 2008 Biological Opinion issued pursuant to Section 7 of the federal Endangered Species Act, the United States Fish and Wildlife Service concluded that although the proposed project will adversely affect the Delta smelt and will result in direct effects and possibly indirect effects to delta smelt, it is not likely to jeopardize the continued existence of this species.

Implementation of avoidance and minimization measures listed below will further reduce potential impacts to delta smelt.

Under the California Endangered Species Act, it is unlawful to “take” any species listed as rare, threatened, or endangered. “Take” means to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill,” and take provisions apply to fish, wildlife, and plant species. Take may result whenever activities occur in areas that support a listed species. Consultation with the California Department of Fish and Wildlife is required if a project will result in “take” of a listed species. Since the project will potentially result in “take” of Delta smelt, an Incidental Take Permit pursuant to Section 2081 of the State Fish and Game Code or Consistency Determination pursuant to 2080.1 of the State Fish and Game Code may be required. This cannot occur until CEQA is complete.

Central Valley Steelhead

Pier installation associated with construction of the new bridge will permanently displace 0.003 acres of riverine habitat that is designated critical habitat but is not suitable for Central Valley steelhead spawning. However, 0.016 acres of riverine habitat currently displaced by the footing of the existing bridge will be regained when it is demolished, resulting in an increase of critical habitat for Central Valley steelhead. Approximately 0.06 acres of the river bank (both riparian scrub and exposed bank) will be temporarily disturbed, but these areas will be revegetated.

Although the San Joaquin River within the Biological Study Area does not provide suitable spawning habitat for Central Valley steelhead, the movement of equipment and other construction-related activities within the river channel may disrupt the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles.

In an August 2008 Biological Opinion, National Marine Fisheries Service concluded that the proposed project will adversely affect the Central Valley steelhead, but it will not jeopardize the continued existence of this species and it will not adversely modify critical habitat for Central Valley steelhead.

Implementation of avoidance and minimization measures listed below will further reduce potential impacts to federally listed fish species.

Central Valley Fall/Late Fall Run Chinook Salmon

Pier installation associated with the construction of the new bridge will permanently displace 0.003 acres of the riverine that is designated Essential Fish Habitat for Chinook salmon but is not suitable for Central Valley fall/late fall run Chinook salmon spawning. However, 0.016 acres of the riverine community t that is currently being displaced by the footing of the existing bridge will be regained when it is demolished, resulting in an increase of Essential

Fish Habitat for Chinook salmon. Approximately 0.06 acres of the river bank (both riparian scrub and exposed bank) will be temporarily disturbed, but these areas will be revegetated.

Although the San Joaquin River within the Biological Study Area does not provide suitable spawning habitat for Chinook salmon, the movement of equipment and other construction-related activities within the river channel may disrupt the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles.

In an August 2008 Biological Opinion, National Marine Fisheries Service concluded that the subject project will adversely affect the Essential Fish Habitat for Chinook salmon, but it will not jeopardize the continued existence of this listed species.

Implementation of avoidance and minimization measures listed below will further reduce potential impacts to Chinook salmon.

Green Sturgeon

Pier installation associated with construction of the new bridge will permanently displace 0.003 acres of the riverine habitat that is designated critical habitat but is not suitable for green sturgeon spawning. However, 0.016 acres of the riverine that is currently being displaced by the footing of the existing bridge will be regained when it is demolished, resulting in an increase of critical habitat for green sturgeon. Approximately 0.06 acres of the river bank (both riparian scrub and exposed bank) will be temporarily disturbed, but these areas will be revegetated.

Although the San Joaquin River within the Biological Study Area does not provide suitable spawning habitat for green sturgeon, the movement of equipment and other construction-related activities within the river channel may disrupt the upstream migration of spawning adults and downstream migration, resting, and foraging of juveniles.

In an August 2008 Biological Opinion, National Marine Fisheries Service concluded that the subject project will adversely affect the southern Distinct Population Segment of North American green sturgeon, but it will not jeopardize the continued existence of this species. Additionally, as noted above, critical habitat for green sturgeon was designated November 9, 2009. The National Marine Fisheries Service drafted a technical assistance e-mail dated March 12, 2013, stating that additional analysis would be required to make a determination on how critical habitat would be affected by the proposed project. If it is determined that the project would have no effect to green sturgeon critical habitat, then no further consultation would be necessary. If it is determined that the proposed project may affect, critical habitat for green sturgeon, then reinitiation of Section 7 consultation would be required. The consultation process must be finalized prior to approval of the final environmental document.

Implementation of avoidance and minimization measures listed below will further reduce potential impacts to green sturgeon.

Avoidance, Minimization, and/or Mitigation Measures

Delta Smelt

Delta smelt could be affected by construction-related activities which result in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During in stream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port’s own aeration equipment (which is maintained for use during dredging operations).

The United States Fish and Wildlife Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the delta smelt, as specified in the Biological Opinion dated May 12, 2008 (File # 81420-2008-F-0078-1)(Appendix H):

1. Caltrans shall implement the project as described in the Biological Assessment and the Biological Opinion and reduce effects to delta smelt.

    a. The Port of Stockton shall minimize the potential for harm, harassment, or killing of delta smelt resulting from project related activities by implementation of the Conservation and Minimization Measures as described in the Biological Assessment and appearing in the Project Description of the Biological Opinion.

    b. The Port of Stockton shall make the terms and conditions in the Biological Opinion a required term in all contracts for the project that are issued to all contractors.

    c. The Port of Stockton shall deposit money into the Delta Smelt Conservation Fund. The amount deposited shall be equivalent to the purchase price of 0.72 acres of conservation credits (for a 3:1 ratio). A copy of the Conservation Fund receipt must be provided to the ACOE and the United States Fish and Wildlife Service prior to the initial date of construction.

2. Caltrans shall ensure the Port of Stockton's compliance with this Biological Opinion:

    a. If requested, during or upon completion of construction activities, the on-site biologist, and/or the applicant's representative shall accompany the United States Fish and Wildlife Service or California Department of Fish and Wildlife personnel on an on-site inspection of the site to review project effects to the delta smelt and its habitat.

    b. Caltrans shall ensure the applicant complies with the reporting requirements of the biological opinion.

3. Depending on the results of planned geotechnical investigations, it may be possible to partially or entirely vibrate piles into the channel substrate. The contractor will used vibrational pile driving to the greatest extent feasible.

4. Pile driving activities relying on impact hammers rather than vibratory techniques will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels in any single strike and peak sound pressure less or equal to 208 decibels in any single strike, measured at a distance of 32.8 feet from the source.

5. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between hammer and pile will be used.

6. Bubble curtains will be used at all permanent piles driven by impact hammers. Bubble curtains disrupt the propagation of the pressure waves to reduce potential barotrauma injury and related mortality of Delta smelt.

Central Valley Steelhead

Central Valley steelhead could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During in stream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port’s own aeration equipment (which is maintained for use during dredging operations).

The National Marine Fisheries Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the green sturgeon, as specified in the Biological Opinion dated August 12, 2008 (File #2007/06640)(Appendix H):

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on Central Valley steelhead, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project. Acoustic monitoring must be designed to detect if, and at what range, pile driving activities generate noise levels found to be lethal to juvenile steelhead (208 dB).

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

    b. If steelhead are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.

3. Caltrans shall ensure the applicant complies with the reporting requirements of the Biological Opinion.

4. Based on the results of geotechnical investigations, whenever possible and to the greatest extent feasible, the contractor will partially or entirely vibrate piles into the channel substrate rather than driving them by means of “hammering”. Vibratory pile driving does not generate peak sound pressure levels that cause direct impacts to fish species.

5. Pile driving activities relying on impact hammers rather than vibratory techniques will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels in any single strike and peak sound pressure less or equal to 208 decibels in any single strike, measured at a distance of 32.8 feet from the source.

6. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between hammer and pile will be used.

7. Bubble curtains will be used at all permanent piles driven by impact hammers. Bubble curtains disrupt the propagation of the pressure waves to reduce potential barotrauma injury and related mortality of steelhead.

Central Valley Fall/Late Fall Run Chinook Salmon

Chinook salmon could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port’s own aeration equipment (which is maintained for use during dredging operations).

The National Marine Fisheries Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the green sturgeon, as specified in the Biological Opinion dated August 12, 2008 (File #2007/06640)(Appendix H):

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on Chinook salmon, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project. Acoustic monitoring must be designed to detect if, and at what range, pile driving activities generate noise levels found to be lethal to juvenile Chinook salmon (208 dB).

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

    b. If Chinook salmon are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.

3. Caltrans shall ensure the applicant complies with the reporting requirements of the Biological Opinion.

4. Based on the results of geotechnical investigations, whenever possible and to the greatest extent feasible, the contractor will partially or entirely vibrate piles into the channel substrate rather than driving them by means of “hammering”. Vibratory pile driving does not generate peak sound pressure levels that cause direct impacts to fish species.

5. Pile driving activities relying on impact hammers rather than vibratory techniques will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels in any single strike and peak sound pressure less or equal to 208 decibels in any single strike, measured at a distance of 32.8 feet from the source.

6. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between hammer and pile will be used.

7. Bubble curtains will be used at all permanent piles driven by impact hammers. Bubble curtains disrupt the propagation of the pressure waves to reduce potential barotrauma injury and related mortality of Chinook salmon.

Green Sturgeon

Green sturgeon could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

Green sturgeon utilize the waters of the Delta for juvenile rearing, adult holding, and migratory movements to and from the upper Sacramento River spawning grounds, and their presence in the Delta is considered to be year-round. No construction work windows have been established for green sturgeon, but limiting construction to the window discussed above would avoid adverse impacts to adult green sturgeon. Instream construction activities within the Biological Study Area are considered to take place when juvenile green sturgeon are present, and the species may therefore be exposed to these activities. Measures described below are expected and intended to minimize potential adverse effects on juvenile green sturgeon. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance shall be kept to a minimum. Furthermore, no portion of the existing bridge shall be left in the channel.

All in-stream work would be conducted between August 1 and October 31. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of

oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment (which is maintained for use during dredging operations).

The National Marine Fisheries Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the green sturgeon, as specified in the Biological Opinion dated August 12, 2008 (File # 2007/06640)(Appendix H):

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on green sturgeon, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project.

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

    b. If green sturgeon are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.

3. Caltrans shall ensure the applicant complies with the reporting requirements of the Biological Opinion.

4. Based on the results of geotechnical investigations, whenever possible and to the greatest extent feasible, the contractor will partially or entirely vibrate piles into the channel substrate rather than driving them by means of "hammering". Vibratory pile driving does not generate peak sound pressure levels that cause direct impacts to fish species.

5. Pile driving activities relying on impact hammers rather than vibratory techniques will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels in any single strike and peak sound pressure less or equal to 208 decibels in any single strike, measured at a distance of 32.8 feet from the source.

6. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between hammer and pile will be used.

7. Bubble curtains will be used at all permanent piles driven by impact hammers. Bubble curtains disrupt the propagation of the pressure waves to reduce potential barotrauma injury and related mortality of green sturgeon.

2.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the State’s invasive species list currently maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

Affected Environment

A Natural Environment Study was prepared for the project in March 2012. A Biological Assessment was prepared in September 2007.

A retired agricultural field lies north of the San Joaquin River, in the northwest portion of the Biological Study Area. Although the field is currently fallow, past crops may have included wheat, sorghum, alfalfa, corn, and barley. It also appears that the grassland south of the river on the eastern side of Navy Drive has been leveled and disked in the past. These graded fields are now dominated by non-native annual grasses and forbs, including some invasive species. Dominant plant species include foxtail barley, ripgut brome, soft chess, wild oats, filaree, shortpod mustard, yellow starthistle, and hoary cress; all of which are considered weedy non-native invasive species.

Environmental Consequences

Vegetation in the Biological Study Area is highly disturbed and it is highly unlikely that project-related activities would further degrade the vegetative composition in the Biological Study Area. However, construction-related activities would potentially promote the distribution of invasive plant species to off-site areas through ground disturbance and movement of earth moving equipment. To avoid the introduction of invasive species into the Biological Study Area during project construction, contract specifications shall include, at a minimum, the measures listed below.

Avoidance, Minimization, and/or Mitigation Measures

1. All earthmoving equipment to be used during project construction shall be thoroughly cleaned before arriving on the project site.

2. All seeding equipment (i.e., hydroseed trucks) shall be thoroughly rinsed at least three times prior to beginning seeding work.

3. To avoid spreading any non-native invasive species already existing on-site, to off-site areas, all equipment shall be thoroughly cleaned before leaving the site.

4. In compliance with the Executive Order on Invasive Species, Executive Order 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project would not use species listed as invasive. In

areas of particular sensitivity, extra precautions would be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.4 Cumulative Impacts

Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

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

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

Affected Environment

Regional Context

This document is based on accepted, regional land use forecasts for 2035, and assumes transportation improvements programmed within the same time frame. The effects evaluated with the project include the cumulative effects of development within the region. Permanent cumulative effects of the proposed project would be beneficial, as the bridge replacement would improve traffic operations in the project area. An analysis of cumulative effects related to specific development and transportation improvement projects within the region has been included in the discussion of transportation and noise impacts included in previous sections. No further discussion of cumulative impacts for these sections is necessary.

Local Context

The proposed project was analyzed to determine whether less-than-significant environmental effects that would be experienced locally, rather than regionally, could become significant when considered in combination with other reasonably foreseeable future projects in the project area. Projects are considered “reasonably foreseeable” if they: (a) have applications pending with a government agency; (b) are included in an agency’s budget or capital improvement program; or (c) are foreseeable future phases of existing projects. Table 2-24 identifies the proposed development in the project area that may contribute to cumulative impacts for the proposed project. This table includes reasonably

foreseeable future projects that would potentially affect the same resources as the proposed project.

Table 2-24: Projects Evaluated for Cumulative Impacts Analysis

Project	Location	Project Description	Percent Built
Port of Stockton West Complex Development Plan : **Marine Terminal Development**	Port of Stockton	Marine development associated with the Port's West Complex.	Phase I – **0%** Phase II - **0%** Phase III - **0%**
Port of Stockton West Complex Development Plan : **Commercial and Industrial Park Development**	Port of Stockton	Commercial development associated with the Port's West Complex.	Phase A – **20%** Phase B – **0%** Phase C – **0%**
Port of Stockton West Complex Development Plan : **Infrastructure Improvements**	Port of Stockton	Industrial development associated with the Port's West Complex.	Short Term Access- **ongoing roadway maintenance** Mid Term Access- **50%** Long Term Access- **30%** Internal Road System- **30%** Rail System, Phase II – **50%** Rail System, Phase III – **0%** Wharf – **50%** Utilities – **50%**
State Route 4 Crosstown Freeway Ramp Extension Project	City of Stockton	Extension of existing ramps with a mile of elevated structure. Minor widening and realignment of Navy Drive between Fresno Ave and Burlington Northern Santa Fe underpass.	0%
Daggett Road Grade Separation Project	Port of Stockton	Construction of a new bridge over the Burlington Northern Santa Fe (BNSF) railroad tracks on Daggett Road (now known as the Port of Stockton Expressway).	100%
McCloy Avenue Extension Project	Port of Stockton	Extension of McCloy Avenue on the Port's West Complex.	100%

Environmental Consequences

The proposed Navy Drive Bridge Replacement project will result in no impacts to project-specific resources. Section 2.1 Human Environment described potential environmental impacts in Land Use, Growth, Utilities, Community, Traffic and Transportation/Pedestrian and Bicycle Facilities and Visual Aesthetics. Section 2.2 Physical Environmental addressed potential impacts to Cultural Resources, Hydrology and Floodplain, Water Quality and Storm Water Runoff, Geology/Soils/Seismic/Topography, Paleontology, Hazardous Waste/Materials, Air Quality and Noise. Section 2.3 Biological Environment described potential impacts to Natural Communities, Wetlands, Plant Species, Animal Species, Threatened and Endangered Species, and Invasive Species.

Based on these analyses, it was determined that the following resources may be cumulatively affected by the proposed project:

- Air Quality
- Biological Environment

Table 2-25 explains each of the above resources and the area studied for the purpose of the cumulative impact analysis.

Table 2-25: Resource Area Considered for Cumulative Impact Analysis

Resource	Area Studied
Air Quality	San Joaquin Valley Air Pollution Control District regulatory boundary.
Biological Environment	The Biological Study Area, totaling approximately 22.9 acres, consists of the project footprint, existing roadways, and access and staging areas. The Biological Study Area also includes lands beyond the footprint that could potentially be affected by project construction.

Global climate change was not included in this cumulative analysis. Climate change is by its very nature a cumulative impact and is discussed separately in Section 2.5.

Air Quality

Modeling of Air Quality impacts are based on land uses from the State Transportation Improvement Program and State Implementation Plan, which is a cumulative assessment. Since the project is consistent with both of these programs additional cumulative analysis is not warranted. With the mitigation measures proposed in the Air Quality section, the proposed project will not have cumulatively considerable impacts to air quality.

Biological Resources

This project, in conjunction with other reasonably foreseeable projects in the region, would not result in significant cumulative effects on threatened and endangered species and animal species. Although the project area supports several different biological resources, proposed avoidance and minimization measures would reduce project related impacts.

Compensatory mitigation for certain resources is required (please see Section 2.3 for this discussion), and over time would offset the project's cumulative effects. Other projects in the region with similar impacts would also be required to mitigate those impacts.

Avoidance, Minimization, and/or Mitigation Measures

The analysis shows that the incremental effects of the proposed project, combined with the effects of past, present, and probable future projects are not cumulatively considerable for this project. No avoidance, minimization or mitigation measures are required in addition to those already contained in this document.

2.5 Climate Change (CEQA)

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, 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 by the United Nations and World Meteorological Organization's in 1988, has led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of greenhouse gasses related to human activity that include carbon dioxide (CO2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

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

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas Mitigation" is a term for reducing greenhouse gas emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[1].

There are four primary strategies for reducing greenhouse gas emissions from transportation sources: 1) improve system and operational efficiencies, 2) reduce growth of vehicle miles traveled 3) transition to lower greenhouse gas fuels and 4) improve vehicle technologies. To be most effective all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce greenhouse gas emissions from transportation sources.

Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level.

Assembly Bill 1493, Pavley. Vehicular Emissions: Greenhouse Gases (Assembly Bill 1493), 2002: requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the United States Environmental Protection Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own greenhouse gas emission standards for motor vehicles beginning with

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

model year 2009. California agencies would be working with Federal agencies to conduct joint rulemaking to reduce greenhouse gas emissions for passenger cars model years 2017-2025.

Executive Order S-3-05: (signed on June 1, 2005, by Governor Arnold Schwarzenegger) the goal of this Executive Order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32, the Global Warming Solutions Act of 2006: Assembly Bill 32 sets the same overall greenhouse gas emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that California Air Resources Board create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing Assembly Bill 32, including the recommendations made by the State's Climate Action Team.

Executive Order S-01-07: Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least ten percent by 2020.

Senate Bill 97 (Chapter 185, 2007): required the Governor's Office of Planning and Research to develop recommended amendments to the State California Environmental Quality Act Guidelines for addressing greenhouse gas emissions. The Amendments became effective on March 18, 2010.

Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities, SB 375, Steinberg, Statutes of 2008): enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. Sustainable Communities requires the Air Resources Board (ARB) to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations (MPOs). Each of California's MPOs then prepare a "sustainable communities strategy (SCS)" that demonstrates how the region will meet its greenhouse gas reduction target through integrated land use, housing and transportation planning. Once adopted by the MPO, the SCS will be incorporated into that region's federally enforceable regional transportation plan (RTP). ARB is also required to review each final SCS to determine whether it would, if implemented, achieve the greenhouse gas emission reduction target for its region.

Federal

Although climate change and greenhouse gas reduction is a concern at the federal level, currently there are no regulations or legislation that have been enacted specifically addressing greenhouse gas emissions reductions and climate change at the project level. Neither the United States Environmental Protection Agency nor Federal Highway Administration has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on Federal Highway Administration's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process would facilitate decision-making and improve

efficiency at the program level, and would inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies set forth by Federal Highway Administration to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a United States strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. Environmental Protection Agency*, 549 United States 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the United States Environmental Protection Agency has the authority to regulate greenhouse gas. The Court held that the United States Environmental Protection Agency Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the United States Environmental Protection Agency Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding**: The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)--in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding**: The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the United States Environmental Protection Agency's *Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles*, which was published on September 15, 2009[1]. On May 7, 2010 the final *Light-Duty*

[1] http://www.epa.gov/climatechange/endangerment.html

Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

United States Environmental Protection Agency and the National Highway Traffic Safety Administration are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced greenhouse gas emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever greenhouse gas regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle greenhouse gas regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.[1]

The final combined United States Environmental Protection Agency and National Highway Traffic Safety Administration standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the United States Environmental Protection Agency along with the United States Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

Project Analysis

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gas.[2] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See California Environmental Quality Act Guidelines sections 15064(h)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

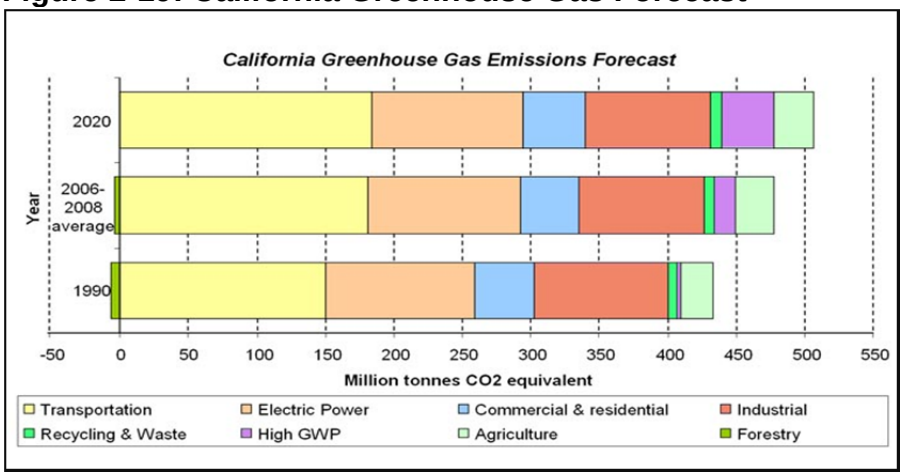
The Assembly Bill 32 Scoping Plan contains the main strategies California would use to reduce greenhouse gas. As part of its supporting documentation for the Draft Scoping Plan, California Air Resources Board released the greenhouse gas inventory for California (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions

[1] http://epa.gov/otaq/climate/regulations.htm

[2] This approach is supported by the Association of Environmental Professionals: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in California Environmental Quality Act Documents* (March 5, 2007), as well as the SCAQMD (Chapter 6: The California Environmental Quality Act Guide, April 2011) and the United States Forest Service (Climate Change Considerations in Project Level National Environmental Policy Act Analysis, July 13, 2009).

expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the greenhouse gas inventory for 2006, 2007, and 2008.

Figure 2-19: California Greenhouse Gas Forecast



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

The proposed project is part of the San Joaquin Council of Governments' (SJCOG) 2012 Regional Transportation Plan (RTP). The RTP must be a financially viable plan, and also conform to clean air goals. The RTP has adopted several policies that help reduce greenhouse gas emissions including reductions in vehicle miles travelled, reduction in peak hour travel times, and reduction of NO_x, ROG, and PM emissions. Under Senate Bill 375, the 2014 RTP update must include a Sustainable Communities Strategy for achieving the regional target for reducing greenhouse gases. However, the Sustainable Communities Strategy is still in the process of completion and will not be available until 2014. The proposed Navy Drive Bridge is in the current RTP.

Additionally, the San Joaquin Valley Air Pollution Control District has set air quality standards for the region to achieve the 2020 greenhouse gas emission reduction set forth in Assembly Bill 32 as part of their Vision for Clean Air: A Framework for Air Quality and Climate Planning. These standards are set forth in the State Implementation Plans (SIPs) by the California Air Resources Board for each region and factor in technology improvements and land uses (as set forth by the MPO). As a part of the RTP, the proposed project is subject to the emissions standards set forth by the San Joaquin Valley Air Pollution Control District.

The Port is currently preparing a Climate Action Plan that is anticipated to be complete in 2014. Additionally, the Port has adopted several policies to attempt to reduce greenhouse gas and air quality emissions including the following:

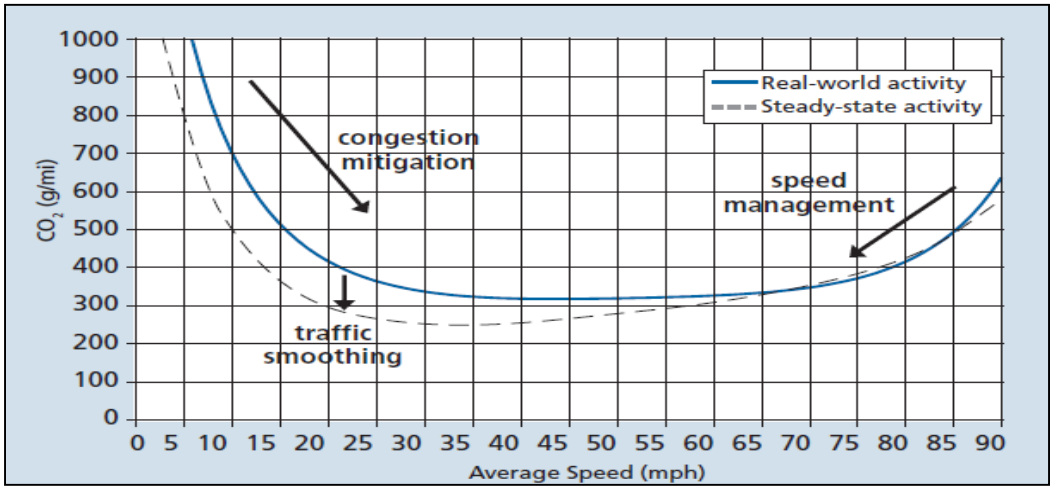
- As part of the Healthy Air Living Campaign, the Port has teamed with the San Joaquin Valley Air Pollution Control District to develop and implement strategies that will result in real emission reductions. To this end, the Port's Board of Commissioners adopted a resolution proclaiming July 7–13, 2008, Healthy Air Living Week. Some of the strategies to reduce air pollution include: on-site food service and dry-cleaning pick-up service to minimize vehicle trips; completion of an energy audit to identify areas where energy consumption can be reduced; and investigation of the

feasibility of purchasing a video conferencing system that would minimize the need for Port staff to travel to various meetings

- The Port has replaced four older gasoline powered trucks with new, zero-emission electric vehicles for use on the docks. The Port is also working with tenants and the San Joaquin Valley Air District to re-power and/or retrofit existing equipment with lower emitting engines for improved air quality.
- During dredging activities, port contractors operate an electric rather than diesel-powered dredge. This reduces air emissions by using a clean, renewable energy source instead of burning fossil fuels.
- The Port's Truck Traffic Control Plan has been finalized. The Port has installed signage on Rough & Ready Island directing truck traffic to the recently completed Daggett Road Bridge. This will ease congestion and reduce emissions in the nearby Boggs Tract neighborhood and overcrossing.

The improvements associated with the proposed Navy Drive Bridge replacement project are to address potential delays and extensive queuing due to congestion, which would bring about inefficient fuel consumption, deteriorating air quality, and unacceptable level of service conditions (see Traffic/Transportation Chapter 2.1 and Air Quality Chapter 2.2 for additional details). Therefore, the overall greenhouse gas emissions from the Build Alternative would be anticipated to be similar or less than the No Build Alternative.

Figure 2-20: Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emission[1]



[1] **Traffic Congestion and Greenhouse Gases:** Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010)<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the greenhouse gas emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include CO, NOx, volatile organic compounds (VOCs), directly-emitted particulate matter (PM2.5 and PM10), and toxic air contaminants such as diesel exhaust particulate matter.

Anticipated project-related construction emissions are presented for the entire construction period, which is 15 months. As indicated in Table 2-26, even when using total emissions for the 15 month period, none of the construction emissions estimates exceed San Joaquin Valley Air Pollution Control District recommended annual thresholds, even for a construction period of 15 months when compared to a 12 month threshold. Therefore, the project will not result in significant annual regional construction emissions.

Table 2-26: Anticipated Project-Related Construction Emissions

	ROG	CO	NO_x	Exhaust PM_{10}	Fugitive Dust PM_{10}	Total PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$	Total $PM_{2.5}$
Total (tons/construction period)	0.6	3.4	3.2	0.1	0.6	0.7	0.1	0.1	0.2
San Joaquin Valley Air Pollution Control District Annual Thresholds	10.0	NA	10.0	NA	BMP	BMP	NA	NA	NA
Exceed Threshold?	**No**	**NA**	**No**	**NA**	**No**	**No**	**No**	**NA**	**NA**

Notes:
BMP = construction best management practices, comply with San Joaquin Valley Air Pollution Control District Regulation VIII
NA = Not Applicable
Some totals may vary slightly due to rounding.
Emission estimates include a 33 percent reduction for NOx and PM exhaust.
Source: LSA Associates, Inc., November 2011.

Adaptation Strategies

"Adaptation strategies" refer to how federal, state and local agencies can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the Federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency report October 14, 2010 outlining recommendations to President Obama for how Federal Agency policies and programs can better prepare the United States to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the Federal Government implement actions to expand and strengthen the Nation's capacity to better understand, prepare for, and respond to climate change.

The 2012 Adaptation Planning Guide (APG) provides guidance to support regional and local communities in proactively addressing the unavoidable consequences of climate change. It was developed cooperatively by the California Natural Resources Agency, California Emergency Management Agency, with support from California Polytechnic State University–San Luis Obispo, and with funding through the Federal Emergency Management Agency and the California Energy Commission. The APG was developed under the guidance of an interagency steering committee and a technical advisory panel, and underwent an extensive review process following its release to the public as part of a conference held in April 2012 by the Governor's Office of Planning and Research, Confronting Climate Change: A Focus on Local Government Impacts, Actions and Resources.

The APG provides a step-by-step process for local and regional climate vulnerability assessment and adaptation strategy development. Usage of the APG is meant to allow for flexibility in the commitment of time, money, and effort to suit the needs of the community.

The report includes:

- relative sea level rise projections for regions of California taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates;
- the range of uncertainty in selected sea level rise projections;
- a synthesis of existing information on projected sea level rise impacts to local and regional infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems; and
- Nine steps for adoption of adaptive implementation strategies.

Adaptation strategies at the local level are currently being developed. Under Senate Bill 375, the 2014 RTP update must include a Sustainable Communities Strategy which includes long-term planning and risk management to address transportation vulnerabilities due to increased precipitation and flooding. However, the Sustainable Communities Strategy is still in the process of completion and will not be available until 2014.

Chapter 3 – Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation, the level of analysis required, and to identify potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings and interagency coordination meetings. Additionally, local groups and individuals were notified of the project and invited to comment. This chapter summarizes the results of the Port's and Caltrans' efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

Boater Surveys

The Port conducted a survey of commercial waterway operators in 2002 to determine whether there was any opposition to the construction of a fixed bridge at the Navy Drive crossing location. No opposition was identified though implementation of the survey.

Subsequently on August 21, 2008, the Coast Guard conducted a similar survey of potential users of the navigation channel as an initial step toward obtaining a permit for a fixed replacement bridge. These users included major stakeholders such as the local reclamation districts, the Port, Caltrans staff, and local pleasure boat organizations/users. The Coast Guard received no negative comments for a fixed replacement bridge through implementation of the survey.

Agency Consultation

Agencies were formally or informally contacted and consulted during the preparation of this draft environmental document. Additionally, local groups and individuals were notified of the project and invited to comment. All relevant federal, state, and local agencies, organizations, and other interested entities and individuals would receive a Notice of Availability of this environmental document.

National Marine Fisheries Service

On October 3, 2007, the National Marine Fisheries Service received a consultation request and biological assessment from Caltrans for the Navy Drive Bridge Replacement Project. On August 12, 2008, the National Marine Fisheries Service issued a Biological Opinion on the effects of the project on Central Valley steelhead (*Oncorhynchus mykiss*) and its designated critical habitat and the Southern District Population Segment of North American green sturgeon (*Acipenser medirostris*). The Biological Opinion concluded that while the project will adversely affect these listed species or their respective critical habitat, the project will not likely jeopardize the continued existence of the Central Valley steelhead and the Southern District Population Segment of North American green sturgeon.

Additionally, critical habitat for green sturgeon was designated November 9, 2009. The National Marine Fisheries Service drafted a technical assistance e-mail dated March 12, 2013, stating that additional analysis would be required to make a determination on how critical habitat would be affected by the proposed project. If it is determined that the project would produce no effect to green sturgeon critical habitat, then no further consultation would

be necessary. If it is determined that the proposed project may affect, but is not likely to adversely affect, critical habitat for green sturgeon, then re-initiation of informal consultation would be required. The consultation process must be finalized prior to approval of the final environmental document.

United States Coast Guard

On August 1, 2003 the Port sent a letter to USCG asking for their assistance. The Port requested that USCG give favorable consideration to an application for a permit to replace the existing Navy Drive Bridge with a fixed bridge providing similar clearances to the existing bridge. On August 4, 2003 the USCG sent the Port a letter in response. This letter stated that the plans for the bridge replacement must be approved by the Commandant, USCG, prior to commencing construction. The USCG also provided guidance on the permitting process and what the application must and should include. The USCG also provided determination of vertical and horizontal clearance for the navigational channel.

On August 30, 2005 the FHWA sent a letter to USCG requesting their participation in development of the EA and the steps that will be taken to maximize interagency cooperation. No response was documented.

On December 14, 2005 the USCG sent a memorandum to the FHWA restating that a USCG permit will be required for this project. They agreed to serve as a cooperating agency to satisfy requirements of NEPA and requested that they too be listed as cooperating agency in the EA. The USCG stated that they will review the EA for navigational issues and provided a list of requested information. No response was documented.

On October 30, 2007 the USCG sent a letter to the Port in response to issues discussed in a meeting held on October 1, 2007 concerning the Navy Drive Bridge. The letter stated that if the Port intends to convert the bridge to a fixed bridge, the Port must apply for a USCG permit. No response was documented.

To date the USCG staff have participated in the monthly progress meetings, and extensive coordination has taken place to inform USCG of the revised bridge alignment. USCG was provided an opportunity to review and comment on Chapter 1 of the admin. Draft IS/EA. Updated plans, detailing the proposed temporary clearances of the revised alignment, were submitted to USCG on December 18, 2012. Through PDT communication on December 20, 2012, USCG confirmed that additional waterway user outreach was not necessary due to the minor variations in the revised alignment. USCG will continue to be part of the PDT throughout the final design process.

United States Army Corps of Engineers

Caltrans coordinated with the ACOE in March 2013 regarding the process for verifying the delineation. Marc Fugler of the ACOE recommended that Caltans submit a Preliminary JD for the project.

Interagency Consultation Regarding PM 2.5 and PM 10 Hot-Spot Conformity

In December 2006, the Port of Stockton submitted a memo determining the project was not a Project of Air Quality Concern to San Joaquin Council of Governments. In January 2007, the Environmental Protection Agency and the Federal Highways Administration concurred.

In a letter dated July 3, 2007, Caltrans determined that the project will require interagency consultation for PM10 hot-spot analysis. The project was assumed to be POAQC for purposes of this analysis, and therefore a memo addressing PM10 and PM2.5 hot spot analysis and conformity was issued on August 8, 2008. Federal Highway Administration and Caltrans concurred with the memo, and Environmental Protection Agency did not concur, and provided additional comments on the analysis. After additional consultation with San Joaquin Council of Governments and Caltrans, the project sponsor determined the original finding of not a project of air quality concern was correct, based on the latest Environmental Protection Agency guidance, and contacted the Interagency Consultation Partners for concurrence. On August 20, 2009, the Interagency Consultation Partners concluded that the Navy Drive Bridge Replacement Project is not a “POAQC” and therefore would not cause or contribute to a violation of the national standards for PM2.5 or PM10.

Between 2009 and 2012 the Draft Environmental Document was not finalized. As such the project conditions have changed in the interim due to the build out of the Port’s West Complex. The Interagency Agency Consultation memo from 2009 was reviewed by Caltrans and it was determined that due to the existing truck traffic percentages that will access Navy Drive, the Environmental Protection Agency would likely consider this a POAQC. An April 2, 2012 an Interagency Agency Consultation memo was prepared to address this issue, but was never issued due to a pending San Joaquin Council of Government Federal Transportation Improvement Program amendment. Currently, the Federal Transportation Improvement Program was adopted on July 25, 2012 and updated interagency consultation is pending.

Coordination Regarding Cultural Resources

The following organizations and concerned parties were notified of the proposed project by letter and invited to comment regarding concerns they may have had about cultural resources in the project vicinity:

Native American Tribes, Group and Individuals

The Native American Heritage Commission was originally contacted on December 22, 2003, for initial scoping efforts and asked to review their Sacred Lands files and provide a list of Native Americans that should be contacted. A letter and list of Native American Contacts was received from the Native American Heritage Commission on December 23, 2003. Katherine Erolinda Perez was the sole Native American contact identified by the Native American Heritage Commission. Ms. Perez was contacted by letter on December 23, 2003, and with a follow-up telephone conversation on December 31, 2003. Ms. Perez noted her association with Repatriation, Inc., and indicated that she believes the project area is sensitive for the presence of buried archaeological sites. She recommended that Native American monitoring should be conducted during ground-disturbing work at this location. In response to comments provided by Native American tribal organizations, the project has been modified to provide for tribal monitoring. A Native American monitor shall be present during project ground-disturbing activities to review possible archaeological materials and provide recommendations on the identification and treatment of such resources. The monitor shall provide recommendations regarding protection and ultimate disposition of the find.

Ms. Perez was again contacted via scoping letter on May 30, 2006, regarding mitigation efforts associated with this project and requesting comments, if any.

As a part of the Supplemental Historic Property Survey Report (2012) the Native American Heritage Commission was contacted again on June 9, 2011, and asked to review their Sacred Lands files and provide a list of Native Americans that should be contacted. Each person on the Native American Heritage Commission list was contacted by letter. No response letters were received.

For the 2012 Supplemental Historic Property Survey Report, letters describing the project, with maps, were sent on June 17, 2011, to the following individuals on the Native American Heritage Commission contacts list asking for any information or concerns they might have regarding cultural resources:

- Randy Yonemura
- Katherine Erolinda Perez
- Briana Creekmore
- Rhonda Morningstar Pope, Chairperson, Buena Vista Rancheria
- Silvia Burley, Chairperson, California Valley Miwok Tribe
- Debra Grimes, Cultural Preservation Specialist, California Valley Miwok Tribe
- Chairperson, Ione Band of Miwok Indians
- Billie Blue, Chairperson, Ione Band of Miwok Indians Cultural Committee
- Mary Daniels-Tarango, Chairperson, Wilton Rancheria

No responses have been received to date.

Local Historical Societies or Museums, and Government Agencies

Seven local historical societies were originally contacted by scoping letter on December 30, 2003, and asked to provide any information and comments relevant to the project. They are: 1) Children's Museum of Stockton, 2) Conference of California Historical Societies, 3) Jedediah Smith Society, 4) Manteca Historical Society and Museum, 5) San Joaquin County Historical Society and Museum, 6) Stockton Corral of Westerners and 7) The Haggin Museum. One response was received (Jedediah Smith Society) indicating that their organization had no interest in the project site.

The historical organizations mentioned above were again contacted on May 30, 2006, notifying them of project impacts and proposed mitigation efforts associated with this project and requesting comments, if any. A letter was not sent to the Jedediah Smith Society since they expressed no interest in the project site. On May 20, 2011, LSA sent letters describing the project, with maps, to the following historical societies and organizations asking for any information or concerns they might have regarding cultural resources in the Area of Potential Effects:

- Children's Museum of Stockton. No response was received.
- Conference of California Historical Societies. No response was received.
- Jedediah Smith Society. No response was received.
- Manteca Historical Society and Museum. No response was received.

- San Joaquin County Historical Society and Museum. No response was received.
- Stockton Corral of Westerners. No response was received.
- The Haggin Museum. In a May 25, 2011, telephone voice message, Todd Ruhstaller, Museum Director, stated that the museum has no concerns.

State Historic Preservation Officer

The Finding of Effect and Memorandum of Agreement were transmitted by Caltrans to the Federal Highway Administration on March 15, 2007, and the Federal Highway Administration submitted them to the State Historic Preservation Officer on April 26, 2007. The State Historic Preservation Officer concurred with the findings and terms of the Finding of Effect on June 5, 2007. The Memorandum of Agreement was fully executed on February 28, 2008 with signatures from the State Historic Preservation Officer and Caltrans. The Port of Stockton signed the Memorandum of Agreement in concurrence on April 30, 2008. The Memorandum of Agreement is included in Appendix E of this Initial Study/Environmental Assessment.

United States Fish and Wildlife Service

On October 2, 2007, the United States Fish and Wildlife Service received a consultation request and biological assessment from Caltrans for the Navy Drive Bridge Replacement Project. On May 12, 2008, the United States Fish and Wildlife Service issued a Biological Opinion on the effects of the project on the delta smelt and its designated critical habitat. The Biological Opinion concluded that while the project will affect delta smelt and its critical habitat, the project will not likely jeopardize the continued existence of the delta smelt. The Biological Opinion is included in Appendix H.

Prior to the consultation, a formal list of federal endangered, threatened, or proposed species that may be affected by the proposed project was requested from the United States Fish and Wildlife Service and was received from Chris Nagano (Chief, Endangered Species Division) on February 27, 2004. An updated species list was generated from the United States Fish and Wildlife Service website on April 26, 2006, October 27, 2011, and on March 1, 2013.

United States Navy

On August 23, 2011, LSA Associates, Inc. contacted the Department of the Navy - Naval History & Heritage Command (The Navy Department Library) at the Washington Navy Yard for information regarding the military history of Rough and Ready Island in Stockton, CA. Mr. Davis Elliott referred LSA to two readings: United States Navy and Marine Corps Bases, Domestic, by Paolo E. Coletta and K. Jack Bauer and Building the Navy's Bases in World War II - History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946, by Navy Department Bureau of Yards and Docks.

Chapter 4 – List of Preparers

4.1 Preparers

The Initial Study/Environmental Assessment is based on the technical studies prepared for the California Department of Transportation and the Federal Highway Administration. This document was prepared by the following professionals:

LSA Associates, Inc.

Kelly Jackson

Edward Heming

Jeff Bray

Amberly Morgan

Mike Trueblood

Phil Ault

Amy Fischer

Neal Kaptain

Justin Howland

Stephanie Powers

California Department of Transportation

Abdul Chafi, air quality specialist

Allam Alhabaly, noise specialist

Bill Duttera, landscape architect

Chris Kuzak, architectural historian

Chuck Carlson, hydraulics engineer

Clemens Goewert, hazardous waste specialist

Dave Nelson, environmental coordinator

Dotrik Wilson, biologist

Haiyan Zhang, NEPA quality control reviewer

Homer Zarzuela, transportation engineer

Jacqueline Wait, archaeologist

Jamie Quesada, transportation engineer

Jesus Serrano, local assistance engineer

Julie Myrah, environmental supervisor

Kathy Ikeda, environmental coordinator

Ken J. Romero, air quality reviewer

Kursten Sheridan, biologist

Pat Robledo, transportation engineer

Rajeev Dwivedi, water quality specialist

Rand Helde, local assistance structures engineer

Sam Wong, hydraulics engineer

Port of Stockton

Jeff Wingfield

Juan Villanueva

Henry McKay

United States Coast Guard

Carl Hausner

David Sulouff

Parsons Transportation Group

Michael Higgins

Elvira Gaddi

Fehr and Peers

Fred Choa

The original administrative draft environmental document (2009) upon which this document is based was prepared by the following ESA staff:

Brian Grattidge

Jessica Mitchell

Matt Morales

Ashley Miller

Kathy Anderson

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Chapter 5 – Distribution List

The following officials, agencies and interested parties have received either a copy of the environmental document or a notice informing them of its availability.

Federal Agencies

- U.S. Coast Guard
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

State Agencies

- California Air Resources Board
- California Highway Patrol
- California Department of Transportation, Planning (Headquarters)
- California Department of Conservation – Reclamation Board
- California Department of Education
- California Energy Commission
- California Department of Fish and Wildlife Region #2
- California Housing and Community Development
- California Integrated Waste Management Board
- California Native American Heritage Commission
- California Office of Emergency Services
- California Office of Historic Preservation
- California Parks and Recreation
- California Public Utilities Commission
- California Regional Water Quality Control Board #5 Sacramento
- California Natural Resources Agency
- California State Lands Commission
- California Department of Toxic Substances Control
- California Department of Water Resources
- California Highway Patrol – Business Office
- Delta Protection Commission
- San Joaquin River Conservancy
- State Water Resource Control Board: Storm Water Regional Control Board: Water Quality

Regional Agencies

- San Joaquin Regional Transit District

County Agencies

- Port of Stockton
- County of San Joaquin, Community Development Department
- County of San Joaquin, Public Works Department
- County of San Joaquin, Parks and Recreation
- San Joaquin County Office of Emergency Services
- San Joaquin County Hispanic Chamber of Commerce
- San Joaquin County's Sheriff's Department
- San Joaquin Council of Governments

City Agencies

- Stockton Unified School District
- Stockton Metropolitan Airport
- Community Development, City of Stockton
- Parks and Recreation, City of Stockton
- Fire Department, City of Stockton
- Redevelopment, City of Stockton
- Greater Stockton Chamber of Commerce
- Stockton Police Department
- Stockton Merchants Association
- City of Stockton Municipal Utilities

Other Interested Parties

- Cesar Chavez Central Library
- Fair Oaks Branch Library
- Environmental Affairs Council
- Buena Vista Rancheria
- California Valley Miwok Tribe
- Ione Band of Miwok Indians
- Wilton Rancheria
- Asian American Chamber of Commerce
- Children's Museum of Stockton
- Conference of California Historical Societies
- Jedediah Smith Society
- Manteca Historical Society and Museum

- San Joaquin County Historical Society and Museum
- Stockton Corral of Westerners
- The Haggin Museum
- Cal Water
- PG&E
- AT&T
- Kinder Morgan, Engineering Department
- Jihad Farhat (Project Manager)
- Grant McClellan (Stockton Area Manager)

Appendix A. California Environmental Quality Act Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				

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

IV. BIOLOGICAL RESOURCES: Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒
VIII. 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?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☒	☐

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?	☐	☐	☒	☐
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

XI. MINERAL RESOURCES: Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

XII. NOISE: Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

XIII. POPULATION AND HOUSING: Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

XIV. PUBLIC SERVICES:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Appendix B. Programmatic Section 4(f) Evaluation

10-SJ-Port of Stockton
BRLS-6349(002)

Replacement of the Navy Drive Bridge (Bridge No. 29C-0023)
at the Port of Stockton in the City of Stockton, San Joaquin County, California

PROGRAMMATIC SECTION 4(F) EVALUATION

Submitted Pursuant to:

49 USC 303

THE STATE OF CALIFORNIA

Department of Transportation as assigned

4/12/13
Date of Approval

Julie Myrah
Julie Myrah
Senior Environmental Planner
Environmental MPS and Local Assistance Branch
Caltrans District 10

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

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1.0 INTRODUCTION

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

The Federal Highway Administration (FHWA) has prepared and approved a Nationwide Programmatic Section 4(f) Evaluation for federally funded projects that require use of certain historic structures. The Nationwide Programmatic Section 4(f) Evaluation satisfies the requirements of Section 4(f) for all projects that meet the applicability criteria. The approval of the Programmatic Section 4(f) Evaluation is made pursuant to Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303, and Section 18(a) of the Federal-Aid Highway Act of 1968 23 U.S.C. 138.

The Port of Stockton (Port), in cooperation with the California Department of Transportation (Caltrans), proposes to replace the existing historic Navy Drive Bridge, a contributor to the Naval Supply Annex Stockton Historic District, with a new bridge. Caltrans has determined that the project qualifies for consideration under the Programmatic Section 4(f) process. This determination was based upon the findings presented in reports, agreements between responsible parties, and consultations with responsible agencies and interested parties. The primary documents used to reach this conclusion are:

- **Historical Resources Evaluation Report** (HRER) (December 2006; approved March 15, 2007).

  This report summarizes in detail the background research, contact with interested parties, and field survey conducted to evaluate the significance of the Naval Supply Annex Stockton Historic District. The HRER concluded that the district is eligible for inclusion in the National Register of Historic Places. The HRER is included in the Historic Property Survey Report as an appendix.

- **Archaeological Survey Report** (ASR) (December 2006; approved March 15, 2007).

  This report summarizes in detail the background research, contact with interested parties, and field survey conducted to identify archaeological deposits in the project's Area of Potential Effects (APE). The ASR did not identify archaeological deposits in or adjacent to the APE. The ASR is included in the Historic Property Survey Report as an appendix.

- **Historic Property Survey Report** (HPSR) (December 2006; approved March 15, 2007).

  This report summarizes in detail the identification efforts for cultural resources located within the project's APE. It identified the Naval Supply Annex Stockton Historic District as a historic resource within the APE, and the Navy Drive Bridge as a resource previously determined eligible for inclusion in the National Register of Historic Places.

- **Finding of Adverse Effect Report** (FAE) (December 2006). This document describes Caltrans' determination the project will result in an adverse effect on the Navy Drive Bridge. Mitigation measures are proposed to resolve adverse effects to the bridge. The FAE also documents consultation with various organizations and historical societies, including the Children's Museum of Stockton, the Conference of California Historical Societies, the Jedediah Smith Society, the Manteca Historical Society and Museum, the San Joaquin County Historical Society and Museum, the Stockton Corral of Westerners, and the Haggin Museum.

- **Memorandum of Agreement** (MOA) (approved February 28, 2008). This document memorializes measures agreed to by Caltrans Division of

Environmental Analysis and the California State Historic Preservation Officer (SHPO), with concurrence by Caltrans District 10 and the Port, to resolve the adverse effect to the Navy Drive Bridge in accordance with 36 CFR Part 800.6(c). The MOA included requirements for documentation to the standards of the Historic American Engineering Records (HAER); a written historical narrative report; the placement of selected commemorative plaques and historical photographs; and the opportunity for historical organizations to claim artifacts or structural elements of the original bridge removed during demolition.

- **Supplemental Historic Property Survey Report** (SHPSR) (May 2012; approved June 20, 2012) This report was prepared to address the change in project scope from a new fixed-span Navy Drive Bridge to a removable-span bridge, in response to U.S. Coast Guard requirements. The SHPSR confirmed the findings of the HPSR.

The purpose of this Programmatic Section 4(f) Evaluation is to document the considerations, consultations, and alternatives which support the determination that there are no feasible and prudent alternatives to the use of Section 4(f) properties, and to support the determination that the proposed project includes all possible planning to minimize harm to the affected properties.

2.0 DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES

The Port, in cooperation with Caltrans, proposes to replace the existing Navy Drive Bridge (Bridge No. 29C-0023) across the San Joaquin River in the City of Stockton, San Joaquin County (Figures 1 and 2, following this page). The project would be funded by the Federal Highway Adminstration (FHWA) through the Local Assistance Highway Bridge Program. Please see Chapter 1, Section 1.3 of the Initial Study/Environmental Assessment (IS/EA), Project Alternatives, for more detailed information on the proposed and eliminated project alternatives.

Build Alternative

The Build Alternative meets the purpose and need of the project. This alternative would construct a new four-lane removable span Navy Drive Bridge and demolish the existing two-lane swing span bridge.

The new bridge would be located about 40 feet upstream and to the west of the existing Navy Drive Bridge. The new bridge would incorporate a center navigation channel that provides 80 feet of horizontal clearance, 15 feet of vertical clearance above the San Joaquin River at Mean High Water, and unlimited vertical clearance with the removable span removed. Final operating regulations would be proposed by the U.S. Coast Guard once the replacement bridge is built and the existing bridge has been removed from the waterway.

No Build Alternative

The No Build Alternative would keep the existing Navy Drive Bridge without rehabilitation, reconstruction, or replacement. This alternative does not meet the purpose and need of the project because the existing Navy Drive Bridge does not meet current safety and design standards.

The No Build Alternative has two advantages: (1) it would avoid all construction impacts; and (2) it would initially avoid impacts to a historic resource, since the existing Navy Drive Bridge is a contributing element to the Naval Supply Annex Stockton Historic District. However, without any rehabilitation, the condition of the bridge would eventually deteriorate, resulting in potential effects to a historic resource.

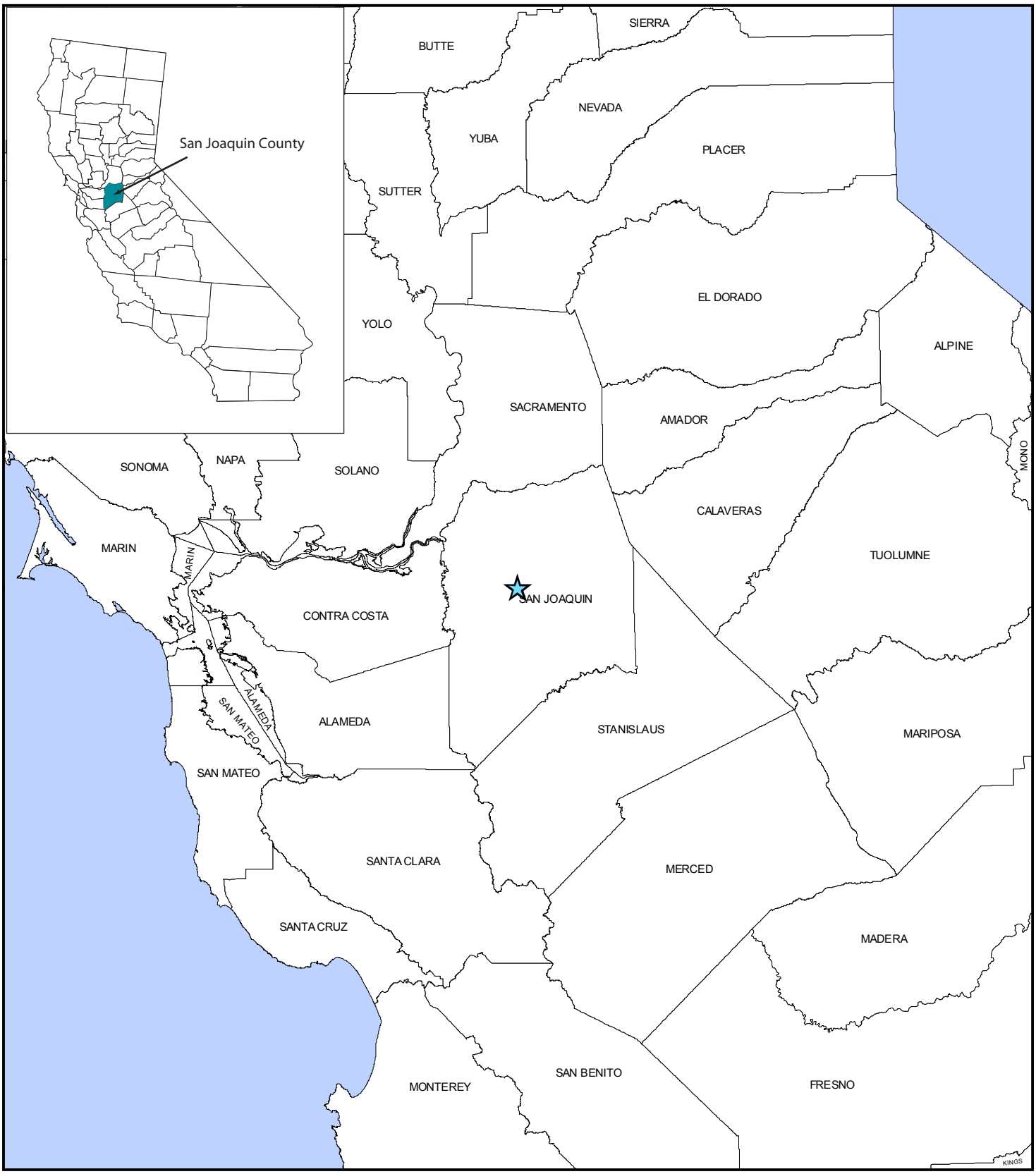

FIGURE 1

LEGEND

Project Location

N

0 12.5 25

MILES

SOURCE: ESRI Imagery (2008)

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Navy Drive Bridge Replacement Project

Regional Vicinity

LSA

FIGURE 2

LEGEND

Navy Drive Bridge

NSA Stockton Historic District

N

0 1500 3000

FEET

SOURCE: Microsoft Bing Map - Aerial (2010)

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Navy Drive Bridge Replacement Project

Project Location/4(f) Resources

3.0 DESCRIPTION OF SECTION 4(f) PROPERTY

Naval Supply Annex Stockton Historic District

The boundaries of the Naval Supply Annex Stockton Historic District (NSA Stockton Historic District) encompass all of the Port of Stockton's West Complex (formerly known as "Rough and Ready Island" when owned by the U.S. Navy). The entire island is now owned by the Port of Stockton. The property boundaries of the district are those of Rough and Ready Island and include approximately 1,420 acres (see Figure 2).

The Navy used the site as communication headquarters for the Pacific Theater during World War II. In 1944, the island was used as a great supply depot, administratively an annex of the Oakland Naval Supply Depot. This new depot was the first supply depot to be built entirely according to standard designs developed during the war to meet all requirements of modern materials handling. The site was ideal as a supply depot due to the City's excellent transportation facilities, which included a deep-water channel to the sea.

On April 2, 1951 the site was renamed Sharpe General Depot, Stockton Annex, and on September 7, 1955 the site was once again redesignated Sharpe General Depot, Stockton Storage Activity. In 1960, Naval Communication Station (NCS) San Francisco moved from the Federal Building in San Francisco to Rough and Ready Island. At first a tenant activity of the Naval Supply Annex, upon decommissioning of that activity in 1965 NCS San Francisco became the host. On May 5, 1976 the name was change to Naval Communications Station, Stockton.

Ownership of the island was transferred to the Port in 2003, and redevelopment of the island is underway. Three highway bridges connect the island with the main land, and the Port of Stockton belt-line railroad, which serves the site, connects with three large railroads, the Southern Pacific, the Western Pacific, and the Santa Fe.

The NSA Stockton Historic District was determined to be eligible for inclusion in the National Register of Historic Places by consensus between the California State Historic Preservation Officer (SHPO) and the U.S. Navy on December 4, 1996 (USN960502Z). The NSA Stockton Historic District is significant under National Register of Historic Places Criteria A and C as a new type of inland supply and distribution facility for the U.S. Navy, as well as the only example of a naval depot designed to accommodate cargo

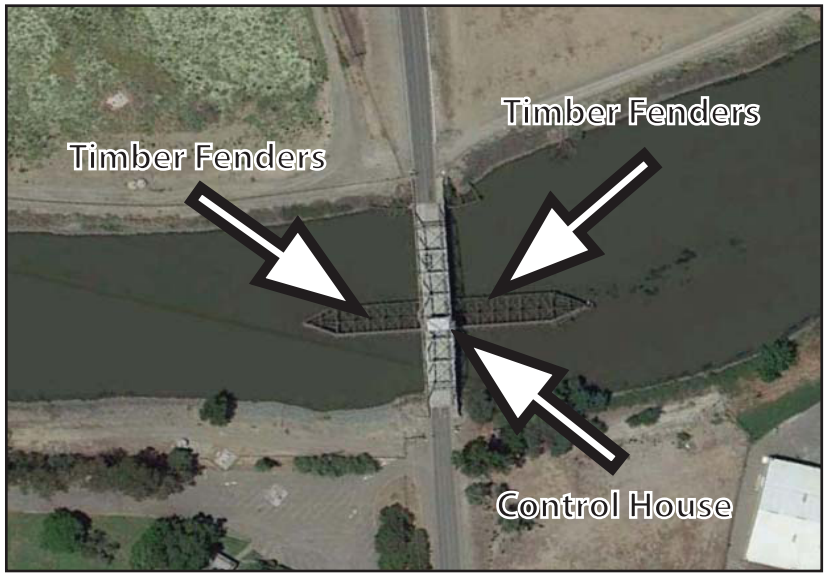
pallets and forklift operations. The NSA Stockton Historic District's period of significance was defined as 1946 to 1965, the period of use and operation as a naval supply depot. The NSA Stockton Historic District included 109 contributing elements when it was originally documented in 2006, all of which were built by 1946. All of the post-1946 features were determined not to contribute to the significance of the NSA Stockton Historic District.

Navy Drive Bridge

The Navy Drive Bridge, which is owned by the Port, is located at the southeast corner of the NSA Stockton Historic District, connecting the Port's West Complex with the City of Stockton across the San Joaquin River. Navy Drive Bridge is located at the southeast corner of the base, connecting Rough and Ready Island with the City of Stockton across the San Joaquin River. The bridge was built between 1940-41 under the direction of Harold B. Hammill, consulting engineer, and W. Harry Archer & Associates, a mechanical and electrical engineering firm. When the bridge was constructed, it was originally referred to as the Jacobs No. 1 Drawbridge. Please see Figure 2 for a depiction of the Navy Drive Bridge relative to NSA Stockton Historic District, and Figures 3 and 4 for photographs of the Navy Drive Bridge.

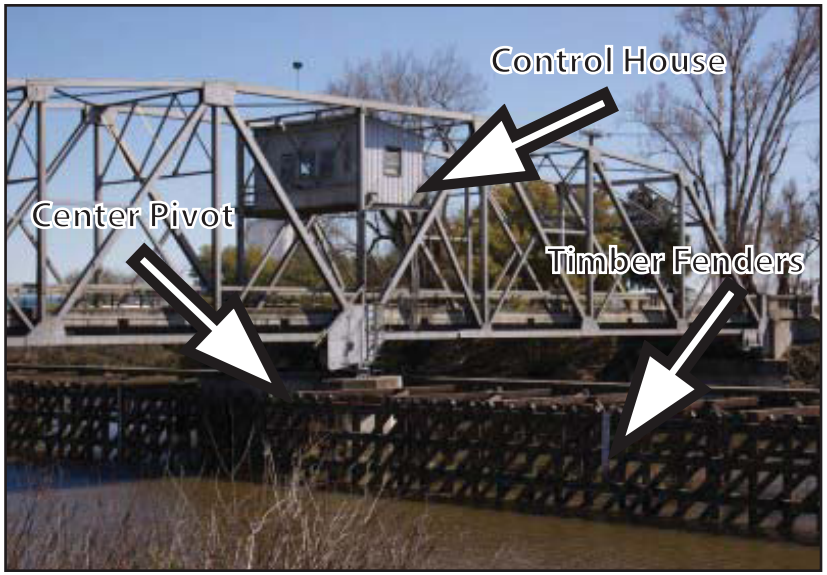
The bridge has two 12-foot wide lanes and no shoulders, and it is a through-truss swing bridge. This is a moveable bridge that is first elevated, then turns on a central pivot and is anchored onto a perpendicular fender pier (the last time the bridge was opened was in 1978). When the bridge is anchored onto the fender pier, two channels are opened for boat traffic to flow through along the San Joaquin River. The bridge is operated through a system of gears and is powered with electricity. Please refer to the Traffic section of the DED for construction and future year traffic information.

The opening of the bridge is set into motion by an operator, whose "house" is situated in the center of the bridge above the roadway. The operator's house is a steel structure with a shed roof accessed by a set of stairs along the northeast side of the bridge. The operator's house was actually designed to function as a residence, with a toilet room, closet, chimney for a stove, and a 50-gallon water tank set in the attic. A cast iron bell is installed on the deck just outside the house's entry door. Fenestration consists of three windows on the north and south sides, one window on the west, and two windows on the east. Some of the windows are boarded up; the ones that are not are single hung, one-over-one light.

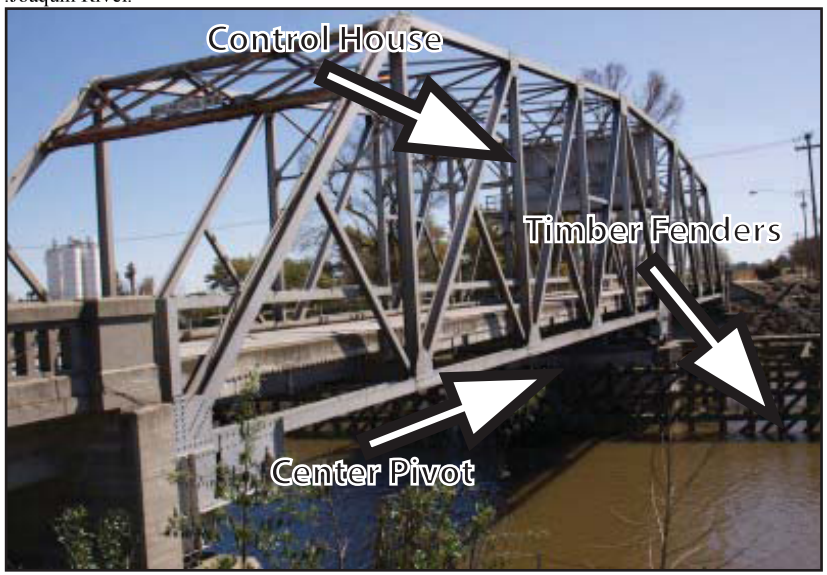


Aerial photograph of Navy Drive Bridge showing the control house and timber fenders.

Photograph of Navy Drive Bridge looking south-southeast from the west bank of the San .Joaquin River.



Photograph of Navy Drive Bridge looking southeast from the west bank of the San Joaquin River and showing the control house, timber fenders, and central pivot.



Photograph of Navy Drive Bridge looking east-southeast from the west bank of the San Joaquin River.

FIGURE 3

Navy Drive Bridge Replacement Project

Navy Drive Bridge

SOURCE: ESRI Imagery (2010)

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Photograph of Navy Drive Bridge looking east from the west bank of the San Joaquin River.

Photograph of Navy Drive roadway and Navy Drive Bridge looking north.

FIGURE 4

Navy Drive Bridge Replacement Project

Navy Drive Bridge

SOURCE: ESRI Imagery (2010)

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The galvanized steel bridge rests upon four concrete piers, two on the north end approach, one on the south end approach, and the large center pier that also supports the pivot mechanism. A timber fender system is located around the central pier. The approaches are 27 feet wide and framed with concrete rails on both sides supported by a row of balustrades. Both approaches are preceded by red and white painted safety gates that swing down to prevent traffic from crossing when the bridge is moving. The road deck is also concrete and is 23.9 feet wide from curb to curb. Sidewalks do not exist on either side of the bridge on Navy Drive. The industrial character associated with the Port is not conducive to pedestrian or bike usage due to heavy truck movements and equipment activity that occurs along Navy Drive. A steel walkway is situated along the bridge's east side for pedestrian access, but is unused.

In 1996, the Navy Drive Bridge was formally determined to be eligible for the National Register of Historic Places as a contributor to the NSA Stockton Historic District (USN960502Z). The bridge is the only contributing element to the NSA Stockton Historic District that would be affected by the proposed project.

4.0 IMPACTS ON SECTION 4(f) PROPERTY

The Build Alternative and No Build Alternative are described in this section with respect to potential impacts to a Section 4(f) property. Please see Chapter 2 of the IS/EA, (Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures) for more detailed description of the impacts of these alternatives.

Build Alternative – Removable Span Bridge Replacement

Facilities, Functions, and Activities. The Build Alternative would retain the functions and activities of the existing Navy Drive Bridge. Although the existing bridge facilities would be demolished, mitigation measures would be implemented to document and preserve a record of the bridge. The primary functions of and activities associated with the bridge (providing vehicular access to the Port's West Complex and allowing unrestricted movement of waterway users along the nearby portion of the San Joaquin River) would remain intact and be improved with construction of a new bridge. Access to the Port's West Complex, and therefore the NSA Stockton Historic District, would remain unrestricted with the new bridge; in fact, traffic operations would be improved by building a new bridge with two more lanes. The existing bridge is a swing-style bridge that can be opened to allow boat traffic through the San Joaquin River, but it has not opened since 1978, and is not currently operational. The new bridge will provide improved vertical clearance for recreational river users, and removable span will allow river access by large equipment in emergency situations.

Accessibility. The Build Alternative would build a new bridge approximately 40 feet upstream and to the west of the existing Navy Drive Bridge. This would require the portions of Navy Drive that approach the bridge to be realigned. In addition, the entrance to the Stockton Police Department Firing Range would be relocated. During construction of the new bridge, the existing bridge would be retained in place long enough to ensure that Navy Drive can remain open to traffic. Therefore, accessibility will be maintained during construction. Vehicle accessibility will likely improve after construction of the Build Alternative due to the addition of two travel lanes and higher design speeds. Although the existing bridge has a pedestrian walkway, there is little to no pedestrian use of the bridge, and the gates at either end remain closed and locked unless access by Port

personnel is required. The new bridge would have shoulders that would allow pedestrian access when needed.

Visual. The Build Alternative would have minor visual impacts within the project area. These impacts would be minimized by planting of landscape screening near the Stockton Police Department Training Facility and by replanting of affected rirparian areas.

Noise. The Build Alternative would have minor noise impacts within the project area that would occur primarily due to (1) construction crew commutes and the transport of construction equipment and materials to the project site; and (2) activity during roadway and bridge construction. These impacts would be minimized by limits on the noise level from construction between 7:00 p.m. and 7:00 a.m.; no work on Sundays; an alternative warning method instead of a sound signal; and assuring that all internal combustion engines will have the manufacturer-recommended muffler.

Vegetation/Wildlife. The Build Alternative could have minor impacts to vegetation and wildlife within the project area. For vegetation, the construction of the new bridge could result in potential impacts to Slough thistle, Mason's lilaeopsis, and Delta mugwort. These impacts would be minimized by a requirement for pre-construction surveys for special-status plant species and mitigation development with California Department of Fish and Game, if necessary.

For wildlife, the construction of the new bridge could result in potential impacts to Pacific pond turtle, burrowing owl, nesting raptors, and nesting songbirds. These impacts would be minimized by a combination of measures, including pre-construction, season-specific biological surveys; the establishment of Environmental Sensitive Areas; buffer areas; and passive relocation. For threatened and endangered species, Delta smelt, Central Valley steelhead, Chinook salmon, and Green sturgeon could potentially affected. These impacts would be minimized by a combination of measures, including the use of Best Management Practices, streambed restoration, compliance with the terms of the Biological Opinion, use of a turbidity curtain and aeration equipment, and acoustic monitoring.

Air Quality. The Build Alternative could have minor impacts to air quality, including (1) increases in localized emissions of CO and PM10; and (2) short-term degradation of air quality during construction due to the release of particulate emissions generated by excavation, grading, hauling, and other activities related to construction. These impacts would be minimized by the adherence to the requirements of San Joaquin Valley Air

Pollution Control District Regulation VIII; and compliance with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications.

Water Quality. The Build Alternative could have minor impacts to water quality, including (1) discharge into receiving waters of disturbed and eroded soil, petroleum products, and miscellaneous wastes; (2) an increase in impervious paved roadway surfaces; and (3) sediment resuspension and decreased dissolved oxygen during construction. These impacts would be minimized by a combination of measures, including Best Management Practices, a sheet-pile cofferdam, a turbidity curtain, aeration equipment, debris-catching devices, dewatering, and a bubble curtain.

No Build Alternative

Facilities, Functions, and Activities. Under this alternative, the existing facilities, functions, and activities of the Navy Drive Bridge and the NSA Stockton Historic District would remain unchanged. Traffic studies show, however, that average daily traffic on Navy Drive would increase from 4,300 in 2011 to 36,250 in 2035, requiring Navy Drive to be widened from two lanes to four. Under the No Build Alternative, future functions of the existing two-lane bridge would be substandard. In addition, the existing bridge facilities do not meet current safety and design standards.

Accessibility. Under this alternative, the vehicle accessibility the existing bridge provides to and from the NSA Stockton Historic District would remain unchanged. However, traffic studies forecast a more than eight-fold increase in average daily traffic on Navy Drive by the year 2035. Under the No Build alternative, future accessibility to the NSA Stockton Historic District would be restricted since the existing two-lane bridge would not have adequate capacity for future traffic volumes.

Visual. No visual impacts would occur.

Noise. No noise impacts would occur.

Vegetation/Wildlife. No biological impacts would occur.

Air Quality. Traffic volumes are forecast to increase significantly on Navy Drive by the year 2035, resulting in a lack of capacity and increased congestion on the existing two-lane bridge. Therefore, under the No Build Alternative, adverse long-term operational air quality impacts are expected.

Water Quality. No water quality impacts would occur.

5.0 APPLICABILITY OF PROGRAMMATIC SECTION 4(f)

The "Historic Bridges" Programmatic Section 4(f) Evaluation applies to this project because it meets the following criteria, as set forth in FHWA guidance:

- The Navy Drive Bridge is to be replaced with Federal funds.
- The project will require the use of a historic bridge structure which was determined eligible for listing on the National Register of Historic Places.
- The Navy Drive Bridge is not a National Historic Landmark.
- Caltrans, acting as federal lead agency on behalf of the FHWA pursuant to NEPA Assignment, has determined that the facts of the project match those set forth in the Alternatives, Findings, and Mitigation sections of this Programmatic Section 4(f) Evaluation.
- Agreement among Caltrans (on behalf of the FHWA), the SHPO, and the Advisory Council on Historic Preservation (ACHP) has been reached through procedures pursuant to Section 106 of the National Historic Preservation Act. Measures to mitigate harm to the Section 4(f) property are documented in the MOA between the FHWA and SHPO, which was approved on February 28, 2008, with subsequent concurrence by Caltrans District 10 and the Port. The ACHP acknowledged receipt of the MOA on May 19, 2008.

The Historic Bridges Programmatic Section 4(f) also applies to this project based upon information contained in the FHWA's revised Section 4(f) Policy Paper (July 20, 2012). New language in this Policy Paper (Part II – Questions and Answers Regarding Section 4(f) Applicability and Compliance; Use of Historic Properties; Historic Bridges, Highways and Other Transportation Facilities) states:

> **Question 8D**: Can the *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* be applied to the replacement of a historic bridge or culvert that lacks individual distinction but is identified as a contributing element of a historic district that is on or eligible for listing on the NR [National Register]?

Answer: Historic districts may include properties or elements that lack individual distinction but possess sufficient integrity to contribute to the overall significance of the district, as well as individually distinctive features that may be separately listed or determined eligible for the NR. All contributing properties or elements, including identified features and their settings are considered eligible for the NR and are therefore Section 4(f) resources. As such, bridges in historic districts may be individually eligible but may also be identified as contributing features within the larger historic district. The *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* may be applied to any historic bridge or culvert, either contributing to a district or individually eligible. The application of the historic bridge programmatic Section 4(f) evaluation would be limited to the bridge replacement or rehabilitation only and must meet all the applicability criteria stated in the programmatic Section 4(f) evaluation. If the bridge replacement requires use, either direct or constructive, of surrounding or adjoining property that contributes to the significance of the historic district, the use of that property would have to be evaluated via another form of Section 4(f) evaluation, including possibly an individual evaluation.

Since the historic Navy Drive Bridge is the only contributing element to the NSA Stockton Historic District that would be affected by the project, the use of the Historic Bridges Programmatic Section 4(f) Evaluation is appropriate.

6.0 AVOIDANCE ALTERNATIVES AND OTHER FINDINGS

As required under the terms of the Programmatic Section 4(f) for historic bridges, the purpose of this chapter is to examine alternatives that would avoid the “use” of a Section 4(f) resource, and to determine whether such avoidance alternatives are prudent and feasible.

Under Section 4(f), an alternative that completely avoids the use of Section 4(f) property must be selected unless it would not be “feasible and prudent” to construct it [49 USC 303(c)]. As defined in 23 CFR 774, a feasible and prudent avoidance alternative "avoids using any Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property."

The following alternatives would avoid any use of the historic bridge:

1. Do nothing.
2. Build a new structure at a different location without affecting the historic integrity of the old bridge, as determined by procedures implementing the National Historic Preservation Act (NHPA).
3. Rehabilitate the historic bridge without affecting the historic integrity of the structure, as determined by procedures implementing the NHPA.

Avoidance Alternative 1 – Do Nothing

Avoidance Alternative 1 is equivalent to proposed project Alternative 2 (No Build) (refer to Chapter 1, Section 1.3.2 of the IS/EA). Although it would avoid impacts to the Section 4(f) resources by retaining the existing Navy Drive Bridge without rehabilitation, reconstruction, or replacement, Avoidance Alternative 1 does not meet the basic transportation purpose and need defined for the proposed project. For the following reasons, this alternative is not feasible and prudent.

Maintenance. The do nothing alternative does not correct the situation that causes the Navy Drive Bridge to be considered structurally deficient or deteriorated. These deficiencies can eventually lead to sudden collapse and potential injury or loss of life. Normal maintenance is not considered adequate to cope with the situation.

The existing bridge has been given a sufficiency rating of 46.8 (out of a possible score of 100) based on a Caltrans inspection completed on October 15, 2012. The rating makes the bridge eligible for replacement under the Highway Bridge Program. As explained in more detail in Chapter 1, Section 1.2.2 of the IS/EA, the many structural insufficiencies include a substandard bridge deck, superstructure, and substructure; insufficient deck geometry, waterway adequacy, and roadway alignment; and non-standard bridge railings, transitions, and approach guardrail.

The existing Navy Drive Bridge is a through truss type bridge. This design does not allow trusses to be removed or modified to provide improved structural stability and greater vertical and horizontal clearance across the bridge without incurring unreasonable high costs for bridge retrofit.

Safety. The do nothing alternative does not correct the situation that causes the Navy Drive Bridge to be considered deficient. Because of the deficiencies summarized below, the Navy Drive Bridge places intolerable restrictions on transport and travel.

The existing bridge has only 14.2 feet of vertical clearance between the bridge deck and the bottom of the trusses that are above the bridge. Standard vertical clearance for interstate highway facilities, from which much of the truck traffic entering the West Complex originates, is 15.5 feet. The bridge's limited vertical clearance prevents vehicles over 14.2 feet tall from utilizing Navy Drive to access the West Complex.

The existing bridge has two 12-foot-wide travel lanes with no shoulders, which does not meet current American Association of State Highway and Transportation Officials standards. The replacement bridge would provide four 12-foot-wide lanes, a 4-foot-wide median and 8-foot-wide shoulders, consistent with American Association of State Highway and Transportation Officials standards.

Avoidance Alternative 2 – Build on New Location without Using the Old Bridge

Avoidance Alternative 2 is similar to proposed project Alternative 4 (refer to Chapter 1, Section 1.3.3 of the IS/EA), which would construct either a removable or fixed-span four-lane bridge at a new location and would leave in place and rehabilitate the existing Navy Drive Bridge. Alternative 4 was considered and withdrawn prior to commencement of the environmental review process, and it fails to meet the "feasible and prudent" test due to constraints associated with (1) Terrain; (2) Engineering and Economy; and (3) the Preservation of the Old Bridge.

Terrain. Avoidance Alternative 2 fails to meet the "feasible and prudent" test with respect to terrain due to the following reason:

- The location of a new bridge would be constricted by the path of the San Joaquin River, the current location of Navy Drive, and existing nearby facilities (railroad tracks and the Stockton Police Department Training Facility). For these reasons, a proposed new bridge must be located close to and slightly southwest (upstream) of the existing bridge. The navigational channel under the existing bridge is on the north side of its central pier to the side of the San Joaquin River, while the navigational channel of the proposed bridge would be located in the center of the river. If both bridges were in place at the same time, the alignment of their navigational channels would be mismatched, which would pose a hazard to waterway users on the San Joaquin River. Alternative locations for the proposed bridge to eliminate the navigational conflict were not considered since they would require relocation of buildings or would conflict with nearby railroad lines. This is considered infeasible due to expense and potential community impacts.

Engineering and Economy. Avoidance Alternative 2 fails to meet the "feasible and prudent" test with respect to engineering and economy due to the following reasons:

- The existing bridge would require some level of rehabilitation to meet current standards, even if it was to be preserved for use only by pedestrians and bicyclists rather than vehicles. However, based on an August 29, 2010, Caltrans inspection, the existing bridge is not eligible for rehabilitation funding through the FHWA Highway Bridge Program.

- Current seismic standards could not be met without substantial retrofit of the existing bridge. Retrofit would be cost-prohibitive and would not have an identified funding source.The new bridge would need to be constructed near to the existing bridge due to the location of other facilities in the area, including the Stockton Police Department Training Facility and nearby railroad lines. The existing bridge would not be able to swing open fully due to the necessary proximity of the new bridge.

Preservation of Old Bridge. Avoidance Alternative 2 fails to meet the "feasible and prudent" test with respect to preservation of the old bridge due to the following reasons:

- In order to satisfy the project's objectives, the ability of the existing bridge to swing would need to be restored. This would involve substantial repairs and retrofit work, which would be cost-prohibitive.

- To this point, no historical organization or entity has presented a feasible proposal to preserve and maintain the Navy Drive Bridge. The Port will market the relocation and preservation of the bridge to the following organizations prior to the publication of the Final Environmental Document: the Manteca Historical Society, the San Joaquin County Historical Society and Museum, and the Haggin Museum. The inside front cover of this IS/EA (General Information about This Document) contains a solicitation to any parties interested in acquiring artifacts from the existing bridge. Additional marketing efforts are anticipated to begin in the summer of 2013. It is unlikely that the bridge can be disassembled and relocated in its entirety; however, a stipulation in the MOA provides for structural elements of the bridge to be offered to these same organizations.

Avoidance Alternative 3 – Rehabilitation without Affecting the Historic Integrity of the Bridge

Avoidance Alternative 3 is equivalent to proposed project Alternative 5 (refer to Chapter 1, Section 1.3.3 of the IS/EA). Avoidance Alternative 3 would involve rehabilitating the existing bridge for use as the primary vehicular access between the Port's East and West Complexes.

The Section 4(f) Policy Paper states that there are two possible reasons that can be used in determining whether a rehabilitation alternative is feasible or prudent:

A. The bridge is so structurally deficient that it cannot be rehabilitated to meet minimum acceptable load requirements without affecting the historic integrity of the bridge.

B. The bridge is seriously deficient geometrically and cannot be widened to meet the minimum required capacity of the highway system on which it is located without affecting the historic integrity of the bridge. Flexibility in the application of the American Association of State Highway and Transportation Officials geometric standards should be exercised as permitted in 23 CFR 625 during the analysis of this alternative.

Alternative 5 was considered and withdrawn prior to commencement of the environmental review process, and it is not feasible or prudent. The following facts support a conclusion that the bridge is too structurally deficient to permit a feasible rehabilitation.

- The Navy Drive Bridge sufficiency rating is 46.8 (out of a possible score of 100) based on a Caltrans inspection completed on October 15, 2012. This low rating makes the bridge ineligible for rehabilitation funding from the FHWA Highway Bridge Program.

- The existing bridge configuration, which accommodates two travel lanes and a sidewalk in a 24-foot-wide roadway, does not meet current design standards. To accommodate these design standards, a four-lane bridge is proposed, which which require widening of the existing bridge. Modification to this degree would not be possible without affecting the historic integrity of the bridge, particularly the aspects of design, materials, and workmanship.

- Current seismic standards could not be met without substantial retrofit of the existing bridge. Retrofit would be cost-prohibitive, would not have an identified funding source, and would affect the bridge's historic integrity with respect to design, materials, and workmanship.

- In order to satisfy the project requirements, the ability of the existing bridge to swing would need to be restored. This would involve substantial repairs and retrofit work, which would also be cost-prohibitive. Rehabilitation of the existing bridge and restoration of swing operation would cost $2-3 million. This, however, would still not address the following purpose and need elements: future traffic demand, homeland security requirements, and functionally adequacy of the bridge. Modifications that would still be required to meet these purpose and need elements would entail alternations to character-defining features of the bridge (e.g., the deck).

Conclusion

Based upon the considerations presented in this section, there is no feasible and prudent alternative to the demolition of the Navy Drive Bridge.

7.0 MEASURES TO MINIMIZE HARM TO SECTION 4(f) PROPERTY

None of the previously discussed avoidance alternatives are considered feasible and prudent. Because there are no feasible alternatives that would avoid use of the historic Navy Drive Bridge, measures to minimize harm to the Section 4(f) property have been developed.

Measures to minimize harm to a Section 4(f) property must be developed in consultation with the agency with jurisdiction. Federal regulations (23 CFR 774.17) define the entities and individuals who are considered the officials with jurisdiction for various types of property. In the case of historic sites, the official with jurisdiction is the State Historic Preservation Officer (SHPO). When the Advisory Council on Historic Preservation (ACHP) is involved in consultation concerning a property under Section 106 of the National Historic Preservation Act (NHPA), the ACHP is also an official with jurisdiction over that resource for the purposes of Section 4(f).

Per the Section 4(f) Policy Paper, the historic bridges programmatic Section 4(f) evaluation and approval may be used only for projects where the proposed action includes all possible planning to minimize harm. This has occurred when:

- For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge; and

- For bridges that are adversely affected, agreement among the SHPO, ACHP, and Caltrans (as assigned by FHWA) is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project.

Prior to the publication of the Final Environmental Document, the Port will market the bridge for relocation and preservation to the following historical organizations: the Manteca Historical Society, the San Joaquin County Historical Society and Museum, and the Haggin Museum. The inside front cover of this IS/EA (General Information about This Document) contains a solicitation to any parties interested in acquiring artifacts from the existing bridge. Additional marketing efforts are anticipated to begin in the summer of 2013.

Measures to minimize harm to the Navy Drive Bridge are documented in the Memorandum of Agreement (MOA), approved on February 28, 2008 by Caltrans and the SHPO, with concurrence by the Port on April 30, 2008. A copy of the fully executed MOA was sent to the ACHP on May 7, 2008, and the ACHP acknowledged its receipt in a letter dated May 19, 2008. The measures take into account the adverse effects of the project on historic properties in compliance with Section 106 of the NHPA, pursuant to 36 CFR Part 800. The MOA is included as Appendix E of the IS/EA.

In accordance with the MOA, the stipulations must be implemented to mitigate harm to the Navy Drive Bridge.

A. Prior to the start of any work that could adversely affect any characteristics that qualify Navy Drive Bridge as an historic property, Caltrans shall ensure that the recordation measures specified in section A of this stipulation are completed.

    1. The Port shall take large-format (4" by 5" or larger negative size) photographs showing the Navy Drive Bridge in context as well as details of its historic engineering features. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record (HAER) photographic specifications. Views of the Navy Drive Bridge shall include:

        a. Contextual views showing the Bridge in its setting;

        b. Elevation views;

        c. Views of the operator house exterior and interior;

        d. Views of the Bridge approaches and abutments;

        e. Detail views of significant engineering and design elements.

        [HAER documentation is still in progress and is anticipated to be finalized in summer 2013.]

    2. The Port shall make a reasonable and good faith effort to locate and photographically reproduce historic construction drawings for the Navy Drive Bridge. If these drawings are located, the Port shall photographically reproduce plans, elevations, and selected details from these drawings in accordance with HAER photographic specifications. If they are legible in this format, reduced size (8 ½” by 11”) copies of the construction drawings may

be included as pages of the report cited in subsection A.3. of this stipulation rather than photographed and included as photographic documentation.

[HAER documentation is still in progress and is anticipated to be finalized in summer 2013.]

3. A written historical and descriptive report for the Navy Drive Bridge will be completed. This report will provide a physical description of the Navy Drive Bridge, discuss its construction and its significance under applicable National Register of Historic Places criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Park Service (NPS) *HAER Guidelines for Preparing Written Historical and Descriptive Data* guidelines for written documentation.

   [HAER documentation is still in progress and is anticipated to be finalized in summer 2013.]

4. Upon completion, copies of the documentation prescribed in subsection A.3 of this stipulation shall be retained by Caltrans District 10 and the Port, deposited in the Caltrans Transportation History Library in Sacramento, and offered to repositories to include the San Joaquin County Historical Society and Museum in Lodi.

   [HAER documentation is still in progress and is anticipated to be finalized in summer 2013.]

B. The Port shall offer artifacts removed from the Navy Drive Bridge during demolition to local museums such as the San Joaquin County Historical Society and Museum, or other suitable facilities to be determined by the Port, and provide for their delivery to accepting institutions.

   [Artifacts will offered prior to demolition, but the transfer of said artifacts will not occur until after bridge demolition.]

C. The Port shall install informative permanent metal plaques at both ends of the replacement bridge at public locations that provide a brief history of the original Navy Drive Bridge and its relationship to the NSA Stockton Historic District. The SHPO shall have 30 days to review proposed photographs and texts before they are installed.

[Commemorative plaques will be installed after the new bridge is finished in 2015.]

D. The Port shall mount and display a representative photograph of the Navy Drive Bridge, along with accompanying historical text, in a public place at the Port of Stockton. The text shall provide a brief history of the Navy Drive Bridge and its relationship to the NSA Stockton Historic District. The SHPO shall have 30 days to review proposed photographs and text before they are installed.

   [This task is anticipated to be completed in spring 2014.]

Conclusion

Based upon the considerations presented in this section, the proposed action includes all possible planning to minimize harm to the Section 4(f) property. The official having jurisdiction agrees with the assessment and proposed measures to minimize harm. The measures are consistent with the MOA between Caltrans (as assigned by FHWA) and the SHPO and take into account the adverse effects of the project on historic properties in compliance with Section 106 of the NHPA, pursuant to 36 CFR Part 800.

8.0 COORDINATION

Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. Additionally, local groups and individuals were notified of the project and invited to comment. This chapter summarizes the results of efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

The following organizations and concerned parties were notified of the proposed project by letter and invited to comment regarding concerns they may have had about cultural resources in the project vicinity.

California State Historic Preservation Officer (SHPO)

Please refer to Chapter 1, Section 1.4 (Permits and Approvals Needed) and Chapter 2, Section 2.1.6 (Cultural Resources) of the environmental document for details regarding coordination with the SHPO. These sections summarize project coordination with the SHPO with respect to the significance of the resources involved, proposed use and impacts, and proposed measures to mitigate harm resulting from demolition of the existing Navy Drive Bridge.

The Finding of Effect and MOA were transmitted by Caltrans to FHWA on March 15, 2007, and FHWA submitted them to SHPO on April 26, 2007. SHPO concurred with the conclusions of the Finding of Effect on June 5, 2007. The MOA was approved on February 28, 2008 by the SHPO and Caltrans.

The existing Navy Drive Bridge and the NSA Stockton Historic District are considered Section 4(f) properties, and the proposed demolition of the bridge constitutes “use” of these Section 4(f) properties. The SHPO’s review of the IS/EA, participation in previous effect consultation, and concurrence on the content and adequacy of the MOA cumulatively constitute coordination with the official with jurisdiction over the Section 4(f) resources.

Advisory Council on Historic Preservation (ACHP)

Correspondence was exchanged with the ACHP as part of the project's Section 106 review. On May 17, 2007, FHWA sent a letter to the ACHP with a notification that an adverse effect would occur to Navy Drive Bridge and inviting the ACHP to participate in consultation. On June 8, 2007, ACHP sent a letter to FHWA requesting additional project information in order to determine if it would join conultation. On May 19, 2008, ACHP sent a letter to Caltrans acknowledging receipt and filing of the project MOA. Copies of these letters are included in the Letters and Correspondence section.

Local Historical Societies and Museums

Seven local historical societies or museums were originally contacted by scoping letter on December 30, 2003 requesting ". . . information about the bridge and its surroundings . . ." Follow-up letters were sent to the same organizations on June 6, 2006 to ". . . inform you of the steps taken to date regarding the demolition of the historic bridge and to request any comments or questions that you might have regarding the proposed mitigation measures." Due to changes to the project, letters were again sent to the organizations on May 20, 2011 to request any ". . . information or concerns about historical sites in the project area." Example copies of these letters are included in the Letters and Correspondence section. All organizations contacted are listed below along with a description of their responses, if any:

- Children's Museum of Stockton. No responses were received..
- Conference of California Historical Societies. No responses were received.
- Jedediah Smith Society. In response to the scoping letter dated December 30, 2003, the society responded by letter on January 21, 2004, indicating that their organization had no interest in the project site. No responses to the other two letters were received..
- Manteca Historical Society and Museum. No responses were received.
- San Joaquin County Historical Society and Museum. No responses were received.
- Stockton Corral of Westerners. No responses were received.

9.0 LETTERS AND OTHER CORRESPONDENCE

ESA Environmental Science Associates

Example Historical Society Contact Letter

December 30, 2003

Name
Address
City, State Zip

SUBJECT: Request for Information and Comments for the Port of Stockton Navy Drive Bridge Replacement Project, San Joaquin County, California

Dear Sir:

Environmental Science Associates (ESA) is conducting cultural resource studies for the Port of Stockton Navy Drive Bridge Replacement Project, San Joaquin County, Stockton California. The project area is located in Township 1 North, Range 6 East, unsectioned, Stockton West, Calif. Quadrangle (see attached map). The Navy Drive Bridge is a vehicular movable bridge connecting the City of Stockton with Rough and Ready Island across the San Joaquin River. The existing structure was built in 1940 and is a through-truss swing bridge.

In an effort to provide an adequate appraisal of all potential impacts that may result from the proposed project (bridge replacement), ESA is requesting information and comments concerning this bridge and its surroundings. If you have any information concerning this bridge or if you would like to comment on the proposed project, please contact me at 916/669-4730.

Thank you for your time and cooperation regarding this matter.

Sincerely,

Barry Scott,
Senior Archaeologist

202599

BGS:daj

Enclosure

8950 Cal Center Drive, Suite 300 Sacramento, California 95826 (916) 564-4500 *fax* 564-4501 www.esassoc.com

List of Historic Society Contacts

San Joaquin County

Children's Museum of Stockton
402 W. Weber Avenue
Stockton, CA 95203
(209) 465-4386
http://www.sonnet.com/usr/children/

Conference of California Historical Societies
University of the Pacific
Stockton, CA 95211
(209) 946-2169
http://www.oac.cdlib.org/dynaweb/
ead/uop/ms243/@Generic__BookView

Jedediah Smith Society
University of the Pacific
Stockton, CA 94542
(209) 946-2404
http://www.cs.uop.edu/organizations/JSS96.html

Manteca Historical Society and Museum
P.O. Box 907
Manteca, CA 95337
(209) 825-3021
http://www.artcom.com/museums/nv/mr/95336.htm

San Joaquin County Historical Society and Museum
11793 North Micke Grove Road
Lodi, CA 95240
(209) 331-2055
http://www.sanjoaquinhistory.org/

Stockton Corral of Westerners
P.O. Box 1315
Stockton, CA 95201
(209) 478-9266
http://www.westerners-intl.org/tally2.html#CA

The Haggin Museum
Victory Park, 1201 North Pershing Avenue
Stockton, CA 95203
(209) 940-6300
http://www.hagginmuseum.org/

JEDEDIAH SMITH SOCIETY

Founded in 1957 to research and to disseminate information on the fur trade era.

UNIVERSITY OF THE PACIFIC • STOCKTON, CALIFORNIA 95211

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Robert Shannon
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James Smith
Helena MT
Nancy Taniguchi, Ph D
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Darrell Thomas
Stockton CA
Bill Swaggerty, Ph D
John Muir Ctr

EMERITI

Robert Dash, Ph D
Damariscotta ME
Ron Limbaugh, Ph D
Gualala CA

EXECUTIVE DIRECTOR

Haworth Clover, Ed. D.
2985 Summit Drive,
Hillsborough CA 94010
650-342-9930

Senior Archaeologist
8950 Cal Center Drive, Suite 300
Sacramento, CA 95826

Dear Barry Scott,

Re: Request for Information and Comments – Port of Stockton Navy Drive Bridge

The Society does not know of any Jedediah Smith interest in the site. Therefore we have no objection to the proposed project. Thank you for the consideration.

Sincerely,

Haworth A. Clover

Haworth A. Clover, Ed.D.
Executive Director
Jedediah Smith Society
University of the Pacific
Stockton, CA 95211

GalvinPreservationAssociates

GPA

June 6, 2006

Name
Organization
Address
City, State Zip

RE: Request for Public Comments Regarding Mitigation Measures for the Port of Stockton Navy Drive Bridge Replacement Project, San Joaquin County, California

To Whom It May Concern:

Galvin Preservation Associates Inc. (GPA) is assisting the Port of Stockton with their Navy Drive Bridge Replacement Project located in San Joaquin County, Stockton, California (see Maps 1, 2, 3 and 4). You were originally notified of this project in a letter dated December 30, 2003 (letter sent from ESA Environmental Company). The proposed project will include the demolition of the bridge, realignment of Navy Drive and the construction of a replacement bridge. The Navy Drive Bridge is a vehicular thorough-truss swing bridge connecting the City of Stockton with Rough and Ready Island across the San Joaquin River. It was built in 1940-41, and determined to be a contributor to the Naval Supply Annex Stockton historic district, which is eligible for the National Register of Historic Places.

The Port is in the process of completing their environmental compliance as part of this project and is currently working out mitigation measures to mitigate the loss of the historic Navy Drive Bridge.

The Port of Stockton proposes to use FHWA's Highway Bridge Rehabilitation and Replacement (HBRR) program to partially fund the project. Because this project will be constructed using federal funds, the project is subject to compliance with Section 106 of the National Historic Preservation Act (36 CFR § 800). Compliance is also addressed in accordance with the California Environmental Quality Act (CEQA) guidelines at Title 14 California Code of Regulations (CCR) §15064.5 and Public Resources Code (PRC) 5024.

The Port has considered several alternatives for the bridge replacement project, including alternatives that would not adversely affect the bridge. However, due to an expected increase in vehicular traffic over the next twenty years and structural deficiencies in the existing bridge, the Port has determined that the "no build" and "rehabilitation" alternatives are not viable to relieve congestion and address safety concerns for the exiting bridge. Additionally, the Port has considered an alternative re-use of the bridge, which would leave the existing bridge in place but construct a new bridge adjacent to the

existing bridge. This alternative was also rejected due to the Port's inability to receive federal funding for the construction of a new bridge and for the navigational hazards that would be caused by keeping the old bridge in place. Therefore, it was determined that the Port could not avoid causing an adverse effect on the bridge.

Galvin Preservation Associates Inc. (GPA) has worked with the Port and is currently consulting with Caltrans, the Federal Highway Administration, and the State Historic Preservation Officer (SHPO) to mitigate the adverse effects on the bridge. The proposed mitigation measures include; photographing and documenting the bridge using Historic American Engineering Record (HAER) type standards, identifying and salvaging bridge parts for display in local museums, and installing a bronze plaque on the new bridge commemorating the historic bridge.

The purpose of this letter is to inform you of the steps taken to date regarding the demolition of the historic bridge and to request any comments or questions that you might have regarding the proposed mitigation measures.

GPA would like to thank you for your time and consideration of our requests for comments regarding the mitigation measures to mitigate the adverse effect of this project on Navy Drive Bridge. We would greatly appreciate any responses by June 26, 2006 (30 days from the date of this letter), such that we can include a copy of your comments in our report.

We appreciate your interest in historic properties and we look forward to receiving your responses. If you have any questions, or if you would like to discuss this request further, please feel free to contact me by telephone at 310-792-2690 or by e-mail at andrea@galvinpreservation.com.

Sincerely,

Andrea Galvin
Principal Architectural Historian
Galvin Preservation Associates Inc.

Attachments: Maps

List of Scoping Letter Contacts

Scoping letters were sent to the following organizations on June 6, 2006:

Children's Museum of Stockton
402 W. Weber Avenue
Stockton, CA 95203
(209) 465-4386

11th Coast Guard District, Bridge Office
Attn: Carl Hausner
Bridge Management Specialist
Coast Guard Island, Bldg. 50-03
Alameda, CA 94501-5100
510-437-3515

Conference of California Historical Societies
University of the Pacific
Stockton, CA 95211
(209) 946-2169

The Haggin Museum
Victory Park
1201 North Pershing Avenue
Stockton, CA 95203
(209) 940-6300

Manteca Historical Society and Museum
P. O. Box 907
Manteca, CA 95337
(209) 825-3021

Katherine Erolinda Perez
(Native American individual)
1234 Luna Lane
Stockton, CA 95206
(209) 462-2680

San Joaquin County Historical Society and Museum
11793 North Micke Grove Road
Lodi, CA 95240
(209) 331-2055

Stockton Corral of Westerners
P. O. Box 1315
Stockton, CA 95201
(209) 478-9266

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
FORT COLLINS
FRESNO
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
S. SAN FRANCISCO

May 20, 2011

Haggin Museum
Victory Park
1201 North Pershing Avenue

Stockton, CA 95203

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Haggin Museum:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
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SAN LUIS OBISPO
S. SAN FRANCISCO

May 20, 2011

Stockton Corral of Westerners
P.O. Box 1315
Stockton, CA 95201

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Stockton Corral of Westerners:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

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S. SAN FRANCISCO

May 20, 2011

San Joaquin County Historical Society and Museum
11793 North Micke Grove Road
Lodi, CA 95337

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear San Joaquin County Historical Society and Museum:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

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157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

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510.236.3480 FAX

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May 20, 2011

Manteca Historical Society and Museum
P.O. Box 907
Manteca, CA 95337

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Manteca Historical Society and Museum:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

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S. SAN FRANCISCO

May 20, 2011

Jedediah Smith Society
University of the Pacific
Stockton, CA 94542

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Jedediah Smith Society:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

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S. SAN FRANCISCO

May 20, 2011

Conference of California Historical Societies
University of the Pacific
Stockton, CA 95211

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Conference of California Historical Societies:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

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S. SAN FRANCISCO

May 20, 2011

Children's Museum of Stockton
402 W. Weber Avenue
Stockton, CA 95203

Subject: Navy Drive Bridge Replacement Project, Stockton, San Joaquin County, California
LSA Project #PRC1002

Dear Children's Museum of Stockton:

The Port of Stockton proposes to realign Navy Drive and replace the existing Navy Drive bridge over the San Joaquin River with a new bridge. LSA Associates, Inc., is conducting a study to determine if the project might affect cultural resources. The project area is located in Township 1 North, Range 6 East, in unsectioned land, as depicted on the accompanying portion of the USGS *Stockton West, Calif.*, 7.5' topographic map.

Please notify us if your organization has any information or concerns about historical sites in the project area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. If you have any questions, please contact me at the address and phone number above or via email (neal.kaptain@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Neal Kaptain

Neal Kaptain, M.A., RPA
Senior Cultural Resources Manager
Prehistoric and Historical Archaeologist and Architectural Historian
LSA Northern California Cultural Resources Group

PORT OF STOCKTON

Phone: (209) 946-0246

Fax: (209) 466-5984

December 19, 2006

Margaret Lawrence, PQS
Environmental MPS & Local Assistance Branch Chief
Caltrans District 10, Environmental Division
1976 E. Charter Way/1976 Martin Luther King Jr. Boulevard
Stockton, CA 95205

Re: Final Submission of Historic Property Survey Report with Attachments Including a Historical Resources Evaluation Report, Finding of Effect Report and Memorandum of Agreement for the Navy Drive Bridge Replacement Project Located in the City of Stockton, San Joaquin County [EA# BRLS-6347(002)]

Dear Margaret:

Enclosed please find the Final Historic Property Survey Report (HPSR) with attachments, including the Historical Resources Evaluation Report, Finding of Effect Report and Memorandum of Agreement for the ongoing Navy Drive Bridge Replacement Project located at the Port of Stockton, San Joaquin County. These documents are intended to fulfill Caltrans and FHWA's responsibilities under the July 2003 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation* (PA).

The Port of Stockton (Port) has previously submitted a Draft Historic Property Survey Report (HPSR), including an Archaeological Survey Report (ASR) and Historic Resources Evaluation Report (HRER), for the proposed replacement of the Navy Drive Bridge (Bridge # 29C-0023), which is located within Caltrans District 10 at the crossing of the San Joaquin River to Rough and Ready Island in Stockton, San Joaquin County. The Port also previously submitted the FOE and a draft MOA for your review. The attached documents incorporate the changes recommended by Caltrans District 10 in the August 2, 2006 letter.

The Port proposes to use funds from Federal Highway Administration's Highway (FHWA's) Bridge Rehabilitation and Replacement (HBRR) program to partially subsidize the project. On behalf of Caltrans and FHWA, the Port has contracted qualified consultants to fulfill the environmental compliance requirements for Section 106 of the NHPA.

The Area of Potential Effects (APE) for the proposed project was established in consultation with Andy Hope, Caltrans Headquarters (HQ) Professionally Qualified Staff (PQS), Principal Architectural Historian and Jacqueline Wait, Caltrans District 10 PQS, Lead Archaeological Surveyor, on January 31, 2006. The general APE includes all of Rough and Ready Island due to the presence of a pre-existing National Register of Historic Places (NRHP) historic district. The focused APE for the proposed project has one

historic property, the Navy Drive Bridge, which was determined to be a contributor to the NRHP eligible NSA Stockton historic district.

The Port has considered several alternatives for the Navy Drive Bridge replacement project, including three that may not adversely affect the bridge. However, due to safety, funding, and navigation constraints, the Port has determined that it cannot reasonably avoid causing an adverse effect on the bridge. Therefore, the Port is recommending that Caltrans propose to FHWA a finding of Adverse Effect and submit the attached documentation supporting the proposed findings. Should FHWA concur, the Port requests that FHWA (with the cooperation and assistance of Caltrans) consult with SHPO and the Advisory Council on Historic Preservation (ACHP) regarding the resolution of adverse effects, pursuant to Section 106 PA Stipulation XI., 36 CFR 800.6(a), and 800.6(b)(1).

With the help of qualified consultants, the Port would like to continue consultation with Caltrans, the FHWA, and the State Historic Preservation Officer (SHPO) to mitigate the adverse effects on the bridge. The proposed mitigation measures include: photographing and documenting the bridge using Historic American Engineering Record (HAER) type standards, identifying and salvaging bridge parts for display in local museums, and installing a bronze plaque on the new bridge commemorating the historic bridge.

The Port is requesting Caltrans signature and approval on the Historic Property Survey Report (HPSR), including an Archaeological Survey Report (ASR) and Historic Resources Evaluation Report (HRER) for the proposed replacement of the Navy Drive Bridge. The Port is also requesting that Caltrans forward the attached documents to the SHPO for concurrence, and to continue consulting with the other interested parties to finalize the MOA document.

The Port thanks for you for your consideration in this matter and appreciates Caltrans' ongoing assistance and coordination on this project. We seek to hear back, with any responses regarding the adequacy of the documents, within 30 days from receipt of the documents. If you need additional information, please contact me at (209) 946-0246 or hmckay@stocktonport.com. Additionally, for questions regarding the individual documents, please contact Andrea Galvin of Galvin Preservation Associates Inc. at (310) 792-2690 or andrea@galvinpreservation.com.

Sincerely,

Henry McKay for
Special Projects Manager
Port of Stockton

Attachments: Historic Property Survey Report for the Navy Drive Bridge Replacement Project located in the City of Stockton, San Joaquin County; BRLS-6347(002) (including maps and correspondence)

cc: Brian Grattige, ESA
Jim Brady, Moffat & Nichol Engineers
Melissa Logue, PMC
Richard Galvin, PMC

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 STOCKTON, CA 95201
(1976 E. CHARTER WAY/1976 E. DR. MARTIN
LUTHER KING JR. BLVD. 95205)
TTY: California Relay Service (800) 735-2929
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March 15, 2007

Mr. Gene Fong
Division Administrator
Federal Highway Administration
650 Capitol Mall Suite 4-100
Sacramento, CA 95814

Attn: Edrie Vinson

Re: Finding of Adverse Effect and Recommended Resolution for the Proposed Navy Drive Bridge Replacement Project, Rough and Ready Island, Port of Stockton, City of Stockton, San Joaquin County, California

Dear Mr. Fong:

The California Department of Transportation (Caltrans), requests that Federal Highway Administration (FHWA) initiate consultation with the State Historic Preservation Officer (SHPO) regarding the finding of adverse effect and recommended resolution for the proposed removal and replacement of a National Register-eligible bridge on Rough and Ready Island in the Port of Stockton, San Joaquin County. This consultation is requested in accordance with the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Preservation Officer, and the California Department of Transportation* (PA).

Enclosed you will find a Finding of Adverse Effect (FOAE) and Memorandum of Agreement (MOA) for the *Proposed Navy Drive Bridge Replacement on Rough and Ready Island, Port of Stockton, in the City of Stockton, San Joaquin County, California.* A Historic Property Survey Report (HPSR) for the proposed undertaking and its supporting technical documents, an Archaeological Survey Report (ASR) and Historical Resources Evaluation Report (HRER) are provided for reference.

Under the PA, Caltrans is responsible for ensuring the appropriateness of the Area of Potential Effects (APE) (Stipulation VIII.A) and the adequacy of historic property identification efforts (Stipulation VIII.B). In accordance with Stipulation IX.B of the PA, Caltrans finds that there is a historic property within the APE that would be affected by

the undertaking, the Naval Supply Annex (NSA) Stockton Historic District, which was formally determined eligible for the National Register of Historic Places (NRHP) by the SHPO in a letter dated December 4, 1996 (USN960502Z). Navy Drive Bridge (Bridge No. 29C0023), a through-truss swing bridge, connects Rough and Ready Island to the City of Stockton across the San Joaquin River. The bridge, built between 1940 and 1941, is a contributor to the NSA Stockton Historic District.

As described in the accompanying documentation, the Port of Stockton (Port), in conjunction with Caltrans on behalf of FHWA, proposes to realign Navy Drive from the western edge of its intersection with Washington Street to the San Joaquin River, construct a new bridge crossing in the San Joaquin River and realign Navy Drive on Rough and Ready Island from the San Joaquin River to the juncture with the proposed McCloy Avenue. The new bridge structure would be located upstream from the existing bridge and its south abutment would be placed next to the south abutment of the existing bridge. Two new traffic lanes, a median, shoulders and sidewalks with barriers would be provided by the replacement bridge.

Since a part of the NSA Stockton Historic District would be affected by the undertaking, a general APE was established to include all of Rough and Ready Island. A more focused APE was established to include the area that could reasonably be expected to be directly or indirectly affected by the proposed project. The only extant contributing elements to the district in visual range of the project area are the Navy Drive Bridge and Fyffe Avenue. The focused APE includes both an archaeological APE and a slightly larger architectural APE. A full project description and depiction of the APE can be found beginning on page two of the FOAE.

Caltrans has applied the Criteria of Adverse Effect set forth at 36 CFR 800.5(a)(1) and finds that the undertaking, which would physically dismantle the existing Navy Drive Bridge, would have an Adverse Effect on a historic property pursuant to Stipulation X.A of the PA. This is an adverse effect because the bridge would cease to exist and cannot be avoided pursuant to Stipulation X.B, or for any other reason.

Following Stipulation X.C.1, Caltrans requests that FHWA review this proposed finding and, if in agreement with the finding, consult the SHPO following Stipulation XI. Caltrans, on behalf of FHWA, shall notify consulting parties and interested members of the public, as appropriate, of the finding. To assist FHWA with the resolution of those adverse effects pursuant to Stipulation XI, a draft MOA has been prepared that governs the undertaking and all of its parts, pursuant to 36 CFR 800.6(c). Caltrans requests that FHWA review the proposed MOA and, if in agreement with the stipulations, consult with the SHPO and notify the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR 800.6(a) and (b). Caltrans and the Port of Stockton would be concurring

signatories if the MOA is executed. If an agreement to resolve adverse effects cannot be reached, consultation may be terminated pursuant to Stipulation XI.E.

If you need any additional information or would like to set up a meeting, please do not hesitate to contact Caltrans Archaeologist Jacqueline Wait at (209) 942-6141 (e-mail: Jacqueline_Wait@dot.ca.gov). Thank you for your assistance with this undertaking.

Sincerely,

Margaret Lawrence

Margaret Lawrence
Environmental MPS & Local Assistance Branch Chief

Attachments:

Navy Drive Bridge Replacement on Rough and Ready Island, Port of Stockton, in the City of Stockton, San Joaquin County, California. (December 2006)

- Historic Property Survey Report (HPSR)
- Archaeological Survey Report (ASR)
- Historical Resources Evaluation Report (HRER)
- Finding of Adverse Effect (FOAE)
- Memorandum of Agreement (MOA)

c: Edrie Vinson
Gary Sweeten
Greg King
Jill Hupp

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CALIFORNIA DIVISION
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

April 26, 2007

IN REPLY REFER TO
HDA-CA
File # BRLS-6347(002)
Document # P56779

CERTIFIED RETURN RECEIPT REQUESTED: **7003 1680 0002 3834 1923**

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Mr. Donaldson:

SUBJECT: Finding of Adverse Effect and Recommended Resolution for the Proposed Navy Drive Bridge Replacement Project, Rough and Ready Island, Port of Stockton, City of Stockton, San Joaquin County, California

The Federal Highway Administration (FHWA) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the finding of adverse effect and recommended resolution for the proposed removal and replacement of a National Register-eligible bridge on Rough and Ready Island in the Port of Stockton, San Joaquin County. This consultation is requested in accordance with the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Preservation Officer, and the California Department of Transportation* (PA).

Enclosed you will find a Finding of Adverse Effect (FOAE) and Memorandum of Agreement (MOA) for the *Proposed Navy Drive Bridge Replacement on Rough and Ready Island, Port of Stockton in the City of Stockton, San Joaquin County, California*. A Historic Property Survey Report (HPSR) for the proposed undertaking and its supporting technical documents, an Archaeological Survey Report (ASR) and a Historical Resources Evaluation Report (HRER) are provided for reference.

Under the PA, Caltrans is responsible for ensuring the appropriateness of the Area of Potential Effects (APE) (Stipulation VIII.A) and the adequacy of historic property identification efforts (Stipulation VIII.B). In accordance with Stipulation IX.B of the PA, Caltrans finds that there is a historic property within the APE that would be affected by the undertaking, the Naval Supply Annex (NSA) Stockton Historic District, which was

MOVING THE AMERICAN ECONOMY

or Edrie Vinson, Sr. Environmental Specialist, FHWA at 916-498-5852 (e-mail: Edrie.Vinson@fhwa.dot.gov). Thank you for your assistance with this undertaking.

Sincerely,

/s/ Mayela Sosa

For
Gene K. Fong
Division Administrator

Enclosure

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CALIFORNIA DIVISION
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

May 16, 2007

IN REPLY REFER TO
HDA-CA
File # Navy Drive Bridge Replacement
Document # P57051

CERTIFIED RETURN RECEIPT REQUESTED: **7003 1680 0002 3834 0308**

Mr. Don Klima, Director
Office of Planning and Review
Advisory Council on Historic Preservation
1100 Pennsylvania Ave. N.W.
Washington, DC 20004

Dear Mr. Klima:

The Federal Highway Administration (FHWA), in consultation with the State Historic Preservation Officer (SHPO), has found that it will have an adverse effect on the proposed Navy Drive Bridge Replacement on Rough and Ready Island, Port of Stockton, in the City of Stockton, San Joaquin County, California. A Memorandum of Agreement is being prepared for the bridge replacement. Would the Advisory Council on Historic Preservation wish to participate in the MOA to resolve adverse effects?

Thank you for your consideration. If you have any questions, please call Edrie Vinson, FHWA, at (916) 498-5852.

Sincerely,

/s/ Edrie Vinson

For
Gene K. Fong
Division Administrator

MOVING THE AMERICAN ECONOMY

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

Received
JUN 07 2007
FHWA

June 5, 2007

Reply To: FHWA070501A

Gene K. Fong, Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

Re: Finding of Effect for the Proposed Replacement of the Navy Drive Bridge, Rough and Ready Island, Stockton, CA

Dear Mr. Fong:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA).

The Federal Highway Administration (FHWA) is requesting my concurrence that the proposed project will have an adverse effect on historic properties, specifically the Navy Drive Bridge, a contributor to the Naval Supply Annex Stockton Historic District, a property determined eligible for the National Register of Historic Places in 1996. Based on my review of the submitted documentation I concur. My comments on the proposed Memorandum of Agreement will follow at a later date.

Thank you for considering historic properties as part of your project planning. If you have any questions, please contact Natalie Lindquist of my staff at your earliest convenience at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov .

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Preserving America's Heritage

June 8, 2007

Mr. Gene K. Fong
Division Administrator
California Division
Federal Highway Administration
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

Re: *Replacement of Navy Drive Bridge on Rough and Ready Island*
Document #P57051
City of Stockton, San Joaquin County, California

Dear Mr. Fong:

On May 18, 2007, the Advisory Council on Historic Preservation (ACHP) received your notification of adverse effect for the referenced undertaking that was submitted in accordance with Section 800.6(a)(1) of our regulations, "Protection of Historic Properties" (36 CFR Part 800). The background documentation included with your submission does not meet the specifications in Section 800.11(e) of the ACHP's regulations. We, therefore, are unable to determine whether Appendix A of the regulations, *Criteria for Council Involvement in Reviewing Individual Section 106* Cases, applies to this undertaking. Accordingly, we request that you submit the following additional information so that we can determine whether our participation in consultation to resolve adverse effects is warranted.

- A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, drawings, as necessary;
- A description of the affected historic properties, including information on the characteristics that qualify them for the National Register; and
- Copies or summaries of any views provided by consulting parties and the public.

Upon receipt of the additional information, we will notify you within 15 days of our decision. Should you have any questions, please contact me at 202-606-8522 or clegard@achp.gov.

Sincerely,

Charlotte Fesko

for Carol Legard
FHWA Liaison
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 809 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENVIRONMENTAL ANALYSIS, MS 27
1120 N STREET
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 653-7507
FAX (916) 653-7757
TTY (916) 653-4086

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May 7, 2008

Ms. Carol Legard
FHWA Liaison
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue NW, Suite 809
Washington, DC 20004

10-SJ-0
Navy Drive Bridge Replacement
BRLS 6349(002)
Port of Stockton

Dear Ms. Legard:

Subject: Signed Memorandum of Agreement for the Replacement of the Navy Drive Bridge, Rough and Ready Island, Stockton, California

The California Department of Transportation (Caltrans) and the California State Historic Preservation Officer executed a Memorandum of Agreement for the above referenced project on February 28, 2008. Enclosed is a copy for the Advisory Council on Historic Preservation's files, which Caltrans is submitting in accordance with 36 CFR 800.6(b)(1)(iv).

Caltrans is transmitting this as a federal agency, following the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program,* which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for FHWA's responsibilities under NEPA as well as consultation and coordination responsibilities under other Federal environmental laws. In that this project is covered by the above referenced MOU, FHWA has assigned, and Caltrans has assumed, FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to Caltrans.

If any additional information is needed, please contact Jill Hupp, Chief of the Caltrans Cultural and Community Studies Office Section 106/PA Coordination Branch, at (916) 654-3567.

Sincerely,

GREGORY P. KING
Chief
Cultural and Community Studies Office
Division of Environmental Analysis

c: Kathy Ikeda – Caltrans D10; Jackie Wait – Caltrans D10; Jill Hupp – Caltrans HQ

JH/jh

Preserving America's Heritage

May 19, 2008

Mr. Gregory P. King, Chief
Cultural and Community Studies Office
Department of Transportation
Division of Environmental Analysis
1120 N Street
P.O. Box 942874
Sacramento, CA 94274-0001

REF: Proposed Replacement of the Navy Drive Bridge
Rough and Ready Island, Stockton, California

Dear Mr. King:

On May 12, 2008 the Advisory Council on Historic Preservation (ACHP) received the Memorandum of Agreement (MOA) for the above referenced project. In accordance with Section 800.6(b)(1)(iv) of the ACHP's regulations, the ACHP acknowledges receipt of the MOA. The filing of the MOA, and execution of its terms, completes the requirements of Section 106 of the National Historic Preservation Act and the ACHP's regulations.

We appreciate you providing us with a copy of this MOA and will retain it for inclusion in our records regarding this project. Should you have any questions or require additional assistance, please contact me at (202) 606-8509 or by e-mail at ljohnson@achp.gov.

Sincerely,

LaShavio Johnson

LaShavio Johnson
Historic Preservation Technician
Federal Permitting, Licensing and Assistance Section
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone:202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048, STOCKTON, CA 95201
(1976 E. CHARTER WAY/1976 E. DR. MARTIN
LUTHER KING JR. BLVD. 95205)
PHONE (209) 948-7427
FAX (209) 948-7782
TTY: 711

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December 17, 2008

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
1416 9th Street, Room 1442-7
Sacramento, CA 95814

RE: Navy Drive Bridge Replacement Project, Federal Aid No. BRLS 6349 (002)
Bridge No. 29C-0023, San Joaquin County, California
Submittal of Signed Memorandum of Agreement

Dear Mr. Donaldson:

The California Department of Transportation (Caltrans) is continuing consultation with you under Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470(f) et seq., as a federal agency, following the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program,* which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for most NEPA Environmental Assessments. For those undertakings, the State may also be assigned FHWA's responsibilities for environmental consultation and coordination under other federal environmental laws. By statute, the State is deemed to be a Federal agency for these assigned responsibilities. As the Section 6005 MOU covers the Navy Drive Bridge Replacement Project, FHWA has assigned and Caltrans has assumed FHWA responsibility for environmental review, consultation, and coordination on this undertaking. Please direct all future correspondence regarding this project to Caltrans.

In accordance with Stipulation XVI of the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California (Section 106 PA)*, Caltrans is pleased to submit the attached final signed version of the following Section 106 compliance document for your files:

Appendix C. Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY 711
www.dot.ca.gov

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March 16, 2012

NON-DISCRIMINATION POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Mario Solis, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353, TTY 711, fax (916) 324-1869, or via email: *mario_solis@dot.ca.gov*.

MALCOLM DOUGHERTY
Acting Director

Appendix D. Avoidance, Minimization and/or Mitigation Summary

Avoidance, Minimization, and Mitigation as listed in the IS/EA

UTILITIES/EMERGENCY SERVICES

The following measure will be required to reduce utility impacts to a less than significant level:

Avoidance: None

Minimization:

- As part of the development of the final construction drawings, a utility relocation plan shall be developed that identifies all existing and proposed water lines, sewer lines, telephone, cable, gas, electric, and other services in the project area. Utility and service operators shall be notified in writing of any utility or service relocations to ensure minimum disruption between the removal or relocation of existing lines and the installation of new lines.

Mitigation: None

TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

The following measure will be implemented during construction to minimize the potential congestion and delay due to construction:

Avoidance: None

Minimization:

- The Port shall require the construction contractor to prepare and implement a Traffic Control Plan during the actual construction phase of the project. The Traffic Control Plan shall include the following:
- This plan will address appropriate vehicle size and speed, travel routes, detour or lane closure plans, flagperson requirements, location of turnouts to be constructed, coordination with law enforcement and fire control agencies, coordination with Caltrans personnel (for work affecting state road rights of way), emergency access to ensure public safety, and need for traffic and speed limit signs.
- The proposed bridge replacement project and roadway approaches will be constructed to accommodate four lanes of traffic. To remain consistent with the project limits, and to address traffic operations at the adjacent Washington Street and West Complex entrance intersections, the lanes will be tapered and striped to conform to the existing 3-lane section at the West Complex entrance intersection and the turning movements required at the Washington Street intersection.
- The Port of Stockton will be responsible for implementing additional improvements within the Port area. These improvements are not required for the proposed project, rather are separate projects that will be implemented by the Port. With these separate projects in place, the Navy Drive component of the circulation system in the Port of Stockton will operate with acceptable levels of service (e.g., level of service D). These improvements are as follows:

- The Navy Drive / Washington Street intersection improvements (as shown in Figure 2-3) should be constructed by Year 2015 Conditions. With these improvements, the signalized intersection would operate at acceptable level of service B Conditions from Year 2015 to beyond Year 2025 Conditions.
- By Year 2030 Conditions, the intersection would need to be re-constructed including re-alignment of Navy Drive as a through movement and Washington Street as the minor street approach. With these improvements, the signalized Navy Drive / Washington Street intersection would operate at acceptable level of service C under Year 2030 AM and PM peak hour conditions, acceptable level of service D conditions under Year 2035 AM peak hour conditions, and acceptable level of service C under Year 2035 PM peak hour conditions.

Mitigation: None

VISUAL/AESTHETICS

Due to the industrial nature of the project area, aesthetics for the new bridge and streetscape improvements are not proposed as an element of this project. The following actions have been recommended in order to minimize any minor visual impacts to landscape.

Avoidance: None

Minimization:

- Replacement of landscape screening on the eastern side of the Stockton Police Shooting Range parking lot is proposed. Trees and shrubs will be planted in front of the proposed retaining wall.
- The trees should be of sufficient size and type to also provide shade for the existing parking lot and visual screening for the shooting range from Navy Drive.

Mitigation: None

CULTURAL RESOURCES

Avoidance: In response to comments provided by Native American tribal organizations during consultation, the project has been modified to provide for tribal monitoring. A Native American monitor shall be present during project ground-disturbing activities to review possible archaeological materials and provide recommendations on the identification and treatment of such resources. The monitor shall provide recommendations regarding protection and ultimate disposition of the find.

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

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Caltrans District 10 Environmental Branch 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.

Minimization: None

Mitigation:
Photograph and Document the Existing Bridge

Prior to the start of any work that could adversely affect any characteristics that qualify Navy Drive Bridge as a historic property; Caltrans shall ensure that the recordation measures specified in this mitigation measure are completed.

1. The Port shall take large-format (4 inch by 5 inch or larger negative size) photographs showing the Navy Drive Bridge in context as well as details of its historic engineering features. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record (HAER) photographic specifications. Views of Navy Drive Bridge shall include:
    a. Contextual views showing the Bridge in its setting;
    b. Elevation views;
    c. Views of the operator house exterior and interior;
    d. Views of the Bridge approaches and abutments; and
    e. Detail views of significant engineering and design elements.
2. The Port shall make a reasonable and good faith effort to locate historic construction drawings for the Navy Drive Bridge. If these drawings are located, the Port shall photographically reproduce plans, elevations and selected details from these drawings in accordance with HAER photographic specifications. If they are legible in this format, reduced size (8 ½ inch by 11 inch) copies of construction drawings may be included as pages of the report cited in subsection 3 of this mitigation measure rather than photographed and included as photographic documentation. The Port shall promptly notify Caltrans if historic drawings for the Navy Drive Bridge cannot be located. In that event, the requirements of this paragraph shall not apply.
3. A written historical and descriptive report for the Navy Drive Bridge will be completed. This report will provide a physical description of the Navy Drive Bridge, discuss its construction and its significance under applicable National Register criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Parks Service (NPS) HAER Guidelines for Preparing Written Historical and Descriptive Data guidelines for written documentation.

4. Upon completion, archival copies of the document described under subsection 3 of this mitigation measure shall be retained by Caltrans District 10 and the Port, distributed to the Caltrans Transportation History Library in Sacramento, the California Office of Historic Preservation and offered to repositories to include the San Joaquin County Historical Society and Museum in Lodi.

Identify and Implement Salvaging Bridge Parts

The Port shall offer artifacts removed from the Navy Drive Bridge during demolition to local museums such as the San Joaquin County Historical Society and Museum, or other suitable facilities to be determined by the Port, and provide for their delivery to accepting institutions.

Install Bronze Plaque on New Bridge Commemorating the Bridge

The Port shall install informative permanent metal plaques at both ends of the replacement bridge at public locations that provide a brief history of the original Navy Drive Bridge, its engineering features and characteristics, and the reasons for its replacement. The SHPO will have 30 days to review proposed plaque text before they are produced and installed.

Create a Display in the Port of Stockton Administration Building

The Port shall mount and display a representative photograph of the Navy Drive Bridge, along with accompanying text, in a public place at the Port of Stockton. The text shall provide a brief history of the Navy Drive Bridge and its relationship to the NSA Stockton historic district. The SHPO shall have 30 *days* to review proposed photograph and text before they are installed.

Water Quality and Storm Water Runoff
The proposed project will have less than significant impact on water quality with implementation of the following measures:

Avoidance:
Implement Best Management Practices

Preparation and implementation of temporary Construction site BMPs in compliance with the provisions of Caltrans' Statewide NPDES Permit and any subsequent permit as they relate to construction activities for the project. This will include submission of a Notice of Construction (NOC) to the Regional Water Quality Control Board (RWQCB) at least 30 days before the start of construction, preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), and submission of a Notice of Construction Completion (NCC) to the RWQCB upon completion of construction and stabilization of the project site.

Implement Design Pollution Prevention (DPP)

Incorporation of Design Pollution Prevention (DPP) and Treatment Control BMPs for the project in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide will be followed. This will include coordination with the

RWQCB with respect to feasibility, maintenance, and monitoring of Treatment Control BMPs as set forth in Caltrans' Statewide Stormwater Management Plan (SWMP).

Implement Drainage Report Recommendations

The Port will prepare a drainage report (also referred to as a master drainage plan or a runoff design report) for the project area and implement the measures provided in the report. The drainage report shall be prepared by a registered civil engineer prior to site development, and shall include the following items:

- An accurate calculation of pre-project runoff conditions and post-project runoff scenarios using appropriate engineering methods. This analysis will accurately evaluate potential changes to runoff through specific design criteria. The model will account for increased surface runoff.
- An assessment of any existing drainage facilities within the project area, and an inventory of necessary upgrades, replacements, redesigns, and rehabilitation.
- A description of the proposed maintenance program for the on-site drainage system.
- Standards for drainage systems to be installed on a project-specific basis.

The drainage system shall be designed in accordance with San Joaquin County and the City of Stockton's flood control design criteria.

Minimization:
Install Sheet-Pile Cofferdam

Under this minimization measure, construction of the bridge replacement structure and demolition of the existing bridge would be hydrologically isolated from the San Joaquin River through installation of a sheet-pile cofferdam. This would ensure that activities do not result in increased turbidity or suspended solids in the San Joaquin River. Dewatering BMPs must be followed. The Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Install Turbidity Curtain

A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles will settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits. Under this minimization measure, a turbidity curtain would be used to isolate the work area.

Operate Aeration Equipment

DO concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen demanding substances into the river. The operation of aeration equipment continuously during and after construction activities should have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment.

Install Debris-Catching Devices

To prevent construction debris from entering the receiving water, the Port or its contractor will use attachments on construction equipment and covers or platforms around the construction area. Debris-catching devices must be inspected and emptied regularly and the debris stored away from the receiving water and protected until removal.

Dewatering Activities

During dewatering activities, if necessary, the provision of Order No. R8-2003-0061, NPDES No. CAG998001, General Waste Discharge Requirements for Discharges to Surface Waters That Pose An Insignificant (De Minimus) Threat to Water Quality, as they relate to construction activities for the project, will be followed. This will include submission of an NOI to the RWQCB at least three months before the start of dewatering and compliance with all applicable provision in the de minimus permit, including water sampling, analysis, and reporting of dewatering-related discharges.

Install a Bubble Curtain

The pressure waves associated with pile driving activities are a potentially significant impact to fish in close proximity to the activity. A bubble curtain disrupts the propagation of the pressure waves to a less than significant impact to fish. Installation of a bubble curtain would reduce this impact to less than significant should construction activities ensue between December 1st and June 30th.

Implement Permanent Best Management Practices

Development and implementation of coordinated drainage features with permanent post construction BMPs would minimize potential water quality impacts associated with highway runoff. The Port would be responsible for constructing permanent post construction stormwater BMPs, which would be identified and incorporated into the SWPPP. The SWPPP requirements would accommodate the additional drainage discharges generated by the project and avoid adverse effects such as off-site erosion, sedimentation, and water quality impairments.

Two broad categories of permanent post construction BMPs and several specific types of BMPs would be implemented.

- The first category consists of erosion control measures such as preservation of existing vegetation, concentrated flow conveyance systems (ditches, berms, drains, flared culvert

end sections, outlet protection, and flow velocity dissipation), and slope protection measures. By controlling erosion, directing runoff through vegetation, or otherwise reducing the off-site discharge of particulate matter and sediment, the permanent erosion control measures would control off-site discharges of roadway pollutants that are associated with particulate matter. Stormwater management measures that result in runoff peak flows and volumes being similar to those under existing conditions should be designed and implemented. Any proposed stormwater management system should be designed to manage runoff volumes and peak flows from storm events up to and including the 25-year, 24-hour design storm.

- The second category of approved permanent post construction BMPs consists of runoff treatment measures such as detention and infiltration basins and drain filters.

The Port would be responsible for long-term inspection and maintenance of the permanent BMPs within their jurisdictional right-of-way to ensure that they are maintained in good working order.

Mitigation: None

PALEONTOLOGY

According to the Draft City of Stockton General Plan Background Report (2004), no known paleontological resources are present in the project vicinity. However, there is always the possibility that buried fossils that were not identified during field surveys could be unearthed during project activities, causing the demolition of or substantial damage to paleontological resources.

Avoidance: None

Minimization:

- If fossils are discovered during project construction, a qualified paleontologist will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner.

Mitigation: None

HAZARDOUS WASTE/MATERIALS

Measures to Avoid and Minimize the Exposure of Individuals to Contaminated Soil and/or Groundwater

There is documented soil and groundwater contamination at the location of the former gasoline station, which is within the project study area. The extent of groundwater contamination and the migration of contaminants in the groundwater have been fully defined, have been determined to be contained within the site, and contaminant concentrations have been decreasing over time. It is recommended that the Port consult

with the Regional Water Quality Control Board to determine if precautions need to be taken or if state agency personnel need to be at the site when construction activities associated with ground disturbance begin. If dewatering is needed, the Regional Water Quality Control Board would need to be consulted for any special requirements. It is also recommended that before construction along the proposed roadway alignment begins, soil and groundwater samples be collected at the former gasoline station to at least the depth of the proposed excavation. These samples should be analyzed for the contaminants of concern identified for this site. A contingency plan should be developed to dispose of any contaminated soil or groundwater.

The proposed project will place the roadway approaches on new alignments and subsequent new fill. Therefore excess soil is not likely. The final roadway alignment and quantities will be determined after approval of the preferred alternative, in the final design phase. In those areas where minor excavation is required, the Port will conduct aerially deposited lead sampling to determine actual aerially deposited lead concentrations. Lead concentrations at the project site will then be compared to the California Human Health Screening Levels for lead for commercial/industrial use (3,500 milligrams per kilogram). Based on the levels of lead determined in the soil, the Port will account for all potential human exposure pathways and scenarios and the protection of nearby groundwater, terrestrial and aquatic resources, including erosion of contaminated soil and subsequent runoff. Based on the results of the lead analysis and human health risk assessments, the Port will seek the approval of California Environmental Protection Agency/Regional Water Quality Control Board for the reuse of lead-contaminated soils generated from the project within the project area in accordance with criteria that safely encapsulates the soil based on the levels of lead to preclude exposure of individuals to elevated levels of lead. Applicable requirements of California Environmental Protection Agency/Regional Water Quality Control Board will be implemented by the Port, particularly those relating to burial areas, soil covers, location in relation to groundwater/water table elevation, erosion control, and others.

If reuse is not possible, the Port will ensure that the lead-contaminated soil will be managed as hazardous waste and disposed in a Class 1 landfill. Detailed specifications will be included in the contractor package, specifying mitigation required to minimize and/or avoid human health risks. These specifications will support the project cost estimates and contractor’s bid. If heavy metals are also found in the soils, the Port will ensure that the soils will be managed in accordance with applicable federal and state regulations for hazardous waste. As the variance only applies to lead from aerially deposited lead, burial within the project site of heavy metal-contaminated soil will not be allowed.

In addition, if contaminated soil and/or groundwater are encountered or suspected contamination is encountered in other areas of the project site during construction, it is recommended that work is suspended in the suspected area of contamination and the type and extent of the contamination be identified. If necessary, a remediation plan shall be implemented in conjunction with continued project construction.

Measures to Avoid and Minimize Exposure of Individuals to Asbestos-Containing Material and Lead-Based Paint/Other Heavy Metals

The Port shall ensure, through contract requirements, that work plans address procedures for the safe removal and proper disposal of materials contaminated with asbestos and lead-based paint. The demolition of the structures shall comply with the United States Environmental Protection Agencies National Emissions Standards for Hazardous Air Pollutants and the San Joaquin Valley Unified Air Pollution Control District rules and regulations regarding asbestos. The demolition of the structures shall also comply with the California Department of Health Services recommendations and California Occupational Safety and Health Agency requirements regarding lead-related construction work by all construction contractors and workers.

To comply with California Occupational Safety and Health Agency and Department of Health Services requirements, workers must be protected when lead is present in any concentration. A Lead Compliance Plan for worker protection shall be prepared and implemented during pavement removal, soil excavation, and/or demolition of structures containing lead-based paint. The Lead Compliance Plan will be part of construction specification requirements for the project.

To avoid generating dust containing lead-based paint and thermoplastic material from striping and markings, the Port will ensure that existing pavement will be carefully removed in large pieces to keep the striping and markings intact to the maximum extent possible.

The United States Environmental Protection Agency regulates asbestos as a hazardous air pollutant under the National Emissions Standards for Hazardous Air Pollutants. The asbestos National Emissions Standards for Hazardous Air Pollutants regulations impose procedures for demolition and renovation activities involving regulated Asbestos Containing Materials (friable asbestos and forms of asbestos that may become friable during renovation and handling). The asbestos National Emissions Standards for Hazardous Air Pollutants regulations also impose additional restrictions on asbestos waste disposal, requiring generators and transporters of Asbestos Containing Materials to maintain waste shipment records. The California Air Resources Board enforces National Emissions Standards for Hazardous Air Pollutants regulations through the air districts. The San Joaquin Valley Air Pollution Control District should be contacted to obtain a copy of its rules and regulations regarding asbestos. An asbestos consultant performing asbestos-related work must have a valid license issued by the California Contractor's State License Board and be certified by the California Occupational Safety and Health Agency.

Detailed specifications will be included in the contractor package, specifying mitigation required to minimize and/or avoid human health risks. These specifications will support the project cost estimates and contractor's bid.

Measures to Avoid and Minimize Exposure of Individuals to Polychlorinated Biphenyls

The Port shall coordinate with Pacific Gas and Electric for the removal and replacement of the transformers. Pacific Gas and Electric will be responsible for complying with all applicable federal and state environmental and worker exposure regulations during the removal and replacement/relocation of the transformers.

Measures to Avoid and Minimize Exposure of Individuals to Treated Wood Waste

In July 2007, the Department of Toxic Substances Control adopted regulations that would allow flexibility in the management and disposal of treated wood waste. Treated wood waste will no longer need to be sampled and analyzed prior to disposal and may be disposed in a composite-lined portion of a solid waste landfill unit that meets all requirements applicable to disposal of municipal solid waste in California and that is regulated by waste discharge requirements issued for discharges of designated waste or treated wood waste. The Port will ensure that the demolished fender system and piles will be removed and disposed at a Regional Water Quality Control Board-certified treated wood waste landfill. The contractors bid package will include this information to adequately address the potential hazards.

Mitigation: None

AIR QUALITY

The following measures would reduce or minimize air pollutant emissions associated with construction activities:

Avoidance: None

Minimization:
- To reduce fugitive dust emissions the construction contractor will adhere to the requirements of SJVAPCD Regulation VIII.
- The construction contractor shall comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications.

Consistent with Regulation VIII, Fugitive PM10 Prohibitions of the SJVAPCD, the following controls are required to be implemented at all construction sites and as specifications for the project:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is

expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)

- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Any site with 150 or more vehicle trips per day shall prevent carryout and track out.

Construction of the project requires the implementation of control measures set forth under Regulation VIII. The following additional control measures would further reduce construction emissions and should be implemented with the project:

- limit traffic speeds on unpaved roads to 15 mph;
- install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent;
- install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
- install wind breaks at windward side(s) of construction area;
- suspend excavation and grading activity when winds exceed 20 mph (regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation); and
- limit area excavation, grading, and other construction activity at any one time.
- the following construction equipment control measures would reduce construction exhaust emissions:
- properly and routinely maintain all construction equipment, as recommended by the manufacturer manuals, to control exhaust emissions;
- shut down equipment when not in use for extended periods of time to reduce emissions associated with idling emissions;
- limit the hours of operation of heavy duty equipment and/or the amount of equipment in use; and
- curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways.

Mitigation: None

NOISE

In accordance with 23 Code of Federal Regulations 772 (13)(c), noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. As no traffic noise impacts are anticipated, no noise avoidance, minimization and/or abatement measures are required.

Avoidance: None

Minimization:
Construction

As discussed above, the closest sensitive receptor location is the outdoor use area of the City of Stockton Police Range located approximately 100 feet from the project construction areas. Therefore, this receptor location may be subject to short term noise reaching the maximum noise level of 84 A-weighted decibels generated by construction activities along the project alignment. Compliance with the construction hours specified in the City's Municipal Code and Caltrans' Standard Special Provisions (SSP) will be required to minimize construction noise impacts on sensitive land uses adjacent to the project site. Construction noise is regulated by Caltrans' Standard Specifications in Section 14-8.02, "Noise Control," and also by SSPs S5 310, "Noise Control." Noise control shall conform to the provisions in Section 14-8.02 and the SSP in S5-310. The noise level from the Contractor's operations, between the hours of 7:00 p.m. and 7:00 a.m., shall not exceed 86 A-weighted decibels at a distance of 50 feet. Work shall not be allowed on Sundays, unless specifically permitted by contract. The Contractor should use an alternative warning method instead of a sound signal unless required by safety laws. In addition, the Contractor shall equip all internal combustion engines with the manufacturer-recommended muffler and shall not operate any internal combustion engine on the job site without the appropriate muffler.

Mitigation: None

BIOLOGICAL ENVIRONMENT

Avoidance: None

- Minimization: The removal or disturbance of riparian vegetation will be minimized to the greatest extent practicable. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season. The implementation of best management practices (BMPs) will substantially decrease construction-related erosion and the potential for discharge of sediments into the San Joaquin River. Typical measures include erecting silt fencing and placing hay bales and straw wattles around construction areas to reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan (SWPPP) that provides additional effective measures to protect water quality, including a hazardous spill prevention plan and erosion prevention techniques.
- Implementation of the project will include the placement of 10 piers within the river bed resulting in the displacement of approximately 0.003 ac of riverine habitat. However, placement of the new bridge supports would replace the concrete support structure that displaces approximately 0.016 ac of the original river bed. Thus, the project result in an overall net gain in riverine habitat of 0.013 ac compared to the existing conditions.
- During in-stream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance shall be kept to a minimum.
- All in-stream work would be conducted between August 1 and October 31.

Mitigation: None

WETLANDS AND OTHER WATERS

Avoidance: None

Minimization: A revegetation plan for river bank/riparian areas temporarily disturbed during construction would be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Approximately 0.06 acres of the riverbank and non-native riparian scrub temporarily impacted by construction of the new bridge shall be reseeded and replanted with native riparian vegetation.

The willow riparian habitat adjacent to the south levee would be fenced off 10 feet beyond the trees drip line to prevent disturbance during construction.

Measures consistent with the current Caltrans' Construction Site Best Management Practices Manual (including the Storm Water Pollution Prevention Plan and Water Pollution Control Plan Manuals) shall be implemented to minimize effects to the San Joaquin River resulting from erosion, siltation, etc. during construction. The implementation of the Best Management Practices described above would substantially decrease construction-related erosion and the potential for sediments to be discharged into the San Joaquin River. These measures include erecting silt fencing and the placement of hay bales around the construction site to reduce offsite sedimentation. Implementation of the project also require the issuance of an approved Storm Water Pollution Prevention Plan.

All instream work would be conducted between August 1 and October 31.
Mitigation: None

PLANT SPECIES

Avoidance: Before construction-related activities begin, a qualified botanist shall survey the Biological Study Area (San Joaquin River levee) for special-status plant species including slough thistle, Mason's lilaeopsis, and Delta mugwort during their blooming period(s) and using established California Department of Fish and Wildlife protocols. If any special-status plant species are detected within the construction zone, California Department of Fish and Wildlife shall be contacted and further avoidance or mitigation techniques will be developed.

Minimization: None

Mitigation: None

ANIMAL SPECIES

Avoidance:
Pacific Pond Turtle

Pacific pond turtles, if present in the BSA, could be adversely affected by construction activities. The following measure will reduce any potential impacts to Pacific pond turtles:

1. Preconstruction surveys for Pacific pond turtles shall be performed by a qualified biologist within 30 days of the start of construction to identify any turtles or active nests within the BSA. If nests are found, exclusion zones shall be established (as determined by a qualified biologist in consultation with the CDFW) and construction-related activities shall be prohibited within the exclusion zones. Monitoring of any active nests once per week during construction shall be required as long as the nests are active. Any turtles found in the work area shall be relocated to an appropriate area by a qualified biologist prior to the start of construction.
2. ESA fencing shall be installed along the edge of the work limits in the California annual grassland community. ESA fencing shall consist of orange construction fencing (or equivalent) and shall be maintained in good condition until construction is complete.

Burrowing Owl

Prior to construction, a qualified wildlife biologist shall survey suitable habitat within 500 feet of the project impact zone (the project footprint and staging areas) (CDFW 1995). Within the BSA the San Joaquin River levee and grassland areas may be habitat for burrowing owls, however survey efforts will extend beyond the BSA, where access can be obtained. Surveys for burrowing owl include a winter (non-breeding) and spring (breeding) survey, unless burrowing owl is detected on the first survey. The winter survey must be conducted between December 1 and January 31, and the spring survey between April 15 and July 15. Surveys will be conducted at dawn (one hour before sunrise and two hours after) and/or dusk (two hours before sunset and one hour after).

In addition to protocol-level surveys, the following measures will be implemented to avoid impacts:

- Pre-construction surveys of suitable habitat will be conducted within 30 days prior to construction to ensure no additional owls have begun nesting within the construction impact area or buffer zone. If ground disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be re-surveyed. Pre-construction surveys for burrowing owl may be combined with raptor surveys (see Swainson's hawk below).
- If possible, the project shall avoid impacts to burrowing owl by ensuring that no disturbance occurs within 160 ft of occupied burrows during the nonbreeding season (September 1 – January 31) or within 250 ft during the breeding season (February 1 – August 31), and that at least 6.5 acres of foraging habitat is permanently preserved around the occupied burrow for each pair or single unpaired resident bird. The configuration of the habitat preservation plan must be approved by CDFW.
- If impacts cannot be avoided, the following mitigation will be required.

If, after the implementation of the avoidance and minimization measures discussed above, impacts to burrowing owl are unavoidable, burrowing owls will be passively relocated during the non-breeding season prior to construction and foraging habitat will be permanently preserved off-site and adjacent to occupied habitat. The amount of habitat shall be 6.5 ac for every pair or single unpaired owls that are removed, or other amount as determined through consultation with CDFW. If destruction of occupied burrows cannot be avoided, then existing burrows shall be enhanced or new burrows created on the protected lands site at a rate per CDFW guidelines. CDFW shall be contacted prior to passive removal and requested to approve compensatory mitigation. Further details regarding burrowing owl mitigation and protective measures can be found in the CDFW guidelines.

Nesting Raptors

A review of the bridge design drawings indicates that most mature trees found within the BSA will be avoided during the project's construction phase. Table 2-23, below, lists mature trees that will likely be removed during project construction.

Table 2-23: Mature Trees Potentially Removed During Project Construction

Species	Location	Total Number	Diameter @ Breast Height (in)	Local Tree Ordinance (Stockton General Plan)	Replacement Ratios
Poplulus fremontii (Fremont cottonwood)	Planted along east side of Navy Drive, south of the river	3	35, 20, 50	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.

Species	Location	Total Number	Diameter @ Breast Height (in)	Local Tree Ordinance (Stockton General Plan)	Replacement Ratios
Acacia sp. (Acacia)	Ornamental established on east side of Navy Drive, in riparian zone, south of the river.	7	8, 7, 5, 5, 5, 5, 18	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species. Additionally, this tree is a non-native, invasive species.
Ailanthus altissima (Tree of heaven)	Ornamental established on east side of Navy Drive, in riparian zone south of the river.	1	10	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species. Additionally, this tree is a non-native, invasive species.
Quercus suber (Cork oak)	Planted along west side of Navy Drive in the Stockton Police Department Training Facility and farther south along edge of Biological Study Area.	3	20, 10, 14	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Malus sp. (Crab apple)	Planted along west side of Navy Drive adjacent to the Stockton Police Department Training Facility	1	27	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Quercus palustris (Pin oak)	Planted along west side of Navy Drive in the Stockton Police Department Training Facility.	3	25, 20, 23	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.
Eucalyptus globulus (Eucalyptus)	Planted along west side of Navy Drive in the Stockton Police Training Center.	1	35	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.

Species	Location	Total Number	Diameter @ Breast Height (in)	Local Tree Ordinance (Stockton General Plan)	Replacement Ratios
Unknown ornamental (no leaves or fruiting bodies present during April 2006 survey)	Ornamental established on east side of Navy Drive, near southern edge of BSA.	1 with 3 trunks	12, 1, 16	None	None, tree will not be removed during nesting season and there are no local tree ordinances for this species.

The following measures will be implemented to avoid impacts to Swainson's hawk, white-tailed kite, and other raptors:

3. If construction activities would occur between March 15 and September 1, preconstruction surveys of suitable habitat will be conducted according to the California Department of Fish and Wildlife's Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California within 30 days prior to construction to ensure no Swainson's hawks or other raptors have begun nesting within the construction impact area. The area surveyed shall include the construction impact area and a ¼-mile buffer zone for Swainson's hawk (and a 500-foot buffer zone for other raptors), where accessible. This buffer distance is appropriate for Swainson's hawk nests located in areas with urban development or where disturbance is regular. If construction activities are delayed or suspended for more than 30 days after the pre-construction survey, the site will be re-surveyed. Preconstruction surveys for raptors may be combined with burrowing owl surveys (see burrowing owl above).
4. If an active Swainson's hawk nest is found within ¼-mile of the construction impact area (or within 500 feet for other raptors) during the breeding season, then no construction activities shall be permitted within these buffers. These buffers may be reduced only by the City of Stockton, who may consult with California Department of Fish and Wildlife to make sure a reduced buffer will not harm the nest. If a buffer is reduced, then a qualified wildlife biologist (see definition in burrowing owl section) will be retained to monitor the nest and the behavior of the nesting birds. If the biologist determines that the project has potential to disturb nesting activities, then construction within the buffer shall be suspended until the young have fledged, as determined by a qualified biologist. California Department of Fish and Wildlife shall be notified if construction causes a nest to fail.
5. Trees that must be removed would be removed during the non-breeding season, between October 1 and February 1.

If, after the implementation of the avoidance and minimization measures discussed above, impacts to Swainson's hawk are unavoidable, then California Department of Fish and

Wildlife shall be contacted and mitigation techniques will likely be required and may include the suspension of construction activities within a certain distance of the active nest until after the young have fledged from the nest. Because less than 5 acres of Swainson's hawk foraging habitat would be permanently impacted and the habitat is surrounded by existing urban development, the loss of Swainson's hawk foraging habitat is minimal and no compensation is recommended by California Department of Fish and Wildlife unless the foraging habitat is within ¼-mile of an active nest site. If an active Swainson's hawk nest site occurs with ¼-mile of the foraging habitat, then this loss of foraging habitat must be compensated according to California Department of Fish and Wildlife guidelines. The mitigation ratio is 1:1 or 0.5:1, depending on how the land is preserved.

Nesting Songbirds

An assessment of existing cliff swallow nests would be conducted and the results described in the California Department of Fish and Wildlife Streambed Alteration Agreement application. All avoidance measures required as part of this permit will be implemented. Such measures may include removal of the existing nests during the non-breeding season prior to construction, and/or preventing the swallows from nesting in that location (using exclusion methods such as netting).

Minimization: None

Mitigation: If, after the implementation of the avoidance and minimization measures discussed above, impacts to Swainson's hawk are unavoidable, then CDFG shall be contacted and mitigation techniques would likely be required and may include the suspension of construction activities within a certain distance of the active nest until after the young have fledged from the nest. Because less than 5 acres of Swainson's hawk foraging habitat will be permanently impacted and the habitat is surrounded by existing urban development, the loss of Swainson's hawk foraging habitat is minimal and no compensation is recommended by CDFG unless the foraging habitat is within ¼-mile of an active nest site. If an active Swainson's hawk nest site occurs with ¼-mile of the foraging habitat, then this loss of foraging habitat must be compensated according to CDFG guidelines. The mitigation ratio is 1:1 or 0.5:1, depending on how the land is preserved.

THREATENED AND ENDANGERED SPECIES

Avoidance: None

Minimization: *Delta Smelt*
Delta smelt could be affected by construction-related activities which result in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures

to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During in stream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment (which is maintained for use during dredging operations).

The United States Fish and Wildlife Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the delta smelt, as specified in the Biological Opinion dated May 12, 2008 (File # 81420-2008-F-0078-1):

1. Caltrans shall implement the project as described in the Biological Assessment and the Biological Opinion and reduce effects to delta smelt.

a. The Port of Stockton shall minimize the potential for harm, harassment, or killing of delta smelt resulting from project related activities by implementation of the Conservation and Minimization Measures as described in the Biological Assessment and appearing in the Project Description of the Biological Opinion.

b. The Port of Stockton shall make the terms and conditions in the Biological Opinion a required term in all contracts for the project that are issued to all contractors.

c. The Port of Stockton shall deposit money into the Delta Smelt Conservation Fund. The amount deposited shall be equivalent to the purchase price of 0.72 acres of conservation credits (for a 3:1 ratio). A copy of the Conservation Fund receipt must be provided to the ACOE and the United States Fish and Wildlife Service prior to the initial date of construction.

2. Caltrans shall ensure the Port of Stockton's compliance with this Biological Opinion:

   a. If requested, during or upon completion of construction activities, the on-site biologist, and/or the applicant's representative shall accompany the United States Fish and Wildlife Service or California Department of Fish and Wildlife personnel on an on-site inspection of the site to review project effects to the delta smelt and its habitat.

   b. Caltrans shall ensure the applicant complies with the reporting requirements of the biological opinion.

3. Depending on the results of planned geotechnical investigations, it may be possible to partially or entirely vibrate piles into the channel substrate. The contractor will used vibrational pile driving to the greatest extent feasible.

4. Pile driving activities will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels in any single strike and peak sound pressure less or equal to 208 decibels in any single strike, measured at a distance of 32.8 feet from the source.

5. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between and pile will be used.

Central Valley Steelhead

Central Valley steelhead could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain

and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During in stream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port’s own aeration equipment (which is maintained for use during dredging operations).

The following measures also shall be implemented, as specified in the National Marine Fisheries Service Biological Opinion (File #2007/06640):

6. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on Central Valley steelhead, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project. Acoustic monitoring must be designed to detect if, and at what range, pile driving activities generate noise levels found to be lethal to juvenile steelhead (208 dB).

7. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

    b. If steelhead are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.
8. Caltrans shall ensure the applicant complies with the reporting requirements of the Biological Opinion.

Central Valley Fall/Late Fall Run Chinook Salmon

Pacific Chinook salmon could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their

preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

All in-stream work would be conducted between August 1 and October 31. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment (which is maintained for use during dredging operations).

The following measures also shall be implemented, as specified in the National Marine Fisheries Service Biological Opinion (File #2007/06640):

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on Chinook salmon, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project. Acoustic monitoring must be designed to

detect if, and at what range, pile driving activities generate noise levels found to be lethal to juvenile Chinook salmon (208 dB).

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

    b. Chinook salmon are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.

Caltrans shall ensure the applicant complies with the reporting requirements of the Biological Opinion.

Green Sturgeon

Green sturgeon could be affected by construction-related activities, which results in decreased water quality, such as increased turbidity. However, the implementation of Best Management Practices will substantially decrease the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical Best Management Practices include erecting silt fencing and placing hay bales around construction areas to help contain and reduce offsite sedimentation. Implementation of the project will also require approval of a site-specific Storm Water Pollution Prevention Plan that will implement effective measures to protect water quality, which may include a hazardous spill prevention plan and additional erosion prevention techniques.

Temporary impacts from the removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

A revegetation plan will be prepared by a qualified restoration ecologist with input from California Department of Fish and Wildlife. Potential water-quality-related impacts during construction will be minimized through the implementation of Best Management Practices and a Storm Water Pollution Prevention Plan.

Green sturgeon utilize the waters of the Delta for juvenile rearing, adult holding, and migratory movements to and from the upper Sacramento River spawning grounds, and their presence in the Delta is considered to be year-round. No construction work windows have been established for green sturgeon, but limiting construction to the window discussed above would avoid adverse impacts to adult green sturgeon. Instream construction activities within the Biological Study Area are considered to take place when juvenile green sturgeon are present, and the species may therefore be exposed to these activities. Measures described below are expected and intended to minimize potential adverse effects on juvenile green sturgeon. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance shall be kept to a minimum. Furthermore, no portion of the existing bridge shall be left in the channel.

All in-stream work would be conducted between August 1 and October 31. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will be kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel. In-channel work shall not be conducted at night.

Turbidity Curtain: A turbidity curtain will be used to isolate the work area within the San Joaquin River. A turbidity curtain is a fabric barrier that is designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles would settle. A turbidity curtain does not prevent water from entering the isolated area; rather, it prevents suspended sediment from spreading beyond the immediate construction area into the receiving water. When properly deployed, turbidity curtains can reduce turbidity levels immediately outside the curtain by 80% to 90% compared to levels within. Turbidity curtains are best suited for slow-moving waters; they should not be used in rivers with water moving at more than 1 knot. After applying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Aeration Equipment: Dissolved oxygen concentrations may be reduced temporarily during project construction and demolition activities as a result of suspension and dispersion of oxygen-demanding substances into the river. The Port could operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved oxygen impacts have been eliminated. The aeration equipment used will have sufficient capacity to supply oxygen into the San Joaquin River at a rate equal to or exceeding the predicted maximum rate of discharge. One option would be to use the Port's own aeration equipment (which is maintained for use during dredging operations).

The National Marine Fisheries Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the green sturgeon, as specified in the Biological Opinion dated August 12, 2008 (File # 2007/06640):

3. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on green sturgeon, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project.

1. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

   a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to National Marine Fisheries Service by December 31 of each construction year.

   b. If green sturgeon are observed injured or killed by project activities, Caltrans/Port of Stockton shall contact National Marine Fisheries Service within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from National Marine Fisheries Service.

Mitigation: None

INVASIVE SPECIES

Avoidance:

1. All earthmoving equipment to be used during project construction shall be thoroughly cleaned before arriving on the project site.

2. All seeding equipment (i.e., hydroseed trucks) shall be thoroughly rinsed at least three times prior to beginning seeding work.

3. To avoid spreading any non-native invasive species already existing on-site, to off-site areas, all equipment shall be thoroughly cleaned before leaving the site.

4. In compliance with the Executive Order on Invasive Species, EO 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as invasive. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

Minimization: None

Mitigation: None

Appendix E: Memorandum of Agreement

MEMORANDUM OF AGREEMENT
BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE REPLACEMENT OF NAVY DRIVE BRIDGE ON ROUGH AND READY ISLAND, PORT OF STOCKTON IN THE CITY OF STOCKTON, SAN JOAQUIN COUNTY, CALIFORNIA

WHEREAS, the Federal Highways Administration (FHWA) was assigned and the California Department of Transportation (Caltrans) has assumed FHWA responsibility for environmental review, consultation, and coordination under the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007 and applies to this project; and

WHEREAS, Caltrans has determined that the replacement of Navy Drive Bridge (Undertaking) will have an adverse effect on the Navy Drive Bridge (bridge 29C-0023), a contributor to the Naval Supply Annex (NSA) Stockton historic district, a property determined to be eligible for inclusion in the National Register of Historic Places (National Register); and

WHEREAS, Caltrans has consulted with the California State Historic Preservation Officer (SHPO) pursuant to Stipulations X.C and X.I of the January 2004, *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California* (PA), and where the PA so directs, in accordance with 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (16 USC Section 470f), as amended (NHPA), regarding the Undertaking's effects on historic properties and has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect finding pursuant to 36 CFR § 800.6(a)(1); and

WHEREAS, Caltrans has thoroughly considered alternatives to the Undertaking, has determined that the statutory and regulatory constraints on the design of the Undertaking preclude the possibility of avoiding adverse effects to the historic property during the Undertaking's implementation, and has further determined that it will resolve adverse effects of the Undertaking on the subject historic property through the execution and implementation of this Memorandum of Agreement (MOA); and

WHEREAS, Caltrans District 10 (District 10) and the Port of Stockton (Port) have participated in the consultation and have been invited to concur in this MOA;

NOW, THEREFORE, Caltrans and the SHPO agree that, upon Caltrans' decision to proceed with the Undertaking, Caltrans shall ensure that the Undertaking is implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties, and further agrees that these stipulations shall govern the Undertaking and all of its parts until this MOA expires or is terminated.

STIPULATIONS

Caltrans shall ensure that the following stipulations are implemented:

I. AREA OF POTENTIAL EFFECT

A. The Area of Potential Effect for the Undertaking is depicted in Appendix A: Figures 3 and 4 of the *Historic Property Survey Report for the Navy Drive Bridge Replacement Project* dated September 2004. It encompasses the boundaries of the NSA Stockton historic district. A focused APE was established to include only the area of potential direct impact and a small visual area around existing and proposed bridge locations. The focused APE was adopted because no extant contributing buildings of the historic district are within visual range of the project area, which is located at the outer edge of the historic district's boundary.

B. If modifications to the Undertaking, subsequent to the execution of this MOA, necessitate the revision of the APE, Caltrans will **consult with District 10** and the SHPO to facilitate mutual agreement on the subject re**visions. If Caltrans, District 10**, and the SHPO cannot reach such agreement, then the parties to this MOA shall resolve the dispute in accordance with Stipulation III. D. be**low. If Caltrans, District 10**, and the SHPO reach mutual agreement on the proposed revisions, then Caltrans will submit a final map of the revisions, consistent with the requirements of stipulation VIII.A and attachment 3 of the PA, no later than 30 days following such agreement.

II. TREATMENT OF HISTORIC PROPERTIES

A. Prior to the start of any work that could adversely affect any characteristics that qualify Navy Drive Bridge as an historic property, Caltrans shall ensure that the recordation measures specified in section A of this stipulation are completed.

1. The Port shall take large-format (4" by 5" or larger negative size) photographs showing the Navy Drive Bridge in context as well as details of its historic engineering features. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record (HAER) photographic specifications. Views of the Navy Drive Bridge shall include:

    a. Contextual views showing the Bridge in its setting;

    b. Elevation views;

    c. Views of the operator house exterior and interior;

    d. Views of the Bridge approaches and abutments;

    e. Detail views of significant engineering and design elements.

2. The Port shall make a reasonable and good faith effort to locate historic construction drawings for the Navy Drive Bridge. If these drawings are located, the Port shall photographically reproduce plans, elevations and selected details from these drawing in accordance with HAER photographic specifications. If they are legible in this format, reduced size (8 1/2" by 11") copies of construction drawings may be included as pages of the report cited in subsection A.3 of this stipulation rather than photographed and included as photographic documentation. The Port shall promptly notify Caltrans if historic construction drawings for the Navy Drive Bridge cannot be located. In that event, the requirements of this paragraph shall not apply.

3. A written historical and descriptive report for the Navy Drive Bridge will be completed. This report will provide a physical description of the Navy Drive Bridge, discuss its construction and its significance under applicable National Register criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Parks Service (NPS) *HAER Guidelines for Preparing Written Historical and Descriptive Data* guidelines for written documentation.

4. Upon completion, archival copies of the documentation prescribed in subsection A.1-3 of this stipulation shall be retained by Caltrans District 10 and the Port, distributed to the Caltrans Transportation History Library in Sacramento, the California Office of Historic Preservation and offered to repositories to include the San Joaquin County Historical Society and Museum in Lodi.

B. The Port shall offer artifacts removed from the Navy Drive Bridge during demolition to local museums such as the San Joaquin County Historical Society and Museum, or other suitable facilities to be determined by the Port, and provide for their delivery to accepting institutions.

C. The Port shall install informative permanent metal plaques at both ends of the replacement bridge at public locations that provide a brief history of the original Navy Drive Bridge, its engineering features and characteristics, and the reasons for its replacement. The SHPO shall have 30 days to review proposed plaque text before they are produced and installed.

D. The Port shall mount and display a representative photograph of the Navy Drive Bridge, along with accompanying text, in a public place at the Port of Stockton. The text shall provide a brief history of the Navy Drive Bridge and its relationship to the NSA Stockton historic district. The SHPO shall have 30 days to review proposed photograph and text before they are installed.

III. ADMINISTRATIVE PROVISIONS

A. Definitions. The definitions provided at 36 CFR § 800.16 are applicable throughout this MOA.

B. Professional Qualifications and Standards. Caltrans will ensure that only individuals meeting the Secretary of the Interior's Professional Qualification Standards (48 FR

44738-39) in the relevant field of study carry out or review appropriateness and quality of the actions and products required by Stipulations II.A-D in this MOA.

C. Discoveries and Unanticipated Effects. If Caltrans determines after the construction of the Undertaking has commenced, that the undertaking will affect a previously unidentified property that may be eligible for listing in the National Register, or affect a known historic property in an unanticipated manner, Caltrans will address the discovery or unanticipated effect in accordance with 36 CFR § 800.13(b)(3). Caltrans at its discretion may hereunder assume any discovered property to be eligible for inclusion in the National Register in accordance with 36 CFR § 800.13 (c).

D. Resolving Objections

1. Should any party to this MOA object at any time in writing to the manner in which the terms of this MOA are implemented, to any action carried out or proposed with respect to implementation of the MOA, or to any document prepared in accordance with and subject to the terms of the MOA, Caltrans shall immediately notify the other parties of the objection, request their comments on the objection within 15 days following receipt of Caltrans' notification, and proceed to consult with the objecting party for no more than 30 days to resolve the objection. Caltrans will honor the request of the other parties to participate in the consultation and will take any comments provided by those parties into account.

2. If the objection is resolved during the 30-day consultation period, Caltrans may proceed with the disputed action in accordance with the terms of such resolution.

3. If at the end of the 30 day consultation period, Caltrans determines that the objection cannot be resolved through such consultation, then Caltrans shall forward all documentation relevant to the objection to the ACHP, including Caltrans' proposed response to the objection, with the expectation that the ACHP will, within thirty (30) days after receipt of such documentation:

   a. Advise Caltrans that the ACHP concurs in Caltrans' proposed response to the objection, whereupon Caltrans will respond to the objection accordingly. The objection shall thereby be resolved; or

   b. Provide Caltrans with recommendations, which Caltrans will take into account in reaching a final decision regarding its response to the objection. The objection shall thereby be resolved; or

   c. Notify Caltrans that the objection will be referred for comment pursuant to 36 CFR § 800.7(c) and proceed to refer the objection and comment. Caltrans shall take the resulting comments into account in accordance with 36 CFR § 800.7(c)(4) and Section 110(1) of the NHPA. The objection shall thereby be resolved.

4. Should the ACHP not exercise one of the above options within 30 days after receipt of all pertinent documentation, Caltrans may assume the ACHP's concurrence in its proposed response to the objection and proceed to implement that response. The objection shall thereby be resolved.

5. Caltrans shall take into account any of the ACHP's recommendations or comments provided in accordance with this stipulation with reference only to the subject of the objection. Caltrans' responsibility to carry out all other actions under this MOA that are not the subject of the objection shall remain unchanged.

6. At any time during implementation of the measures stipulated in this MOA, should a member of the public raise an objection in writing pertaining to such implementation to any signatory party to this MOA, that signatory party shall immediately notify Caltrans. Caltrans shall immediately notify the other signatory parties in writing of the objection. Any signatory party may choose to comment in writing on the objection to Caltrans. Caltrans shall establish a reasonable time frame for this comment period. Caltrans shall consider the objection, and in reaching its decision, Caltrans will take all comments from the other signatory parties into account. Within 15 days following closure of the comment period, Caltrans will render a decision regarding the objection and respond to the objecting party. Caltrans will promptly notify the other signatory parties of its decision in writing, including a copy of the response to the objecting party. Caltrans' decision regarding resolution of the objection will be final. Following issuance of its final decision, Caltrans may authorize the action subject to dispute hereunder to proceed in accordance with the terms of that decision.

7. Caltrans shall provide all parties to this MOA, and the ACHP, if the ACHP has commented, and any parties that have objected pursuant to section D.6 of the stipulation, with a copy of its final written decision regarding any objection addressed pursuant to this stipulation.

8. Caltrans may authorize any action subject to objection under this stipulation to proceed after the objection has been resolved in accordance with the terms of this stipulation.

E. Amendments. Any signatory party to this MOA may propose that this MOA be amended, whereupon all signatory parties shall consult to consider such amendment. The amendment will be effective on the date a copy signed by all of the original signatories is filed with the ACHP. If the signatories cannot agree to appropriate terms to amend the PA, any signatory may terminate the agreement in accordance with Stipulation III.F, below.

F. Termination

1. If this MOA is not amended as provided for in section E of this stipulation, or if either signatory proposes termination of this MOA for other reasons, the signatory party proposing termination shall, in writing, notify the other MOA parties, explain the reasons for proposing termination, and consult with the other parties for at least 30 days to seek alternatives to termination. Such consultation shall not be required if Caltrans proposes termination because the Undertaking no longer meets the definition set forth in 36 CFR § 800.16(y).

2. Should such consultation result in an agreement on an alternative to termination, the signatory parties shall proceed in accordance with that agreement.

3. Should such consultation fail, the signatory party proposing termination may terminate this MOA by promptly notifying the other parties in writing. Termination hereunder shall render this MOA without further force or effect.

4. If this MOA is terminated hereunder, and if Caltrans determines that the Undertaking will nonetheless proceed, then Caltrans shall comply with the requirements of 36 CFR 800.3-800.6.

G. Duration of MOA

1. Unless terminated pursuant to section F. of this stipulation, or unless it is superseded by an amended MOA, this MOA will be in effect following execution by the signatory parties until Caltrans, in consultation with the other signatory parties, determines that all of its stipulations have been satisfactorily fulfilled.

2. The terms of this MOA shall be satisfactorily fulfilled within ten (10) years following the date of execution by the signatory parties. If Caltrans determines that this requirement cannot be met, the MOA parties will consult to reconsider its terms. Reconsideration may include continuation of the MOA as originally executed, amendment of the MOA or termination. In the event of termination, Caltrans will comply with section F.4 of this stipulation, if it determines that the Undertaking will proceed notwithstanding termination of this MOA.

3. If the Undertaking has not been implemented within ten (10) years following execution of this MOA, this MOA shall automatically terminate and have no further force or effect. In such event, Caltrans shall notify the other signatory parties in writing and, if it chooses to continue with the Undertaking, shall reinitiate review of the Undertaking in accordance with 36 CFR Part 800.

H. Effective Date
This MOA will take effect on the date that it is executed by Caltrans and the SHPO.

EXECUTION of this MOA by Caltrans and the SHPO, its filing with the ACHP in accordance with 36 CFR §800.6(b)(1)(iv), and subsequent implementation of its terms, shall evidence, pursuant to 36CFR§800.6(c), that Caltrans has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties, and that Caltrans has taken into account the effects of the Undertaking on historic properties.

SIGNATORY PARTIES:

California Department of Transportation

By Gregg Erickson for Date 2-28-08
Jay Norvell
Chief, Division of Environmental Analysis
California Department of Transportation

California State Historic Preservation Officer

By Stephen L. Mikesell for Date 2/28/08
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

CONCURRING SIGNATORIES:

California Department of Transportation

By Kome Ajise Date 4/7/08
Kome Ajise, Director
District 10

Port of Stockton

By Harry McKay for Date 4/30/08
Richard Aschieris
Director/Chief Executive Officer

Appendix F: List of Acronyms and Abbreviations

ADA	American Disabilities Act
BMP	best management practices
Caltrans	California Department of Transportation
Cal Water	California Water Service Company
CEQA	California Environmental Quality Act
City	City of Stockton
County	County of San Joaquin
CO	carbon monoxide
dBA	a-weighted decibels
EO	Executive Order
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
ft	foot/feet
H_2S	hydrogen sulfide
IAC	Interagency Consultation
NA	not applicable
NB	northbound
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
O_3	Ozone
Pb	Lead
PM_{10} and $PM_{2.5}$	particulate matter
POAQC	project of air quality concern
Port	Port of Stockton
ppm	parts per million
SO_2	sulfur dioxide
$\mu g/m^3$	Micrograms per cubic meter
USDOT	United States Department of Transportation
VOCs	volatile organic compounds

Appendix G: U.S. Coast Guard Correspondence

JTO
Rec'd file 8/7/03

PORT OF STOCKTON

Phone: (209) 946-0246

Fax: (209) 465-7244

August 1, 2003

Dave Sulouff
Chief, Bridge Section
Eleventh Coast Guard District
Bldg 51, Coast Guard Island
Alameda, CA 94501-5100

Dear Mr. Sulouff:

We are at an impasse on the Navy Bridge replacement project in Stockton, and request your assistance. We are working with Caltrans District 10 and the Federal Highway Administration on funding. The Caltrans Local Assistance Engineer is reluctant to go forward with the approvals without some assurance that the Coast Guard will issue a permit for a fixed bridge to replace the existing bridge - which was built as a swing bridge. I recognize that the Coast Guard cannot approve the project before receiving an application, providing an opportunity for public comment, and receiving a completed federal environmental document and water quality certification.

I request you advise me (copy to the DLAE and Moffatt & Nichol) that you would give favorable consideration to an application for a permit to replace the existing Navy Drive Bridge with a fixed bridge providing similar clearances to those available in the existing bridge - in the closed position.

The existing bridge has not been opened for the passage of vessels for 25 years, and there is no demand for commercial navigation on the waterway upstream of the bridge. The existing federal regulation on the bridge states that it need not open for vessels. We conducted a survey of waterway users and potential users and received no opposition to a fixed bridge. I understand that you conducted another preliminary survey, which also indicated no opposition to a fixed bridge.

Sincerely,

Henry McKay
Special Projects Manager

Post Office Box 2089 • Stockton, CA • 95201-2089 • E-mail: portmail@stocktonport.com
Administration Office: 2201 West Washington Street • Stockton, CA • 95203 • Web Page: www.portofstockton.com

U.S. Department of Homeland Security
United States Coast Guard

Commander
Eleventh Coast Guard District

Bldg. 50-3, Coast Guard Island
Alameda, CA 94501-5100
Staff Symbol: oan
Phone: (510) 437-3514
Fax: (510) 437-5836

16591
San Joaquin R (39.8)
Ser: 262-03
August 4, 2003

Port of Stockton
Attn: Mr. Ken Forssen
2201 West Washington Street
Stockton, CA 95203

Dear Sir:

Please refer to the proposed replacement of the Navy Drive Drawbridge, San Joaquin River, mile 39.8, at Stockton, California.

Under the provisions of the General Bridge Act of 1946, the proposed location and plans for bridges over navigable waters of the United States must be approved by the Commandant, U. S. Coast Guard, prior to commencing construction. The San Joaquin River is considered to be a navigable waterway of the United States for bridge administration purposes at the bridge site.

Applications for bridge permits should be addressed to Commander (oan), Eleventh Coast Guard District, Building 50-3, Coast Guard Island, Alameda, CA 94501-5100. The application must be supported by sufficient information to permit a thorough assessment of the impact of the bridge and its immediate approaches on the environment. We recommend that the impacts of procedures for constructing cofferdams, sand islands, and falsework bents, etc., that will be employed to build the bridge, be discussed in the environmental documentation. The environmental document should also contain data on the number, size, and types of vessels currently using the waterway, and the impacts the proposed project will have on navigation. This information should be compared with past and projected future trends on the use of the waterway.

The Federal Highway Administration (FHWA) will be the Lead Federal Agency for satisfying the requirements of the National Environmental Policy Act (NEPA). We agree to serve as a Cooperating Agency for NEPA purposes. We should be given the opportunity to review the EA and be consulted before a decision is made to prepare a FONSI in lieu of an EIS.

Bridge replacements, on essentially the same alignment, may qualify as Categorical Exclusions for NEPA. However, if the existing drawbridge is listed or eligible for the National Register of Historic Places, a guidance memorandum (Enclosure 1), signed by the Federal Highway Administration and the Coast Guard, requires the preparation of an Environmental Impact Statement (EIS) for demolition of a historic bridge, unless the structure is not considered important for preservation. You will note that documentation and coordination beyond Section 106 and 4(f) requirements are necessary in order for us to accept a FONSI for such projects.

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 3

To HENRY MCKAY	From DAVID SULOUFF
Dept./Agency Special Projects Mgr	Phone # (510) 437-3514

16591
August 4, 2003

The Coast Guard has determined that a proposed fixed bridge at this location should provide at least 14.5 ft. vertical clearance above Mean High Water and at least 100 ft. horizontal clearance, with the navigational channel span aligned with that of the existing drawbridge, to meet the reasonable needs of existing and future waterway traffic

A Coast Guard Bridge Permit Application Guide is enclosed, and can be obtained on-line at: http://www.uscg.mil/hq/g-o/g-opt/g-opt.htm.

For the Coast Guard to proceed with the public notice phase of the permit process, the following items must be included with the bridge permit application letter, from the applicant to the Coast Guard, in the format provided in the Permit Application Guide:

a. NEPA document (draft or final).
b. State-issued 401 Water Quality Certification for the proposed bridge (obtained or applied for).

The Coast Guard public notice comment period will run for 30 days from the date of publication. Comments received, concerning this project, will be forwarded to you for consideration and coordination with the Federal Highway Administration for environmental considerations. When the comment period ends and questions or objections have been addressed, your application will receive final review and action by the Coast Guard.

You may contact Mr. Jerry Olmes, Project Manager, by telephone at (510) 437-3515 to discuss this project.

Sincerely,

DAVID H. SULOUFF
Chief, Bridge Section
Eleventh Coast Guard District
By direction

2 Enclosures

Copy: Moffatt & Nichol Engineers
California Department of Transportation
Federal Highway Administration
U. S. Army Corps of Engineers

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CALIFORNIA DIVISION
650 Capitol Mall, Suite 4-100
Sacramento, CA. 95814

August 30, 2005

IN REPLY REFER TO
HDA-CA
File # 10-SJ-CR
San Joaquin River at Navy Drive
Document # P53121

Mr. Carl Hausner
Bridge Management Specialist
11th Coast Guard District
Coast Guard Island, BLDG 50-3
Alameda, CA 94501-5100

Dear Mr. Hausner:

The Federal Highway Administration (FHWA), in cooperation with the California Department of Transportation (Caltrans) and the Port of Stockton, is initiating an Environmental Assessment (EA) for the proposed replacement of the existing two-lane moveable (swing type) bridge across the San Joaquin River at Navy Drive. Since the project involves jurisdiction by law or special expertise from your agency, pursuant to 40 CFR Section 1501.6(a), we are requesting your participation as a cooperating agency in development of the EA.

The FHWA, and Caltrans are currently participants in the project. The Collaborative has been formed to improve the cooperation and efficiency of governmental operations that are necessary to complete the environmental analysis and permitting requirements for transportation projects. As such, your participation as a cooperating agency will complement and formalize your existing role and not require additional efforts from your staff.

The FHWA and Caltrans have agreed to develop an EA to comply with federal environmental requirements under the National Environmental Policy Act (NEPA). FHWA is the lead federal agency for meeting requirements under NEPA in development of the document.

Your agency's involvement would entail those areas under its jurisdiction or expertise. Please be aware that this role does not require your agency to prepare text or conduct analysis for the document's preparation.

The following are activities we will take to maximize interagency cooperation:

- Invite you to coordination meetings;
- Consult with you on any relevant technical studies that will be required for the project;
- Organize joint field reviews with you;
- Provide you with project information, including study results;
- Encourage your agency to use the above documents to express your views on subjects within your jurisdiction or expertise; and

BUCKLE UP AMERICA

- Include information in the project environmental documents that cooperating agencies need to discharge their NEPA responsibilities and any other requirements regarding jurisdictional approvals, permits, license, and/or clearances.

You have a right to expect that the EA will enable you to discharge your jurisdictional responsibilities. Likewise you have the obligation to tell us if, at any point in the process, your needs are not being met. We expect that at the end of the process the EA will satisfy your NEPA requirements including those related to project alternatives, environmental consequences and mitigation. Further, we intend to utilize the final environmental document and NEPA decision-making to serve as the basis for the permit application. We expect the permit application to proceed concurrently with the EA approval process.

We look forward to your response to this request and your role as a cooperating agency on this project. If you have any, please contact Mahfoud Licha at (916) 498-5866, or e-mail at mahfoud.licha@fhwa.dot.gov.

Sincerely,

/s/ Mahfoud A. Licha

For
Gene K. Fong
Division Administrator

cc:
Mahfoud A Licha
Stephanie Stoermer
Margaret Lawrence
Dave Nelson

Mlicha/lmg

U.S. Department of Homeland Security
United States Coast Guard

Commander
District Eleven

U. S. Coast Guard Island
Building 50-3
Alameda, CA 94501-5100
Staff Symbol: dpw
Phone: (510) 437-3515
Fax: (510) 437-5836
Email: carl.t.hausner@d11.uscg.mil

16591
San Joaquin River (39.8)
14 Dec 2005

MEMORANDUM

From: DAVID H. SULOUFF
Chief of Bridge Section

To: U. S. Department of Transportation, Sacramento District
Attn: Gene K. Fong, Division Administrator

Subj: PROPOSED NAVY DRIVE REPLACEMENT BRIDGE, MILE 39.8, SAN JOAQUIN RIVER

1. Please refer to your letter dated August 30, 2005, concerning the proposed replacement bridge crossing the San Joaquin River, at river mile 39.8, at the Port of Stockton.

2. A Coast Guard Bridge permit will be required for this project, pursuant to the General Bridge Act of 1946. The bridge permit will apply to the bridge and its appurtenances, from abutment to abutment, or from where the approaches break grade.

3. We agree to serve as a cooperating agency to satisfy the requirements of the National Environmental Policy Act and should be listed as a cooperating agency in the Environmental Assessment (EA) for the project.

4. We will review the EA for navigational issues. The EA should contain sufficient information to permit a thorough assessment of the impact of the proposed bridge and its immediate approaches on the environment. We recommend the EA discuss the impacts of any proposed temporary cofferdams, sand islands, and falsework bents, etc., needed to build the proposed bridge. The EA should also contain data on the number, size and types of vessels currently using the waterway and the impacts the proposed project will have on existing and prospective future navigation.

5. Please provide the following information:

a. Will the proposed replacement bridge crossing be perpendicular or skewed relative to the navigational channel? A copy of a USGS quad chart, with the proposed replacement bridge alignment drawn in, would simplify the location process.
b. What mode(s) of transportation would use the proposed new bridge? (rail, highway, pedestrian, utilities, etc).
c. Who will apply for the bridge permit?

Subj: PROPOSED NAVY DRIVE REPLACEMENT BRIDGE, MILE 39.8, SAN JOAQUIN RIVER

d. If permitted and constructed, who would be the owner of the proposed new bridge?

6. We look forward to working with you on this project and should be available to attend scoping meetings, when scheduled. You may contact Mr. Carl Hausner, Coast Guard Project Manager, by telephone at (510) 437-3515 to discuss this project.

#

Copy: Caltrans
Port of Stockton
US EPA Region 9
USACOE, Sacramento Office
US Fish and Wildlife Service
National Marine Fisheries Service

2005 DEC 20 AM 10 01

U.S. Department of Homeland Security
United States Coast Guard

Commander
District Eleven

U.S. Coast Guard Island, Bldg 50-2
Alameda, CA 94501-5100
Staff Symbol: (dpw)
Phone: (510) 437-3514
Fax: (510) 437-5836

16590
San Joaquin River (39.8)
October 30, 2007

Port of Stockton
Attn: Henry McKay
P. O. Box 2089
Stockton, CA 95201

Dear Mr. McKay:

This letter is in response to issues which were discussed in a meeting held on October 1, 2007 concerning the Navy Drive Drawbridge, mile 39.8, over the San Joaquin River.

If the Port of Stockton intends to convert the drawbridge to a fixed bridge, the Port must apply for a Coast Guard Bridge permit. If the Port intends to place utility lines on the current drawspan, it must comply with 33 CFR 117.191(b) which states; "The draw of the US Navy Drawbridge need not be opened for the passage of vessels. The owners or agencies controlling the bridge shall restore the draw to full operation within six months of notification to take such action from the Commander, Eleventh Coast Guard District."

You may contact Mr. Carl Hausner by telephone at (510) 437-3515, to discuss this issue.

Sincerely,

DAVID H. SULOUFF
Chief, Branch Section
Eleventh Coast Guard District
By direction of the District Commander

Copy: Mr. Richard Dornhelm, Moffatt and Nichol Consultants

Appendix H – Biological Opinions

FILE COPY
5733

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

AUG 12 2008

In response refer to:
2007/06640

Ms. Margaret Lawrence
Environmental MPS & Local Assistance Branch
California Department of Transportation
P.O. Box 2048
Stockton, California 95201

Dear Ms. Lawrence:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure 1) based on our review of the proposed Navy Drive Bridge Replacement Project in San Joaquin County, California, and its effects on Federally listed as threatened Central Valley steelhead (*Oncorhynchus mykiss*), their designated critical habitat; and the Southern Distinct Population Segment of North American green sturgeon (*Acipenser medirostris*), in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your October 1, 2007, request for formal consultation was received on October 3, 2007.

This biological opinion is based on information provided in the September 2007 Biological Assessment, discussions held between representatives of NMFS, the California Department of Transportation (Caltrans), and the Port of Stockton, and the best available scientific and commercial information. A complete administrative record of this consultation is on file at the NMFS Sacramento Area Office.

Based on the information described above, the biological opinion concludes that the proposed Navy Drive Bridge Replacement project will adversely affect listed species, but that the proposed project will not jeopardize the continued existence of the listed species or adversely modify their respective critical habitat. NMFS has included an incidental take statement with reasonable and prudent measures and non-discretionary terms and conditions that are necessary and appropriate to minimize incidental take of listed species associated with the Navy Drive Bridge Replacement project. The ESA section 9 prohibitions against taking of listed species and the terms and conditions in the Incidental Take Statement of this biological opinion will not apply to the Southern DPS of North American green sturgeon until a final ESA section 4(d) rule becomes effective.

Also enclosed are Essential Fish Habitat (EFH) conservation recommendations for Pacific salmon as required by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) as amended (16 U.S.C. 1801 *et seq.*; Enclosure 2). This document concludes that the Navy Drive Bridge Replacement Project will adversely affect the EFH of Pacific Salmon in the action

area and adopts a subset of the terms and conditions of the incidental take statement and the ESA conservation recommendations of the biological opinion as the EFH conservation recommendations.

Section 305(b)4(B) of the MSA requires Caltrans to provide NMFS with a detailed written response within 30 days, and at least 10 days in advance of any action, to the EFH conservation recommendations, including a description of measures adopted by Caltrans for avoiding, minimizing, or mitigating the impact of the project on EFH (50 CFR §600.920[j]). In the case of a response that is inconsistent with our recommendations, Caltrans must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to avoid, minimize, or mitigate such effects.

Please contact Douglas Hampton by telephone at (916) 930-3610, or via email at Douglas.Hampton@noaa.gov, if you have any questions or require additional information concerning this correspondence.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Copy to file – ARN #151422SWR2007SA00453
NMFS-PRD, Long Beach, CA
Henry McKay, Special Projects Manager, Port of Stockton
Jim Brady, Senior Engineer, Moffitt and Nichol
Susan Moore, Field Supervisor, U.S. Fish and Wildlife Service

Enclosure 1

BIOLOGICAL OPINION

AGENCY: California Department of Transportation

ACTIVITY: Navy Drive Bridge Replacement Project

CONSULTATION CONDUCTED BY: Southwest Region, National Marine Fisheries Service

DATE ISSUED: August 12, 2008

I. CONSULTATION HISTORY

- In a letter dated October 1, 2007, and received by NOAA's National Marine Fisheries Service (NMFS) on October 3, 2007, the California Department of Transportation (Caltrans) requested initiation of consultation under Section 7 of the Endangered Species Act (ESA) with NMFS, on the Navy Drive Bridge Replacement Project.

- On October 3, 2007, NMFS received Caltrans' September 2007 *Navy Drive Bridge Replacement Project Biological Assessment* in support of their request to initiate Section 7 consultation.

- On March 11, 2008, NMFS received an email from Caltrans summarizing a discussion that took place during a March 5, 2008, telephone conference addressing concerns over the work window for in-water work for the proposed project.

- On April 24, 2008, Douglas Hampton of NMFS conducted a site visit with Caltrans staff and representatives from the Port of Stockton.

II. DESCRIPTION OF THE PROPOSED ACTION

The proposed action is to replace the Navy Drive Bridge across the San Joaquin River in the City of Stockton, San Joaquin County, California. Navy Drive is an undivided two-lane east-west collector that currently provides the sole vehicular access point, via the Navy Drive Bridge, between the Port of Stockton's East Complex and West Complex on Rough and Ready Island, and is a critical link between the Port of Stockton and the regional transportation system. The existing two-lane swing bridge will be replaced with a new four-lane fixed bridge on a slightly different alignment.

The new four-lane bridge will be constructed upstream of the existing Navy Drive Bridge with the south abutment of the replacement bridge being placed next to the existing abutment. The existing bridge is perpendicular to the San Joaquin River, whereas the replacement bridge will be constructed at a 10-degree skew to the channel in order to improve the alignment and allow a higher design speed than is available on the current bridge. Additionally, the new bridge will provide four lanes of traffic instead of two, a 4-foot wide median, two 8-foot wide shoulders, and two 6-foot wide sidewalks with barriers. The replacement bridge will be 80 feet wide and will increase in overall length from 271 feet to 302 feet accommodating the new alignment and the fact that the river widens just upstream from the existing bridge. The added length of the replacement bridge will also allow the abutments on both sides of the channel to be constructed to the rear of the top of the bank (back from the edge of the flood control levees) thereby minimizing disturbance of the rivers banks.

The replacement bridge will be constructed using a Precast Bulb Tee Girder design, consisting of twenty-four 61-inch deep precast bulb tee girders with an 8-inch thick, cast-in-place deck. The bulb tee girders accommodate longer spans than standard Caltrans precast I girders, and would be post-tensioned together longitudinally prior to deck placement to ensure continuity. Two different girder lengths will be used; sixteen of the girders will have lengths of 88.5 feet and eight of the girders will have 125 foot lengths. The girders will be evenly spaced, and the entire bulb tee superstructure (including deck, deck fillets, and deck cross slope) will have a structural depth of 6.5 feet. Ten cast-in-steel-shell (CISS) piles will be placed in the channel and extend to an approximate elevation of -76 feet mean lower low water (MLLW) level. The CISS piles will frame into several 5.5-foot wide by 6-foot deep by 82-foot long drop bent caps. The abutment piles will be approximately 45 feet long and the wingwall piles will be about 40 feet long. The alignments and approaches of both the West Complex and the East Complex are being planned and designed to tie in to the new bridge under separate projects.

A. Project Activities

Work would begin with the construction of two temporary trestles extending from the north and south river banks, respectively, and the two in-channel bents. The trestles would each be about 80 feet long by 60 feet wide with three temporary steel pile bents in the channel. Each of the temporary trestle bents would consist of seven temporary steel piles for a total of 42 temporary steel piles composing all six in-channel temporary trestle bents. The temporary steel piles would be either H-pile (HP) sections or 12-inch to 24-inch diameter tubular piles. The temporary steel piles would be either driven or vibrated in to the river bed to depth to support the anticipated construction loads. A temporary deck structure would be constructed above the bents to support cranes and concrete trucks needed for the CISS pile construction and bent caps.

Once the temporary trestles are in place, the CISS steel pile shells will be driven to depth using an impact hammer from the temporary trestle. Once each shell is driven, soil will be removed from inside the shell and disposed of off-site. A reinforcing cage will be placed inside the steel shell before concrete is then placed in the shell using the tremie method. Water taken off the tremie lift will be discharged to a settling pond on shore where it will percolate into the soil. Any residue will be removed when construction is completed. Expected water volume is 500

gallons per pile for each of ten piles. Dewatering inside of the CISS shell is not required as water above the concrete is removed during the concrete placement process.

Following completion of the two in-channel bents either the center span girders will be placed or the temporary trestles dismantled and removed. The contractor may wish to take advantage of the temporary trestles to place the center girders. However, the contractor may alternatively choose to dismantle the temporary trestles and begin placing bridge girders from the shore, leaving the center span girders until the shore spans are completed. In either case, the temporary trestles will be dismantled and removed following placement of either the center span or shore span girders.

The abutments will be built entirely in the dry as these are located behind the top of the levee bank and above the high water level. Relatively shallow excavations will be made and CISS shells will be driven to depth and left in place. The same protocol for the placement of concrete inside the in-channel CISS piles will be employed for the abutment piles. Four small diameter Cast-in-Drilled-Hole (CIDH) piles will support the ends of the wing walls. Placement of reinforcing steel, concrete, and water from the CIDH piles will be done in the same manner as the CISS piles. The CIDH holes may be up to 40 feet deep and may require dewatering of groundwater.

Additionally, demolition of the existing Navy Drive Bridge will be required and will occur following completion of the new bridge's construction in order to maintain uninterrupted access to Rough and Ready Island throughout the implementation of the project. The contractor is required to prevent all superstructure debris from entering the channel and is prohibited from using blasting as a demolition method. The existing truss bridge will be sequentially demolished using a system of barges that will either be floated under the existing rail bridge and Navy Drive Bridge or assembled together from Flexi-Floats that would be trucked into the site. The concrete decking may be demolished and the house, guardrail, lights, stairs, and any other appurtenances may be removed in order to reduce weight. Debris will be trapped by the floats and brought to shore for off-site disposal. The truss will then be cut into segments and lifted out of the channel to be set on land for dismantling and removal.

The existing substructure will be removed to one foot below the design mudline without allowing any debris to remain in the channel. This will be accomplished by first removing the interior walls of the center pier down to the top of the center pier footing with demolished concrete being removed from the center of the pier by an excavator or clamshell operating off of Flexi-Floats. Once the interior of the center pier is demolished, the exterior of the center pier will be demolished using an excavator with a chipping tool working the sides down with debris falling into the center of the pier. Approximately ten feet below water divers with underwater jackhammers will complete the demolition to the top of the footing with a clamshell removing debris from the center of the pier as the demolition progresses. The side piers and abutments will be demolished to just below the top of the bank using an excavator with a chipper, and conventional demolition equipment, respectively. Finally, the timber fender system of the existing bridge will be demolished by pulling the piles, snapping them off just below the mudline, or alternatively having divers with underwater chainsaws cut them off just below the

mudline. All demolished timber will be carried to shore by floats, offloaded, and trucked to an offsite disposal area.

B. Proposed Conservation Measures

The following conservation measures have been proposed by Caltrans (2007) as part of the project description for the Navy Drive Bridge Replacement project.

1. Increased Turbidity and Suspended Sediment

Implementation of Best Management Practices (BMPs), such as placing hay bales around construction areas and erecting silt fencing, will help contain and reduce offsite sedimentation and substantially decrease the potential for erosion associated with the discharge of sediments in to the San Joaquin River. In addition, approval of a site specific Storm Water Pollution Prevention Plan (SWPPP) will be required, which will implement measures to protect water quality including hazardous spill prevention plans and erosion prevention techniques.

During in-water construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbances will be kept to a minimum. A turbidity curtain (*i.e.*, a fabric barrier that is designed to allow water to flow through a limited area while deflecting and containing sediment within that area and providing sufficient retention time so that the soil particles will settle out) will be used to isolate the work area. After deploying the turbidity curtain, the Port or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed Regional Water Quality Control Board's (RWQCB) Basin Plan standards, the Port or its contractor will stop work until levels are within Basin Plan limits.

Furthermore, no portion of the existing bridge will be left in the channel, and if any construction or demolition activities result in the suspension and dispersion of oxygen demanding substances into the river (*i.e.*, causing dissolved oxygen levels to decrease), the Port will operate aeration equipment continuously during these activities, and until such time following their cessation that potential impacts to dissolved oxygen levels in the river have been eliminated.

2. Loss of Shaded Riverine Aquatic (SRA) and Riparian Habitat

The removal and disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction condition, and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

3. Limiting the Work Window for In-channel Construction Activities.

Measures shall be taken to minimize incidental take of listed and proposed anadromous fish by restricting and isolating in-channel work to avoid vulnerable life stages. All in-channel percussive work shall be restricted to the period between June 1 and October 31. Percussive work includes all pile driving and pile removal activities that utilize "hammering". In addition,

in-channel work shall not be conducted at night to afford fish quiet, unobstructed passage during night-time hours.

4. Limiting and Monitoring Sound Pressure Levels.

Based on the results of geotechnical investigations, whenever possible and to the greatest extent feasible, Caltrans will partially or entirely vibrate piles into the channel substrate rather than driving them by means of "hammering". Vibratory pile driving does not generate peak sound pressure levels that cause direct impacts to fish species.

Pile driving activities that rely on impact hammers rather than vibratory techniques will be designed to assure compliance with the interim criteria for Sound Exposure Levels (SEL) less or equal to 187 dB in any single strike, and peak sound pressure less or equal to 208 dB in any single strike, measured at a distance of 32.8 feet from the source. In addition, to reduce sound pressure levels to the greatest extent feasible, a cushioning block between hammer and pile will always be used.

Bubble curtains will be used at all permanent piles driven by impact hammers. An air bubble curtain system typically consists of rings of perforated pipes surrounding the pile and template system (used for holding the piles in place). The perforated pipes emit air bubbles, thus allowing for the pile driving operation to be completely enclosed by bubbles for the full depth of the water column and for a radial dimension of at least 6.5 feet as measured from the outside surface of the pile. Bubble curtains attenuate the effects of sound pressure waves on fish during pile driving, reducing barotrauma injury and related mortality (Caltrans 2004).

C. Description of the Action Area

The action area is defined as 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 action area, for the purpose of this biological opinion, centers on the Navy Drive Bridge over the San Joaquin River at 37° 56' 48"North; 121° 20' 19" West, in the City of Stockton, San Joaquin County, California, and encompasses an area that begins 500 feet upstream of the bridge and extends 500 feet downstream of the bridge. This area was selected because it represents the upstream and downstream extent of anticipated acoustic effects from pile driving, and the downstream extent of anticipated effects related to sediment and turbidity.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

The following listed threatened and endangered species and designated critical habitat occur in the action area and may be affected by the proposed Navy Drive Bridge Replacement project:

Central Valley steelhead (*Oncorhynchus mykiss*) – threatened
Central Valley steelhead critical habitat
Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*) – threatened

A. Species and Critical Habitat Listing Status

Central Valley steelhead were originally listed as threatened under the ESA on March 19, 1998 (63 FR 13347). This DPS consists of steelhead populations in the Sacramento and San Joaquin River basins in California's Central Valley. In June 2004, NMFS proposed that Central Valley steelhead remain listed as threatened (69 FR 33102). On June 28, 2005, after reviewing the best available scientific and commercial information, NMFS issued its final decision to retain the status of Central Valley steelhead as threatened (70 FR 37160). This decision also included the Coleman National Fish Hatchery and Feather River Fish Hatchery steelhead populations. These populations were previously included in the DPS but were not deemed essential for conservation and thus not part of the listed steelhead population. A final rule designating critical habitat for Central Valley steelhead was published on September 2, 2005 (70 FR 52488). The rule became effective on January 2, 2006. The designation includes numerous streams and stream reaches to the ordinary high water line throughout the Central Valley such as those of the American, Feather, and Yuba rivers, and Deer, Mill, Battle, Antelope, and Clear creeks in the Sacramento River basin; the Calaveras, Mokelumne, Stanislaus, and Tuolumne rivers in the San Joaquin River basin; and the Sacramento and San Joaquin rivers and Delta.

The critical habitat designation for Central Valley steelhead identifies the primary constituent elements (PCEs) of critical habitat which include those physical and biological features of the habitat that are essential to the conservation of the species. Within the Sacramento and San Joaquin rivers these PCEs include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors and estuarine areas. The PCEs of critical habitat for these species are made up of essential physical and biological elements such as water of an appropriate quality and quantity, suitable spawning substrates, forage and food sources, and natural cover such as shade, submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

The Southern DPS of North American green sturgeon was listed as threatened on April 7, 2006, (70 FR 17386) and includes the North American green sturgeon population spawning in the Sacramento River and utilizing the Sacramento River, The San Joaquin River, the Sacramento-San Joaquin Delta, and the San Francisco Estuary. While the Southern DPS presently contains only a single documented spawning population in the Sacramento River, individuals may occur in the action area. No critical habitat has been designated or proposed for green sturgeon.

B. Species Life History and Population Dynamics

1. Central Valley Steelhead

a. *General Life History*

Based on their state of sexual maturity at the time of river entry and the duration of their spawning migration, steelhead can be divided into two life history types: stream-maturing and ocean-maturing. Stream-maturing steelhead enter freshwater in a sexually immature condition and require several months to mature and spawn, whereas ocean-maturing steelhead enter

freshwater with well-developed gonads and spawn shortly after river entry. These two life history types are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream-maturing] and winter [ocean-maturing] steelhead). Only winter steelhead are currently found in Central Valley rivers and streams (McEwan and Jackson 1996), although there are indications that summer steelhead were present in the Sacramento River system prior to the commencement of large-scale dam construction in the 1940s (Interagency Ecological Program [IEP] Steelhead Project Work Team 1999). At present, summer steelhead are found only in North Coast drainages, mostly in tributaries of the Eel, Klamath, and Trinity River systems (McEwan and Jackson 1996).

Winter steelhead generally leave the ocean from August through April, and spawn between December and May (Busby *et al.* 1996). Timing of upstream migration is correlated with higher flow events, such as freshets or sand bar breaches, and the associated lower water temperatures. The preferred water temperature for adult steelhead migration is 46 °F to 52 °F (McEwan and Jackson 1996; Myrick 1998; Myrick and Cech 2000). Thermal stress may occur at temperatures beginning at 66 °F and mortality has been demonstrated at temperatures beginning at 70 °F. The preferred water temperature for steelhead spawning is 39 °F to 52 °F, and the preferred water temperature for steelhead egg incubation is 48 °F to 52 °F (McEwan and Jackson 1996; Myrick 1998; Myrick and Cech 2000). The minimum stream depth necessary for successful upstream migration is 13 cm (Thompson 1972). Preferred water velocity for upstream migration is in the range of 40-90 cm/s, with a maximum velocity, beyond which upstream migration is not likely to occur, of 240 cm/s (Thompson 1972; Smith 1973).

Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby *et al.* 1996). However, it is rare for steelhead to spawn more than twice before dying; most that do so are females (Busby *et al.* 1996; Nickleson *et al.* 1992). Iteroparity is more common among southern steelhead populations than northern populations (Busby *et al.* 1996). Although one-time spawners are the great majority, Shapolov and Taft (1954) reported that repeat spawners are relatively numerous (17.2 percent) in California streams. Most steelhead spawning takes place from late December through April, with peaks from January though March (Hallock *et al.* 1961). Steelhead spawn in cool, clear streams featuring suitable gravel size, depth, and current velocity, and may spawn in intermittent streams as well (Everest 1973; Barnhart 1986).

The length of the incubation period for steelhead eggs is dependent on water temperature, dissolved oxygen concentration, and substrate composition. In late spring, and following yolk sac absorption, fry emerge from the gravel and actively begin feeding in shallow water along stream banks (Nickelson *et al.* 1992).

Steelhead rearing during the summer takes place primarily in higher velocity areas in pools, although young-of-the-year also are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Productive steelhead habitat is characterized by complexity, primarily in the form of large and small woody debris. Cover is an important habitat component for juvenile steelhead both as velocity refuge and as a means of avoiding predation (Shirvell 1990; Meehan and Bjornn 1991). Some older juveniles move downstream to rear in large tributaries and mainstem rivers (Nickelson *et al.*

1992). Juveniles feed on a wide variety of aquatic and terrestrial insects (Chapman and Bjornn 1969), and emerging fry are sometimes preyed upon by older juveniles.

Steelhead generally spend two years in freshwater before emigrating downstream (Hallock *et al.* 1961; Hallock 1989). Rearing steelhead juveniles prefer water temperatures of 45 °F to 58 °F and have an upper lethal limit of 75 °F. They can survive in water up to 81 °F with saturated dissolved oxygen conditions and a plentiful food supply. Reiser and Bjornn (1979) recommended that dissolved oxygen concentrations remain at or near saturation levels with temporary reductions no lower than 5.0 mg/l for successful rearing of juvenile steelhead. During rearing, suspended and deposited fine sediments can directly affect salmonids by abrading and clogging gills, and indirectly cause reduced feeding, avoidance reactions, destruction of food supplies, and reduced egg and alevin survival (Reiser and Bjornn 1979). Bell (1973) found that silt loads of less than 25 mg/l permit good rearing conditions for juvenile salmonids.

Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating Central Valley steelhead use the lower reaches of the Sacramento River and the Delta for rearing and as a migration corridor to the ocean. Some may utilize tidal marsh areas, non-tidal freshwater marshes, and other shallow water areas in the Delta as rearing areas for short periods prior to their final emigration to the sea. Barnhart (1986) reported that steelhead smolts in California range in size from 140 to 210 mm (fork length). Hallock *et al.* (1961) found that juvenile steelhead in the Sacramento River basin migrate downstream during most months of the year, but the peak period of emigration occurred in the spring, with a much smaller peak in the fall.

b. Population Trends – Central Valley Steelhead

Steelhead historically were well-distributed throughout the Sacramento and San Joaquin Rivers (Busby *et al.* 1996). Steelhead were found from the upper Sacramento and Pit River systems (now inaccessible due to Shasta and Keswick Dams), south to the Kings and possibly the Kern River systems (now inaccessible due to extensive alteration from water diversion projects), and in both east and west-side Sacramento and San Joaquin River tributaries (Yoshiyama *et al.* 1996). The present distribution has been greatly reduced (McEwan and Jackson 1996). The California Advisory Committee on Salmon and Steelhead (1988) reported a reduction of steelhead habitat from 6,000 miles historically to 300 miles today. Historically, steelhead probably ascended Clear Creek past the French Gulch area, but access to the upper basin was blocked by Whiskeytown Dam in 1964 (Yoshiyama *et al.* 1996). Steelhead also occurred in the upper drainages of the Feather, American, Yuba and Stanislaus Rivers which are now inaccessible (McEwan and Jackson 1996, Yoshiyama *et al.* 1996).

Historic Central Valley steelhead run size is difficult to estimate given the paucity of data, but may have approached one to two million adults annually (McEwan 2001). By the early 1960s, the steelhead run size had declined to about 40,000 adults (McEwan 2001). Over the past 30 years, the naturally-spawned steelhead populations in the upper Sacramento River have declined substantially. Hallock *et al.* (1961) estimated an average of 20,540 adult steelhead in the Sacramento River, upstream of the Feather River, through the 1960s. Steelhead counts at the RBDD declined from an average of 11,187 for the period of 1967 to 1977, to an average of

approximately 2,000 through the early 1990s, with an estimated total annual run size for the entire Sacramento-San Joaquin system, based on RBDD counts, to be no more than 10,000 adults (McEwan and Jackson 1996, McEwan 2001). Steelhead escapement surveys at RBDD ended in 1993 due to changes in dam operations.

Nobriga and Cadrett (2003) compared coded wire tagged (CWT) and untagged (wild) steelhead smolt catch ratios at Chipps Island trawl from 1998 to 2001 and estimated that about 100,000 to 300,000 steelhead juveniles are produced naturally each year in the Central Valley. In the draft *Updated Status Review of West Coast Salmon and Steelhead* (Good *et al.* 2005), the Biological Review Team (BRT) made the following conclusion based on the Chipps Island data:

> "If we make the fairly generous assumptions (in the sense of generating large estimates of spawners) that average fecundity is 5,000 eggs per female, 1 percent of eggs survive to reach Chipps Island, and 181,000 smolts are produced (the 1998-2000 average), about 3,628 female steelhead spawn naturally in the entire Central Valley. This can be compared with McEwan's (2001) estimate of 1 million to 2 million spawners before 1850, and 40,000 spawners in the 1960s".

The only consistent data available on steelhead numbers in the San Joaquin River basin come from CDFG mid-water trawling samples collected on the lower San Joaquin River at Mossdale. These data indicate a decline in steelhead numbers in the early 1990s, which have remained low through 2002 (CDFG 2003). In 2004, a total of 12 steelhead smolts were collected at Mossdale (CDFG, unpublished data).

Existing wild steelhead stocks in the Central Valley are mostly confined to the upper Sacramento River and its tributaries, including Antelope, Deer, and Mill Creeks and the Yuba River. Populations may exist in Big Chico and Butte Creeks and a few wild steelhead are produced in the American and Feather Rivers (McEwan and Jackson 1996).

Recent snorkel surveys (1999 to 2002) indicate that steelhead are present in Clear Creek (J. Newton, FWS, pers. comm. 2002, as reported in Good *et al.* 2005). Because of the large resident *O. mykiss* population in Clear Creek, steelhead spawner abundance has not been estimated.

Until recently, steelhead were thought to be extirpated from the San Joaquin River system. Recent monitoring has detected small self-sustaining populations of steelhead in the Stanislaus, Mokelumne, Calaveras, and other streams previously thought to be void of steelhead (McEwan 2001). On the Stanislaus River, steelhead smolts have been captured in rotary screw traps at Caswell State Park and Oakdale each year since 1995 (Demko *et al.* 2000). After 3 years of operating a fish counting weir on the Stanislaus River only two adult steelhead have been observed moving upstream, although several large rainbow trout (*O. mykiss*) have washed up on the weir in late winter (Cramer 2005). It is possible that naturally spawning populations exist in many other streams but are undetected due to lack of monitoring programs (IEP Steelhead Project Work Team 1999). Incidental catches and observations of steelhead juveniles also have occurred on the Tuolumne and Merced rivers during fall-run Chinook salmon (*Oncorhynchus tshawytscha*) monitoring activities, indicating that steelhead are widespread, if not abundant, throughout accessible streams and rivers in the Central Valley (Good *et al.* 2005).

c. *Status of Central Valley Steelhead and Critical Habitat*

Both the BRT (Good *et al.* 2005) and the Artificial Propagation Evaluation Workshop (69 FR 33102) concluded that the Central Valley steelhead ESU is "in danger of extinction." However, in the proposed status review NMFS concluded that the ESU in-total is "not in danger of extinction, but is likely to become endangered within the foreseeable future" citing benefits of restoration efforts and a yet-to-be funded monitoring program (69 FR 33102). Central Valley steelhead have already been extirpated from most of their historical range. Critical habitat concerns for steelhead focus on the widespread degradation, destruction, and blockage of freshwater habitat within the region, and impacts to PCEs are exacerbated by dry hydrologic conditions resulting in reduced flows and warm water temperatures which negatively impact adults, eggs, and juveniles. Water management operations, including reservoir releases and unscreened or poorly screened diversions along steelhead migration routes, compound drought related problems by further reducing river flows, warming river water temperatures, and entraining juveniles. Widespread hatchery steelhead production within this ESU also raises concerns about the potential ecological interactions between introduced stocks and native stocks. Because the Central Valley steelhead population has been fragmented into smaller isolated tributaries without any large source population, and the remaining habitat continues to be degraded by water diversions and other land use practices, the population remains at an elevated risk for future population declines.

d. *Viable Salmonid Population Summary for Central Valley Steelhead*

Abundance. All indications are that natural Central Valley steelhead have continued to decrease in abundance and in the proportion of natural fish over the past 25 years (Good *et al.* 2005); the long-term trend remains negative. There has been little steelhead population monitoring despite 100 percent marking of hatchery steelhead since 1998. Hatchery production and returns are dominant over natural fish and include significant numbers of non-DPS-origin Eel River steelhead stock.

Productivity. An estimated 100,000 to 300,000 natural juvenile steelhead are estimated to leave the Central Valley annually, based on rough calculations from sporadic catches in trawl gear (Good *et al.* 2005). Concurrently, one million in-DPS hatchery steelhead smolts and another half million out-of-DPS hatchery steelhead smolts are released annually in the Central Valley. The estimated ratio of nonclipped to clipped steelhead has decreased from 0.3 percent to less than 0.1 percent, with a net decrease to one-third of wild female spawners from 1998 to 2000 (Good *et al.* 2005).

Spatial Structure. Steelhead appear to be well-distributed where found throughout the Central Valley (Good *et al.* 2005). Until recently, there was very little documented evidence of steelhead due to the lack of monitoring efforts. Since 2000, steelhead have been confirmed in the Stanislaus and Calaveras rivers.

Diversity. Analysis of natural and hatchery steelhead stocks in the Central Valley reveal genetic structure remaining in the DPS (Nielsen *et al.* 2003). There appears to be a great amount of gene

flow among upper Sacramento River basin stocks, due to the post-dam, lower basin distribution of steelhead and management of stocks. Recent reductions in natural population sizes have created genetic bottlenecks in several Central Valley steelhead stocks (Good *et al.* 2005; Nielsen *et al.* 2003). The out-of-basin steelhead stocks of the Nimbus and Mokelumne River hatcheries are not included in the Central Valley steelhead DPS.

2. Southern DPS of North American Green Sturgeon

The green sturgeon is the most widely distributed member of the sturgeon family Acipenseridae (70 FR 17386). North American green sturgeon are found in rivers from British Columbia south to the Sacramento River, California, though their ocean range is from the Bering Sea to Ensenada, Mexico (Moyle 2002). In assessing North American green sturgeon status, NMFS determined that two DPSs exist. The northern DPS is made up of known North American green sturgeon spawning (or single stock populations) in the Rogue, Klamath and Eel rivers. The Southern DPS presently contains only a single spawning population in the Sacramento River (70 FR 17386). NMFS proposed to list the Southern DPS of North American green sturgeon as threatened on April 6, 2005 (70 FR 17386).

a. *Life History*

North American green sturgeon is an anadromous species that generally migrate upstream into fresh water between late February and late July (CDFG 2002a). In the Klamath River, the water temperature tolerance of immigrating adult North American green sturgeon reportedly ranges from 44.4 °F to 60.8 °F (6.9 °C to 16 °C); North American green sturgeon were not found in areas of the river outside this surface water temperature range (FWS 1995). Mature males range from 139 to 199 centimeters (cm) fork length (FL) and 15 to 30 years of age (Van Eenennaam *et al.* 2001). Mature females range from 157 to 223 cm FL and 17 to 40 years of age. Maximum ages of adult North American green sturgeon are likely to range from 60 to 70 years (Moyle 2002).

Adult North American green sturgeon are thought to spawn every three to five years (70 FR 17386), but new information suggests that spawning could occur as frequently as every two years (Stephen Lindley, NMFS, pers. comm., 2004). Spawning occurs from March through July, with peak activity from April through June (Moyle *et al.* 1995). Spawning occurs in deep turbulent river mainstems. Specific spawning habitat preferences are unclear, but eggs likely are broadcast over large cobble where they settle into the cracks (Moyle *et al.* 1995). North American green sturgeon reportedly prefer to spawn in water temperatures ranging from 46.4 °F to 57.2 °F (8 °C to 14 °C) (FWS 1995; Environmental Protection Information Center *et al.* 2001; Moyle 2002). Water temperatures above 68 °F (20 °C) are reportedly lethal to North American green sturgeon embryos (Cech *et al.* 2000; Beamesderfer and Webb 2002). North American green sturgeon females produce 60,000 - 140,000 eggs (Moyle *et al.* 1992), and they are the largest eggs (diameter 4.34 mm) of any sturgeon species (Cech *et al.* 2000).

North American green sturgeon larvae hatch at around 200 hours (at 54.9° F) after spawning, and are dissimilar to other sturgeon species in that they lack a distinct swim-up or post-hatching stage (Moyle 2002; NMFS 2002). Optimal growth rates for North American green sturgeon juveniles

reportedly occur at water temperatures of 59 °F (Cech *et al.* 2000). North American green sturgeon larvae first feed at 10 days post hatch and grow quickly reaching a length of 66 mm and a weight of 1.8 g in three weeks of exogenous feeding. Metamorphosis to the juvenile stage is complete at 45 days. Juveniles continue to grow rapidly, reaching 300 mm in one year. Juveniles spend from one to four years in fresh and estuarine waters and disperse into salt water at lengths of 300 to 750 mm.

The North American green sturgeon is the most marine oriented of the Pacific Coast sturgeon species (NMFS 2003). Individuals apparently remain near the estuaries at first, but then migrate considerable distances in the ocean as they grow. Based on recoveries of North American green sturgeon tagged in the San Francisco Bay estuary, most North American green sturgeon migrate northward, in some cases as far as British Columbia (Moyle 2002; NMFS 2002). Similarly, tagged North American green sturgeon from the Sacramento and Columbia rivers are primarily captured to the north in coastal and estuarine waters, with some fish tagged in the Columbia River being recaptured as far north as British Columbia (Washington Department of Fish and Wildlife (WDFW) 2002). While there is some bias associated with recovery of tagged fish through commercial fishing, the pattern of a northern migration is supported by the large concentration of North American green sturgeon in the Columbia River estuary, Willapa Bay, and Grays Harbor, which peaks in August. These fish tend to be immature; however, mature fish and at least one ripe fish have been found in the lower Columbia River (WDFW 2002). Genetic evidence suggests that most Columbia River green sturgeon are a mixture of fish spawned in other river systems including the Sacramento, Klamath, and Rogue Rivers (Israel *et al.* 2002).

Some general information is available on North American green sturgeon feeding habits. Adult North American green sturgeon scour the Sacramento-San Joaquin Delta benthos for invertebrates including shrimp, mollusks, amphipods, isopods, and small, disabled or dead fish (Environmental Protection Center *et al.* 2001). The primary diet for juvenile North American green sturgeon reportedly consists of small crustaceans, such as amphipods and opossum shrimp (CDFG 2001). As juvenile North American green sturgeon develop, they reportedly eat a wider variety of benthic invertebrates, including clams, crabs, and shrimp (CDFG 2001).

b. *Southern DPS of North American Green Sturgeon Population Status*

Population abundance information concerning the Southern DPS of North American green sturgeon is scant as described in the status review (NMFS 2002). Limited population abundance information comes from incidental captures of North American green sturgeon from the white sturgeon (*Acipenser transmontanus)* monitoring program by the CDFG sturgeon tagging program (CDFG 2002b). CDFG (2002b) utilizes a multiple-census or Peterson mark-recapture method to estimate the legal population of white sturgeon captures in trammel nets. By comparing ratios of white sturgeon to green sturgeon captures, CDFG provides estimates of adult and sub-adult North American green sturgeon abundance. Estimated abundance between 1954 and 2001 ranged from 175 fish to more than 8,000 per year and averaged 1,509 fish per year. Unfortunately, there are many biases and errors associated with these data, and CDFG does not consider these estimates reliable. Fish monitoring efforts at Red Bluff Diversion Dam and Glen Colusa Irrigation District on the upper Sacramento River have captured between 0 and 2,068 juvenile North American green sturgeon per year, mostly between June and July (NMFS 2002).

The only existing information regarding changes in the abundance of the Southern DPS of North American green sturgeon includes changes in abundance at the John Skinner Fish Protection Facility between 1968 and 2001 (State facility). The estimated average annual number of North American green sturgeon taken at the State Facility prior to 1986 was 732; from 1986 on, the average annual number was 47 (70 FR 17386). For the Tracy Fish Collection Facility (Federal facility), the average annual number prior to 1986 was 889; from 1986 to 2001 it was 32 (70 FR 17386). In light of the increased exports, particularly during the previous 10 years, it is clear that the abundance of the Southern DPS of North American green sturgeon is dropping. Catches of sub-adult and adult North American green sturgeon by the IEP between 1996 and 2004 ranged from 1 to 212 green sturgeon per year (212 occurred in 2001), however, the portion of these catches that were made up of the Southern DPS of North American green sturgeon is unknown as these captures were primarily located in San Pablo Bay which is known to consist of a mixture of the Northern and Southern population segments. Additional analysis of North American green and white sturgeon taken at the State and Federal facilities indicates that take of both North American green and white sturgeon per acre-foot of water exported has decreased substantially since the 1960's (70 FR 17386).

Larval and post larval North American green sturgeon are caught each year in rotary screw traps at the Red Bluff Diversion Dam (Gaines and Martin 2001). A total of 2,608 juvenile sturgeon were captured from 1994-2000. All were assumed to be North American green sturgeon since 124 of these fish were grown by University of California Davis researchers to an identifiable size and all were North American green sturgeon. Young sturgeon appear in catches from early May through August. Most range in size from 1 to 3 inches. Catch rates were greatest in 1995 and 1996 and were lowest in 1999 and 2000 (Gaines and Martin 2001).

No North American green sturgeon have been detected during intensive salmonid monitoring efforts in Clear, Battle, Butte, Deer and Mill creeks, all of which are tributaries to the Sacramento River (Matt Brown, FWS, pers. comm., 2004; Colleen Harvey-Arrison, CDFG, pers. comm., 2004). Sampling on these tributaries includes monitoring adult passage at fish ladders (Battle Creek), snorkel surveys (Deer, Butte, Clear and Battle creeks), and rotary screw trapping (Deer, Mill, Clear, Battle and Butte creeks). Much of this monitoring has occurred during time periods when adult North American green sturgeon would be expected to be in the rivers spawning, and when juvenile North American green sturgeon would be expected to be hatching, rearing and migrating through the river systems (S.P. Cramer & Associates, Inc. 2004).

Similar monitoring activities have likewise failed to detect North American green sturgeon in the American River (Mike Healey, CDFG, pers. comm., 2004; John Hannon, U.S. Bureau of Reclamation, pers. comm., 2004; Trevor Kennedy, Fishery Foundation of California, pers. comm., 2004). These sampling efforts included snorkeling, rotary screw trapping, and seining, and were conducted during periods when adult and juvenile North American green sturgeon would have been expected to be in the river (S.P. Cramer & Associates, Inc. 2004).

Green and white sturgeon adults have been observed periodically in small numbers in the Feather River (S.P. Cramer & Associates, Inc.2004). There are at least two confirmed records of adult North American green sturgeon. There are no records of larval or juvenile sturgeon of either species, even prior to the 1960s when Oroville Dam was built. There are reports that North

American green sturgeon may reproduce in the Feather River during high flow years (CDFG 2002b), but these are not specific and are unconfirmed (S.P. Cramer & Associates, Inc. 2004).

Recent confirmed observations of at least one and possibly two adult North American green sturgeon in the pool below Daguerre Point Dam on the Yuba River (Reedy 2006) provide evidence that adult green sturgeon occur in the lower Yuba River. However, several years of juvenile monitoring at several locations on the lower Yuba River using rotary screw traps has not detected the presence of juvenile sturgeon.

C. Factors Affecting the Species and Critical Habitat

The construction of dams for hydropower, flood control, and water supply resulted in the loss of vast amounts of upstream habitat (*i.e.*, approximately 80 percent, or a minimum linear estimate of over 1,000 stream miles), and has contributed to precipitous declines in affected salmonid populations. The reduced populations that remain below Central Valley dams are forced to spawn in lower elevation tailwater habitats of the mainstem rivers and tributaries that were previously not used for this purpose. This habitat is entirely dependent on managing reservoir releases to maintain cool water temperatures suitable for spawning, and/or rearing of salmonids. Maintaining these conditions has been difficult to achieve in drier water year types for all life stages of affected salmonid species. Steelhead, in particular, seem to require the qualities of small tributary habitat similar to what they historically used for spawning; habitat that is largely unavailable to them under the current water management scenario. Salmonid species have been adversely affected further by the production of hatchery fish associated with the mitigation for habitat lost to dam construction (*e.g.*, from genetic impacts, increased competition, exposure to novel diseases, *etc.*).

Land-use activities such as road construction, urban development, levee construction, logging, mining, agriculture, and recreation are pervasive and have significantly altered fish habitat quantity and quality for Chinook salmon and steelhead through alteration of streambank and channel morphology; alteration of ambient water temperatures; degradation of water quality; elimination of spawning and rearing habitat; fragmentation of available habitats; elimination of downstream recruitment of large woody debris; and destruction of riparian vegetation resulting in increased streambank erosion. Human-induced habitat changes, such as: alteration of natural flow regimes; installation of bank revetment; and building structures such as dams, bridges, water diversions, piers, and wharves, often provide conditions that both disorient juvenile salmonids and attract predators. Harvest activities, ocean productivity, and drought conditions provide added stressors to listed salmonid populations. In contrast, various ecosystem restoration activities have contributed to improved conditions for listed salmonids (*e.g.*, various fish screens). However, some important restoration activities (*e.g.*, Battle Creek Restoration Project) have not yet been implemented, and benefits to listed salmonids from the Environmental Water Account have been smaller than anticipated.

Similar to the listed salmonids, the Southern DPS of North American green sturgeon have been negatively impacted by dam construction and the associated hydroelectric and water storage operations in the Central Valley which ultimately affect the hydrology and accesibility of Central Valley rivers and streams to anadromous fish. Anthropogenic manipulations of the aquatic

habitat, such as introduction of non-native species, dredging, bank stabilization, and water polution have also degraded the quality of the Central Valley's waterways for green sturgeon.

IV. ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem within the action area (*i.e.*, from 500 feet upstream to 500 feet downstream of the Navy Drive Bridge in the San Joaquin River) (FWS and NMFS 1998).

The action area functions primarily as a migratory corridor for adult and juvenile Central Valley steelhead and North American green sturgeon, and as juvenile rearing habitat for both of these species as well.

A. Factors Affecting the Species and Habitat in the Action Area

Starting in the mid-1800s, the U.S. Army Corps of Engineers (Corps) and other private consortiums began straightening river channels and artificially deepening them to enhance shipping commerce. This has led to declines in the natural meandering of river channels and the formation of pool and riffle segments. The deepening of channels beyond their natural depth also has led to a significant alteration in the transport of bedload in the riverine system as well as the local flow velocity in the channel (Mount 1995). The Sacramento Flood Control Project at the turn of the nineteenth century ushered in the start of large scale Corps actions in the Delta and along the rivers of California for reclamation and flood control. The creation of levees and the Sacramento and San Joaquin Deep Water Shipping Channels (DWSCs) reduced the natural tendency of the San Joaquin and Sacramento rivers to create floodplains along their banks with seasonal inundations during the wet winter season and the spring snow melt periods. These annual inundations provided necessary habitat for rearing and foraging of juvenile native fish that evolved with this flooding process. The armored riprapped levee banks and active maintenance actions of reclamation districts precluded the establishment of ecologically important riparian vegetation, introduction of valuable large woody debris (LWD) from these riparian corridors, and the productive intertidal mudflats characteristic of the undisturbed Delta habitat.

Low dissolved oxygen (DO) levels frequently are observed in the portion of the Stockton DWSC extending from Channel Point, downstream to Turner and Columbia Cuts. Over a 5-year period, starting in August 2000, a DO meter has recorded channel DO levels at Rough and Ready Island (Dock 20 of the Port of Stockton, West Complex). Over the course of this time period, there have been 297 days in which violations of the 5 mg/L DO criteria for the protection of aquatic life in the San Joaquin River between Channel Point and Turner and Columbia Cuts have occurred during the September through May migratory period for salmonids in the San Joaquin River. The data derived from the California Data Exchange Center files indicate that DO depressions occur during all migratory months, with significant events occurring from November through March when listed Central Valley steelhead adults and smolts would be utilizing this portion of the San Joaquin River as a migratory corridor.

Potential factors that contribute to these DO depressions are reduced river flows, released ammonia from the City of Stockton Wastewater Treatment Plant, upstream contributions of organic materials (*e.g.*, algal loads, nutrients, agricultural discharges), and the increased volume of the dredged ship channel. During the winter and early spring emigration period, increased ammonia concentrations in the discharges from the City of Stockton Waste Water Treatment Facility lowers the DO in the adjacent DWSC near the West Complex. In addition to the adverse effects of the lowered DO on salmonid physiology, ammonia in itself is toxic to salmonids at low concentrations. Likewise, adult fish migrating upstream will encounter lowered DO in the DWSC as they move upstream in the fall and early winter due to low flows and excessive algal and nutrient loads coming downstream from the upper San Joaquin River watershed. Levels of DO below 5 mg/L have been reported as delaying or blocking fall-run Chinook salmon in studies conducted by Hallock *et al.* (1970). As the river water and its constituents move downstream from the San Joaquin River channel to the DWSC, the channel depth increases from approximately 8 to 10 feet to over 35 feet. The water column is no longer mixed adequately to prevent DO from decreasing by contact with the air–water interface only. Photosynthesis by suspended algae is diminished by increased turbidity and circulation below the photosynthetic compensation depth. This is the depth to which light penetrates with adequate intensity to carry on photosynthesis in excess of the oxygen demands of respiration. As the oxygen demand from respiration, defined as biological oxygen demand, exceeds the rate at which oxygen can be produced by photosynthesis and mixing, then the level of DO in the water column will decrease. Additional demands on oxygen are also exerted in non-biological chemical reactions in which compounds consume oxygen in an oxidation-reduction reaction.

B. Presence of Central Valley Steelhead in the Action Area

All of the Central Valley steelhead in the San Joaquin River watershed originating from the Calaveras, Stanislaus, Tuolumne, or Merced Rivers must pass through the action area on both their downstream emigration to the ocean as smolts and on their upstream spawning migrations as adults. Those few adults that survive to spawn a second time would also pass through this portion of the river again. There is the potential for fish to make their way through either Old River or Middle River to access the upper San Joaquin watershed above the Head of Old River, but their success depends on whether or not the Head of Old River Barrier is in place. Smolts are more likely than adults to stay within the mainstem during their migrations, as they follow the prevailing current out to the ocean. Upstream migrating adults have the option of following either the Sacramento River or San Joaquin River upon their entry into the Delta. This co-mingling of water sources can result in milling behavior as fish seek out the olfactory cues of their natal stream.

Fish monitoring studies have shown that Central Valley steelhead juveniles and smolts from the Sacramento River watershed frequently enter into the San Joaquin River system depending on river flows and pumping rates. Fish from the Sacramento River can access the San Joaquin River from several points; the Delta Cross Channel via the North and South Forks of the Mokelumne River, Georgiana Slough, Three Mile Slough, and the mouth of the San Joaquin River near Antioch and Sherman Island. Fish entering into the San Joaquin River main channel would be exposed to the effects of this project while they migrated within the DWSC. In

addition, adult steelhead would also be exposed to the conditions of the DWSC if they entered into the San Joaquin River channel by mistake while trying to find their way upstream.

C. Presence of North American Green Sturgeon in the Action Area

Both adult and juvenile North American green sturgeon are known to occur within the lower reaches of the San Joaquin River and in the south Delta. Very little specific information is available about the presence of green sturgeon in the immediate action area. One white sturgeon was captured in November, 2006, in the proximity of channel marker 45 near Rough and Ready Island, and Corps sampling prior to the DWSC dredging activity detected the presence of 2 green sturgeon and 81 white sturgeon in the Stockton DWSC between August and December of the 2006 monitoring season. Both adult and juvenile green sturgeon may use the action area as a migratory, resting, or rearing habitat. Green sturgeon presence in the action area could occur in any month, as juveniles may reside in freshwater habitats throughout their first few years of growth. Adults are likely to be present in the winter and early spring as they move through the Delta towards their spawning grounds in the upper Sacramento River watershed. Following spawning, the fish will pass through the Delta again on their way back to the ocean, but the duration and timing of this event is not well understood in the Sacramento River system.

V. EFFECTS OF THE ACTION

Pursuant to section 7(a)(2) of the ESA (16 U.S.C. §1536), Federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. This biological opinion assesses the effects of the Navy Drive Bridge Replacement project on threatened Central Valley steelhead, their designated critical habitats, and threatened Southern DPS of North American green sturgeon. The Navy Drive Bridge Replacement project is likely to adversely affect listed species through temporary construction impacts and short term critical habitat alteration. In the *Description of the Proposed Action* section of this opinion, NMFS provided an overview of the action. In the *Status of the Species* and *Environmental Baseline* sections of this opinion, NMFS provided an overview of the listed species and designated critical habitats that are likely to be adversely affected by the activity under consultation.

Regulations that implement section 7(a)(2) of the ESA require that biological opinions evaluate the direct and indirect effects of Federal actions and actions that are interrelated with or interdependent to the Federal action to determine if it would be reasonable to expect them to appreciably reduce listed species' likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution (16 U.S.C. §1536, 50 CFR §402.02).

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat in 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat. NMFS will evaluate destruction or adverse modification of critical habitat by determining if the action reduces the value of critical habitat for the conservation of the species.

A. Approach to the Assessment

NMFS generally approaches "jeopardy" analyses in a series of steps. First, NMFS evaluates the available evidence to identify direct and indirect physical, chemical, and biotic effects of the proposed actions on individual members of listed species or aspects of the species' environment (these effects include direct, physical harm or injury to individual members of a species; modifications to something in the species' environment - such as reducing a species' prey base, enhancing populations of predators, altering its spawning substrate, altering its ambient temperature regimes; or adding something novel to a species' environment - such as introducing exotic competitors or disruptive noises). Once NMFS has identified the effects of the action, the available evidence is evaluated to identify a species' probable response, including behavioral reactions, to these effects. These responses then will be assessed to determine if they can reasonably be expected to reduce a species' reproduction, numbers, or distribution (for example, by changing birth, death, immigration, or emigration rates; increasing the age at which individuals reach sexual maturity; decreasing the age at which individuals stop reproducing; among others). The available evidence is then used to determine if these reductions, if there are any, could reasonably be expected to appreciably reduce a species' likelihood of surviving and recovering in the wild.

1. Information Available for the Assessment

To conduct the assessment, NMFS examined an extensive amount of evidence from a variety of sources. Detailed background information on the status of these species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, governmental and non-governmental reports, the biological assessment for this project, and project meeting notes. Additional information investigating the effects of the project's actions on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was obtained from the aforementioned resources. For information that has been taken directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document.

2. Assumptions Underlying This Assessment

In the absence of definitive data or conclusive evidence, NMFS must make a logical series of assumptions to overcome the limits of the available information. These assumptions will be made using sound, scientific reasoning that can be logically derived from the available information. The progression of the reasoning will be stated for each assumption, and supporting evidence cited.

In assessing the impacts of anthropogenic noise on the listed salmonid species, NMFS used the available data for several different species of fish for which acoustic experimental data is available, including the hearing specialist, fathead minnow (*Pimephales promelas*) and the hearing generalist, pink snapper (*Pagrus auratus*). Protective acoustic levels were then determined that were appropriate for fish in general, due to a lack of data specific to salmonids. In a recent review of available information on the effects of anthropogenic sound (*i.e.*, pile driving) generated by construction activities on the west coast of North America, Hastings and

Popper (2005) specifically cited the lack of salmonid data as a critical gap in the scientific record for evaluating noise impacts, and recommended increased and focused studies on this group of fish.

Additional information from fish monitoring studies conducted by the FWS and CDFG regarding salmonid density in the San Joaquin River and Sacramento River was incorporated into the calculations for risk assessment. Analysis of turbidity effects utilized information pertaining to salmonids in general, rather than to the specific listed species present in the action area due to a lack of direct information concerning their response.

B. Assessment

The proposed project includes actions that may adversely affect several life stages of Central Valley steelhead and North American green sturgeon. Adverse effects to these species and their habitat may result from changes in water quality from construction activities, loss of riparian vegetation from construction activities, and physical damage and harassment of juveniles and adults from pile driving. The project includes integrated design features to avoid and minimize many of these potential impacts.

1. Presence of Listed Salmonids and North American Green Sturgeon in the Action Area

During the period between September and the end of December, adult Central Valley steelhead may be in the proximity of the bridge replacement activities as proposed; however, NMFS expects the most likely period for adult steelhead to be present is in the month of December. Adult steelhead begin to migrate into the region's watersheds (Calaveras and San Joaquin Rivers) during this period, particularly when increased attractant flows are being released from San Joaquin River reservoirs to enhance fall-run Chinook salmon spawning habitat in the San Joaquin River tributaries or early winter rains cause increased flows in the system. Prior to the fall attractant flows, low DO conditions may occur and cause adult steelhead to linger downstream of the Port of Stockton while they wait for more favorable water quality conditions.

The peak of juvenile Central Valley steelhead emigration from their tributaries in the San Joaquin Valley occurs during the period between February and May. Therefore, conducting in-water project activities between June 1 and October 31 should avoid impacts to the majority of juvenile Central Valley steelhead smolts in this locale. There are, however, larger steelhead smolts that migrate at other times of the year, including the fall and early winter period (Cramer 2005), and thus may be exposed to the project activities during their passage through the action area. As with adults, NMFS expects the most likely period for juvenile steelhead to be present in the action area is in the month of December.

Low numbers of North American green sturgeon are anticipated to be present in the action area throughout the proposed construction period. Although information on the density of green sturgeon in the action area is not currently available, their infrequent occurrence in sampling studies targeting other fish species indicates that they may be present throughout the year within the mainstem of the San Joaquin River and thus vulnerable to both short-term and long-term adverse effects of the project.

2. Water Quality

In-river construction and demolition work may increase suspended sediments and elevate turbidity above natural levels. Activities that could contribute sediment and increase turbidity include steel pile driving and removal, removal of existing piers and timbers, and use of near-river access roads and staging areas. Water quality may also be affected by hydraulic and fuel line leaks and petroleum spills. NMFS expects that the risk of introducing petroleum products or pollutants other than sediment to the waterway will be extremely low and discountable due to the implementation of prevention and contingency measures that will require frequent equipment checks to prevent leaks, will keep stockpiled materials away from the water, and will require that absorbent booms are kept onsite to prevent petroleum products from entering the river in the event of a spill or leak.

High turbidity can affect fish by reducing feeding success, causing avoidance of preferred rearing habitats, and disrupting upstream and downstream migration. Displacement of juveniles from preferred habitats may cause increased susceptibility of juveniles to predation. Bisson and Bilby (1982) reported that juvenile coho salmon avoid turbidities exceeding 70 NTUs, and Sigler *et al.* (1984) in Bjornn and Reiser (1991) found that exposure to turbidities between 25 and 50 NTUs over extended periods of time reduced growth of juvenile coho salmon and steelhead. Increased sediment delivery and high levels of turbidity can also fill interstitial substrate spaces resulting in reduced abundance and availability of aquatic invertebrates for food (Bjornn and Reiser 1991).

Effects of project-related turbidity and introduction of sediment to the San Joaquin River could affect the behavior, growth, and migration of listed species in the action area. Adherence to the preventative and contingency measures of the SWPPP will minimize project related-sediment plumes caused by in-river construction by removing excavated materials to locations outside of the river channel and halting work in the event of a plume being detected. Sediment management and preventative measures will minimize the amount of project-related sediment introduced to the waterway through the use of typical BMPs including the deployment of silt fences, hay bales, and a turbidity curtain around the action area. In the event that a project-related sediment plume does occur, it would be of short duration, since work would be suspended, and would be expected to result in a temporary change in the distribution of fish in the action area, lasting only as long as the plume was present.

These types of events are unlikely to affect migrating adults to the extent of injuring them, but may injure some juvenile fish, which are actively feeding and growing, as well as smaller and less mobile, by temporarily disrupting normal behaviors that are essential to growth and survival. Injury would be caused when disruption of these behaviors increases the likelihood that individual fish will face increased competition for food and space, and experience reduced growth rates or possibly weight loss. Project-related turbidity increases may also affect the sheltering abilities of some juvenile fish and may decrease their likelihood of survival by increasing their susceptibility to predation. However, because of the short duration of any turbidity events, and the fact that these events would be likely to occur during low migration periods when densities of listed juveniles in the action area would be relatively low, any injury or

death that may occur to listed species from changes in feeding behavior, distribution and predation, are not expected to result in appreciable reductions in the species' likelihood of surviving and recovering in the wild.

3. Riparian Habitat

The project is anticipated to temporarily remove approximately 0.06 acre of river bank riparian vegetation along the north and south banks of the San Joaquin River. As a result of riparian habitat disturbance there will be a temporal loss of SRA habitat, but with the implementation of proposed BMP's, the removal and/or disturbance of riparian vegetation will be kept to a feasible minimum, any stream banks disturbed during construction will be returned to their preconstruction condition, and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season. Provided that these BMP's and minimization measures are strictly adhered to, NMFS does not expected that the short term loss of riparian vegetation and SRA cover in the action area will significantly impact or appreciable reduce the number of salmonids or green sturgeon migrating and/or rearing in the San Joaquin River.

4. Impacts to Freshwater Migratory and Rearing Habitat PCEs

There are no suitable spawning sites within the project's action area for Central Valley steelhead; therefore the PCE's of designated critical habitat that will be physically disturbed due to bridge replacement activities are freshwater migration corridors and freshwater rearing sites for Central Valley steelhead. The proposed bridge replacement would result in the placement of 10 piers within the river bed resulting in a permanent displacement of approximately 126 square feet, or 0.003 acre, of designated critical habitat. In comparison, the existing bridge support structures currently displace approximately 707 square feet, or 0.016 acre, of critical habitat in the bed of the channel. Therefore, implementation of the project will have a temporary impact on the size of the freshwater migration corridor and rearing sites within the designated critical habitat of Central Valley steelhead in the San Joaquin River, but will ultimately result in an overall net gain of approximately 581 square feet, or 0.013 acre, of these PCE's available in the action area following project completion. Replacement of the Navy Drive Bridge is therefore expected to result in a long term beneficial effect to the PCE's of Central Valley steelhead critical habitat, and the short term impacts to freshwater migratory and rearing habitat are not expected to significantly impact or appreciably reduce the numbers of Central Valley steelhead migrating and/or rearing in the San Joaquin River.

5. Pile Driving and Bridge Demolition

Pile driving consists of driving steel piles into the riverbed with a mechanical hammer. The force of the hammer hitting a pile forms a sound wave that travels down the pile and causes the pile to resonate radially and longitudinally. Acoustic energy is formed as the walls of the steel pile expand and contract, forming a compression wave that moves through the pile. The outward movement of the pile wall sends a pressure wave propagating outward from the pile and through the riverbed and water column in all directions.

Because inconsistent mediums, such as water, will result in a higher rate of transmission loss, environmental factors such as water depth, water turbulence, air bubbles, and substrate consistency are important to consider when estimating the distance a compression wave will travel. A compression wave traveling through shallow water and substrates with variable consistencies (*i.e.*, variable particle size class distribution) will attenuate more rapidly than compression waves traveling through a constant medium such as deep water or bedrock. As a compression wave moves away from the source, the wave length increases and intersects with the air/water interface. Once the compression wave contacts the air, it attenuates rapidly and does not return to the water column.

Caltrans engineers estimate that sound pressure from driving the largest bridge piles could reach as high as 187 dB in any single strike at a distance of 32.8 feet from the source (*i.e.*, the pile being driven). Demolition of the existing bridge piers will require the use of an excavator with a chipper attachment to break up the concrete into manageable pieces for removal. While sound energy will be created during this process in much the same way as is described above for pile driving, the energy generated by the excavator with chipper attachment typically is much less than the energy generated by a pile-driving hammer by a factor of 10. For instance, the driving energy for a steel pile driver is approximately 75,000 ft-lbs, while the excavator with chipper attachment delivers around 7,500 ft-lbs of energy. The sound energy created by the excavator with chipper attachment during removal of the old bridge is not expected to exceed that of normal underwater background levels (60 to 65 dB) and is therefore not expected to adversely impact listed species.

a. *Immediate Mortality of Fish from Pile Driving*

The effect of pile driving on free swimming fish depends on the duration, frequency (Hz), and pressure (dB) of the compression wave. Rassmusen (1967) found that immediate mortality of juvenile salmonids may occur at sound pressure levels exceeding 208 dB. Due to their size, adult salmon, steelhead, and green sturgeon can tolerate higher pressure levels and immediate mortality rates for adults are expected to be less than those experienced by juveniles (Hubbs and Rechnitzer 1952). As sound pressure levels are not expected to exceed 187 dB, no immediate mortality of juvenile or adult fish is expected.

b. *Pile Driving Impacts on the Auditory Sensory Organs of Fish*

High levels of underwater acoustic noises have been shown to have adverse impacts upon the auditory sensory organs of fish within close proximity of the noise source. Recent studies by Scholik and Yan (2002) examined the effects of boat engine noise on the auditory sensitivity of the fathead minnow. Fish were exposed to a recording of the noise generated by a 55 hp outboard motor over a period of two hours. The noise level was adjusted to 142 dB, which was equivalent to the noise levels measured at 50 meters from a 70 hp outboard motor. The experimental fish suffered a drop in hearing sensitivity over the range of frequencies normally associated with their hearing capabilities. These responses were measured using electrophysiological responses of their auditory nerves under general anesthesia. Studies by McCauley *et al.* (2003) on the marine pink snapper, indicated that high-energy noise sources (approximately 180 dB maximum) can damage the inner ears of aquatic vertebrates by ablating

the sensory hairs on their inner ear epithelial tissue as revealed by electron microscopy. Damage remained apparent in fish held up to 58 days after exposure to the intense sound. Although no studies utilizing salmonids have been conducted, auditory effects on these other fish species can serve as surrogates for salmonids, and it is reasonable to assume that some level of adverse impacts to salmonids can be inferred from the above results.

The loss of hearing sensitivity may adversely affect a salmonid's ability to orient itself (*i.e.,* due to vestibular damage), detect predators, locate prey, or sense their acoustic environment. Chronic noise exposure can reduce a fish's ability to detect piscine predators either by reducing the sensitivity of the auditory response or by masking the noise of an approaching predator. Disruption of the exposed fish's ability to maintain position or swim with the school will enhance its potential as a target for predators. Unusual behavior or swimming characteristics single out an individual fish and allow a predator to focus its attack upon that fish more effectively.

c. *Behavioral Responses to Pile Driving*

Behavioral responses to high noise levels (startle response, avoidance, agitation, etc.) have been studied in salmonids with mixed results. Burner and Moore (1962) found that large juvenile and adult fish rarely responded to sudden or loud sound stimuli. Studies of low frequency sound transducers intended to repel salmonids from navigation channels (Goetz *et al.* 2001; Ploskey and Johnson 2001) found no difference between the reactions of treatment groups of Chinook and coho (*O. kisutch*) salmon exposed to no sound and groups exposed to sounds reaching 170-180 dB.

Other experiments by Mckinley and Patrick (1986) using pulsed sound similar to pile driving found that smaller juvenile salmonids demonstrated a startle or avoidance response. Feist *et al.* (1992) found that salmonids hear within a range of 10 to 400 Hz, with the greatest sensitivity between 180 and 190 Hz, and that pile-driving in Puget Sound created sound within the range of salmonid hearing that could be detected at least 600 meters away. Abundance of juvenile salmon near pile driving rigs was reduced on days when the rigs were operating compared to non-operating days. Also, Shin (1995) found that pile driving may result in "agitation" of salmonids as indicated by a change in swimming behavior. These studies suggest that pile driving may cause startling and/or avoidance of habitat by fish in the immediate vicinity of the project site.

The startling of fish can cause injury by temporarily disrupting normal behaviors that are essential to growth and survival such as feeding, sheltering, and migrating. Injury is caused when disrupting these behaviors increases the likelihood that individual fish will face increased competition for food and space, and experience reduced growth rates or possibly weight loss. Disruption of these behaviors may also result in the death of some individuals due to increased predation if fish are disoriented or concentrated in areas with high predator densities. Disruption of these behaviors may occur for specific periods between June 1 and October 31, during daylight operation hours of the pile driving hammer. Downstream movement of salmonids occurs mainly at night or during the hours between dusk and dawn, although small numbers of fish may also move during daylight hours. Because of this nocturnal migratory behavior, daily migration delays are expected only to impact the portion of a population that migrates during

daylight hours in the periods that pile driving activities are occurring. On similar bridge projects lapses in pile driving activity are common throughout the day because construction crews suspend hammer work for equipment maintenance, to shift from one pile to another, and to take breaks. These construction lapses, including daily breaks and nighttime non-working periods, as well as long periods when no pile driving is scheduled to occur, will allow fish to migrate through the action area and minimize the extent of injury that occurs to populations.

The population-level effects of harassment to adult and juvenile steelhead and green sturgeon are expected to be limited in part because pile driving will occur during the day, enabling unhindered fish passage at night. Also, the June 1 through October 31 percussive work window will avoid the primary migration periods for Central Valley steelhead in the San Joaquin River (e.g., November through May) and should therefore minimize the exposure of these fish to any adverse direct effects resulting from implementation of the proposed project.

VI. CUMULATIVE EFFECTS

For purposes of the ESA, cumulative effects are defined as the 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 consultations pursuant to section 7 of the ESA.

Non-Federal actions that may affect the action area include ongoing agricultural activities and increased urbanization. Agricultural practices in and upstream of the San Joaquin River may adversely affect riparian and wetland habitats through upland modifications of the watershed that lead to increased siltation or reductions in water flow in stream channels flowing into the San Joaquin River. Unscreened agricultural diversions throughout the Delta entrain fish including juvenile salmonids. Grazing activities from dairy and cattle operations can degrade or reduce suitable critical habitat for listed salmonids by increasing erosion and sedimentation as well as introducing nitrogen, ammonia, and other nutrients into the watershed, which then flow into the receiving waters of the San Joaquin River. Stormwater and irrigation discharges related to both agricultural and urban activities contain numerous pesticides and herbicides that may adversely affect salmonid reproductive success and survival rates (Dubrovsky *et al.* 1998, 2000; Daughton 2003).

The San Joaquin River, Delta and East Bay regions, which include portions of Contra Costa, Alameda, Sacramento, San Joaquin, Solano, Stanislaus, and Yolo counties, are expected to increase in population by nearly 3 million people by the year 2020 (California Commercial, Industrial, and Residential Real Estate Services Directory 2002). Increases in urbanization and housing developments can impact habitat by altering watershed characteristics, and changing both water use and stormwater runoff patterns. The project site is within the region controlled by the San Joaquin County Council of Governments, and the cities of Stockton, Lathrop, and Manteca. The General Plans for the cities of Stockton, Lathrop, Manteca, and their surrounding communities anticipate rapid growth for several decades to come. The anticipated growth will occur along both the I-5 and US-99 transit corridors in the east, and Highway 4 in the west.

Increased urbanization also is expected to result in increased wave action and propeller wash in San Joaquin River due to increased recreational boating activity. This potentially will degrade riparian and wetland habitat by eroding channel banks, thereby causing an increase in siltation and turbidity. Wakes and propeller wash also churn up benthic sediments thereby potentially resuspending contaminated sediments and degrading areas of submerged vegetation. This in turn would reduce habitat quality for the invertebrate forage base required for the survival of juvenile salmonids. Increased recreational boat operation on the San Joaquin River is anticipated to result in more contamination from the operation of engines on powered craft entering the river and its tributaries. In addition to recreational boating, commercial vessel traffic is expected to increase with the redevelopment plans of the Port of Stockton. Portions of this redevelopment plan have already been analyzed by NMFS for the West Complex (formerly Rough and Ready Island) but the redevelopment of the East Complex, which currently does not have a Federal action associated with it, will also increase vessel traffic as the Port becomes more modernized. Commercial vessel traffic is expected to create substantial entrainment of aquatic organisms through ship propellers as the vessels transit the shipping channel from Suisun Bay to the Port and back again. In addition, the hydrodynamics of the vessel traffic in the confines of the channel will create sediment resuspension, and localized zones of high turbulence and shear forces. These physical effects are expected to adversely affect aquatic organisms, including both listed salmonids and North American green sturgeon resulting in death or injury.

Global climate change is a broad-scale cumulative effect that is likely to affect the action area. The world is about 1.3 °F warmer today than a century ago and the latest computer models predict that, without drastic cutbacks in emissions of carbon dioxide and other gases released by the burning of fossil fuels, the average global surface temperature may raise by two or more degrees in the 21st century (Intergovernmental Panel on Climate Change (IPCC) 2001). Much of that increase will likely occur in the oceans, and evidence suggests that the most dramatic changes in ocean temperature are now occurring in the Pacific (Noakes 1998). Using objectively analyzed data Huang and Liu (2000) estimated a warming of about 0.9 °F per century in the Northern Pacific Ocean.

Sea levels are expected to rise by 0.5 to 1.0 m in the northeastern Pacific coasts in the next century, mainly due to warmer ocean temperatures, which lead to thermal expansion much the same way that hot air expands. This will cause increased sedimentation, erosion, coastal flooding and permanent inundation of low-lying natural ecosystems within the action area (*i.e.*, salt marsh, riverine, mud flats) affecting salmonid PCEs. Increased winter precipitation, decreased snow pack, and permafrost degradation could affect the flow and temperature of rivers and streams, with negative impacts on fish populations and the habitat that supports them.

Summer droughts along the South Pacific coast and in the interior of the northwest Pacific coastlines will mean decreased stream flow in those areas, decreasing salmonid survival and reducing water supplies in the dry summer season when irrigation and domestic water use are greatest. Global warming may also change the chemical composition of the water that fish inhabit: the amount of oxygen in the water may decline, while pollution, acidity, and salinity levels may increase. This will allow for more invasive species to over take native fish species and impact predator-prey relationships (Stachowicz *et al.* 2002, Peterson and Kitchell 2001).

An alarming prediction is that Sierra snow packs are expected to decrease with global warming and that the majority of runoff in California will be from rainfall in the winter rather than from melting snow pack in the mountains (CDWR 2006). This will alter river runoff patterns and transform the tributaries that feed the Central Valley from a spring/summer snowmelt dominated system to a winter rain dominated system. It can be hypothesized that summer temperatures and flow levels will become unsuitable for salmonid survival. The cold snowmelt that furnishes the late spring and early summer runoff will be replaced by warmer precipitation runoff. This should truncate the period of time that suitable cold-water conditions exist below existing reservoirs and dams due to the warmer inflow temperatures to the reservoir from rain runoff. Without the necessary cold-water pool developed from melting snow pack filling reservoirs in the spring and early summer, late summer and fall temperatures below reservoirs, such as Shasta Lake and Lake Oroville, potentially could rise above thermal tolerances for juvenile and adult salmonids (*i.e.* Central Valley steelhead) that must hold below the dam over the summer and fall periods.

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

This section integrates the current conditions described in the environmental baseline with the effects of the proposed action and the cumulative effects of future actions. The purpose of this synthesis is to develop an understanding of the likely short-term and long-term responses of listed species and critical habitat to the proposed project.

The San Joaquin River basin historically contained numerous independent populations of Central Valley steelhead and spring-run Chinook salmon (Lindley et al. 2006, 2007). Potentially, the Southern DPS of North American green sturgeon were also present in these watersheds prior to anthropogenic changes. The suitability of these watersheds to support these runs of fish changed with the onset of human activities in the region. Human intervention in the region initially captured mountain runoff in foothill reservoirs which supplied water to farms and urban areas. As demand grew, these reservoirs were enlarged or additional dams were constructed higher in the watershed to capture a larger fraction of the annual runoff. San Joaquin Valley agriculture created ever greater demands on the water captured by these reservoirs, diminishing the flow of water remaining in the region's rivers, and negatively impacting regional populations of anadromous fish. Reclamation actions eliminated vast stretches of riparian habitat and seasonal floodplains from the San Joaquin River watershed and Delta through the construction of levees and the armoring of banks with rock riprap for flood control. Construction of extensive water conveyance systems and water diversions altered the flow characteristics of the Delta region. These anthropogenic actions resulted in substantial degradation of the functional characteristics of the aquatic habitat in the watershed upon which the region's anadromous fish populations depended to maintain healthy populations.

Presently, Central Valley spring-run Chinook salmon have been functionally extirpated from the San Joaquin River basin. Populations of Central Valley steelhead in the San Joaquin River basin have been substantially diminished to only a few remnant populations in the lower reaches of the Stanislaus, Tuolumne, and Merced Rivers below the first foothill dams. The Southern DPS of

North American green sturgeon have not been documented spawning in the San Joaquin River, but human alterations, which have been ongoing for over 100 years in the watershed, may have extirpated local populations before accurate records were maintained. Since the viability of small remnant populations of Central Valley steelhead in the San Joaquin River basin is especially tenuous and such populations are susceptible to temporally rapid decreases in abundance and possess a greater risk of extinction relative to larger populations (Pimm *et al.* 1988, Berger 1990, Primack 2004), activities that reduce the quality and quantity of habitats, or that preclude the formation of independent population units (representation and redundancy rule cited by Lindley *et al.* 2007), are expected to drive the species towards extinction as individual populations within the larger metapopulation become extinct (McElhany *et al.* 2000). Therefore, activities having severe impacts on steelhead populations or destroying designated critical habitat, within these smaller population units have significant implications for the DPS as a whole.

Central Valley Steelhead

Estimates of adult escapement of steelhead to these watersheds are typically only a few dozen or so. This is reflected by the low number of smolts captured by monitoring activities throughout the year in different tributaries (*i.e.*, rotary screw traps on the Stanislaus, Tuolumne, Merced, and Calaveras Rivers, and the Mossdale trawls on the San Joaquin River below the confluence of these three east side tributaries) in which only a few dozen smolts to several hundred smolts are collected each year (Marston 2004, Cramer 2005). These capture numbers have been extrapolated to estimate an annual population of only a few thousand juvenile steelhead smolts basin-wide in the San Joaquin River region. The Stanislaus River weir, which is used to count adult steelhead passing through the counting chamber or dead carcasses floating back onto the weir, has only recorded a few adult fish each year it has been in use. This is indicative of the low escapement numbers for adult steelhead in this watershed (Cramer 2005). The other San Joaquin tributaries are thought to have similar or even lower numbers based on the superiority of the Stanislaus River in terms of habitat and water quality for Central Valley steelhead.

Under these low adult escapement conditions, the loss of one individual female's reproductive capacity through mortality can have a relatively high impact on a given watershed's potential population if the number of adults returning to each stream is low. Loss of one female with an expected egg capacity of 5,000 eggs represents approximately 50 to 100 smolts returning to the ocean (Good *et al.* 2005). Yet one must also consider the relative contribution of these San Joaquin Basin populations to the overall Central Valley steelhead DPS. While the geographic isolation of these populations helps to support the viability of the overall DPS, the extremely low juvenile production from the San Joaquin Basin, when compared to the Sacramento Basin, provides a very small contribution to the overall survival of the DPS. It is also likely that these small San Joaquin populations receive significant supplementation from the larger Sacramento River populations through straying by the overwhelmingly dominant Sacramento Basin populations, so that even though the loss of a few steelhead adults on either the San Joaquin River or Calaveras River watersheds could have significant impacts to future juvenile steelhead year classes in these systems, this is not expected to reduce the likelihood of survival and recovery of the Central Valley steelhead DPS overall.

Southern DPS of North American Green Sturgeon

Little is known about the migratory habits and patterns of adult and juvenile green sturgeon in the San Joaquin watershed. The basic pattern described for adult green sturgeon migrations into the Delta region from the San Francisco Bay estuary is that fish enter the Delta region starting in late winter or early spring and migrate upstream towards the stretch of the Sacramento River between Red Bluff and Keswick Dam. After spawning, adults return downstream and re-enter the Delta towards late summer and fall (based on behavior of sturgeon in the Klamath and Rogue River systems). Juvenile and larval green sturgeon begin to show up in rotary screw trap catches along the Sacramento River starting in summer (Beamesderfer *et al.* 2004) and could be expected to reach the Delta by fall. The extent and duration of these fish entering and remaining in the San Joaquin River within the action area is unclear, but because of the habitat similarities and lack of barriers between the action area and documented sturgeon habitat in the Delta, NMFS believes that green sturgeon, including sub-adults, could be found during any month of the year within the action area. Therefore, both adult and juvenile green sturgeon have the potential to be adversely affected by exposure to noise due to the project. However, because the Southern DPS of North American green sturgeon are only known to spawn in the Sacramento River, a small proportion of the overall DPS are expected to occur in the San Joaquin River drainage and be exposed to the adverse effects of the project.

Designated Critical Habitat

The evidence presented in the Environmental Baseline section indicates that past and present activities within the San Joaquin River basin and waters of the South Delta have caused significant habitat loss and fragmentation. This has significantly reduced the quality and quantity of the remaining freshwater rearing sites and the migratory corridors within the lower valley floor reaches of the San Joaquin River and the South Delta for the Central Valley steelhead population. Alterations in the geometry of the South Delta channels, removal of riparian vegetation and shallow water habitat, construction of armored levees for flood protection, changes in river flow created by demands of water diverters, and the influx of contaminants from agricultural and urban dischargers have also substantially reduced the functionality of the region's waterways. Additional losses of freshwater spawning sites, rearing sites, and migratory corridors have occurred upstream of the action area in the tributaries of the San Joaquin and Sacramento River basins, but are outside of the action area of this consultation.

The Stockton DWSC currently experiences episodes of low DO in the channel's water column from Channel Point westwards to Turner and Columbia Cuts. These DO depressions can occur throughout the year, but are more likely in the late summer and early fall periods when temperatures are high and natural flow in the river is typically at its lowest. As cited by Hallock *et al.* (1970), the low DO levels are believed to act as barriers to salmonids migrating upstream into the San Joaquin River Basin in fall and have at other times of the year created "fish kills" in the DWSC due to the low ambient DO levels. Previous actions in the area include the ongoing installation of a fall barrier at the Head of Old river to redirect the majority of the San Joaquin River downstream past the Port of Stockton, rather than splitting the flow and having some of it enter into the South Delta. In addition, the fall release of additional water from San Joaquin River tributaries (the pulse flow) is intended to attract fish into the system and to reduce the

adverse water quality conditions found in the DWSC adjacent to the Port of Stockton. To further alleviate the poor DO conditions in the DWSC, an aerator has been operated at Channel Point for several years, first by the U.S. Army Corps of Engineers, and more recently by the Port of Stockton, in an attempt to mitigate for the additional dredging required to deepen the DWSC to minus 37 feet.

Summary

In general, the direct adverse effects to steelhead and green sturgeon in the San Joaquin River will be substantially attenuated by the work window proposed by Caltrans, which will greatly reduce the exposure of listed salmonids. Pile driving and in-water work activities are to be restricted to the period between June 1 and October 31. The proposed work window will avoid the majority of steelhead migration through the action area. In this area, adult and juvenile steelhead are primarily expected to begin entering the action area during late November and December, when cool and rainy weather is likely to promote upstream migration by adults, and downstream emigrating by juveniles through the action area in March and April. As a result, very few steelhead are expected to be exposed to the direct adverse effects of the project. Green sturgeon presence within the action area is considered to be year-round, with juveniles entering the Delta during the late summer and fall and potentially rearing there for several months to years before migrating to the ocean. However, because North American green sturgeon spawning populations occur in the Sacramento River drainage and not in the San Joaquin River drainage, relatively few fish from this DPS are expected to be exposed to the direct adverse effects of the project, and then only within 500 feet upstream and downstream of the Navy Drive Bridge.

A. Effects of the Proposed Action on Listed Species

Under the proposed Navy Drive Bridge Replacement project, adverse impacts to listed species stemming from loss of riparian vegetation, increased sedimentation, and periods of high turbidity are expected to occur. These impacts may cause physiological stress to the extent that the normal behavior patterns (*e.g.*, feeding, sheltering and migration) of affected individuals may be disrupted. Overall, the changes in turbidity and suspended sediment associated with this project are expected to adversely affect listed species primarily by low-level, short-term alteration of habitat conditions, which may reduce feeding or increase predation rates for juveniles. The potential for the increase in suspended sediment to adversely affect adult green sturgeon is unclear. However, because sturgeon are demersal fish closely associated with the bottom substrate, feed by taste and feel with their barbels, and even shovel up sediment with their snouts when searching for food, it is likely that they would be unaffected by the levels and duration of turbidity expected to be produced by the proposed project. Potential impacts are expected to be minimized by meeting Regional Water Quality Control Board water quality objectives, Caltrans water pollution specifications, implementing "best management practices" for erosion control, staging equipment outside of the riparian corridor, limiting the amount of riparian vegetation removal, and restoring lost riparian habitat values at the project site.

Pile driving activities are scheduled to occur between June 1 and October 31. The elevated noise levels around the pile driving activities may cause temporary behavioral changes and/or loss or

reduction of hearing in affected fish. These impacts will be partially mitigated by the seasonal use of the equipment which will avoid the primary migration periods of juvenile and adult Central Valley steelhead and North American green sturgeon. Migrating fish are expected to avoid the elevated noise of the pile driving operations by swimming around the area with the highest noise levels or holding outside of the high noise areas until there is a break in the pile driving activities. There is a potential for these fish to suffer a temporary loss of hearing sensitivity at the expected noise levels generated by the pile drivers. Loss of hearing sensitivities in juvenile fish will expose them to higher risks of predation. Fish with impacted hearing capacities will have a lower ability to detect predators and may be unable to maintain position in the water column (inner ear equilibrium factors).

Noise from pile driving may also cause startling and/or avoidance of habitat by fish in the immediate vicinity of the project site. The startling of fish can cause harm by temporarily disrupting normal behaviors that are essential to growth and survival such as feeding, sheltering, and migrating. Disruption of these behaviors may occur for specific periods between June 1 and October 31 during daylight operation hours of the pile driving hammer. Construction lapses, including daily breaks and nighttime non-working periods, as well as long periods when no pile driving is scheduled to occur, will allow fish to migrate through the action area and minimize the extent of impacts to populations.

B. Effects of the Proposed Action on Listed Species Likelihood of Survival and Recovery

1. Central Valley Steelhead

NMFS anticipates that the proposed project will result in the exposure of a small number of adult and juvenile Central Valley steelhead to increased levels of turbidity and suspended sediment, as well as noise from pile driving activities. The exposure to noise in particular is expected to adversely affect a small number of individuals. Noise may delay or impede fish migration causing increased energy expenditure by affected individuals, but as sound pressure levels are not expected to exceed 208 dB, no direct mortality of juvenile or adult fish is expected. The elevated stress levels may degrade the fish's health and the reproductive potential of adults, and increase the potential of juveniles to be preyed upon by striped bass or other large predators due to impaired behavioral and physiological responses. Individuals that appear different in their behavior attract predators, and thus experience higher mortality due to predator attacks. Even so, given the relatively small contribution to juvenile production that the San Joaquin Basin provides to the overall population numbers for the Central Valley steelhead DPS, the uncertain nature of the actual effects of the proposed project on steelhead in the action area, and the adherence to a seasonal in-water work window that minimizes the exposure of vulnerable life stages to those effects, it is expected that these short-term effects, when considered in the context of the current baseline and likely future cumulative effects, would not appreciably reduce the likelihood of survival and recovery of the Central Valley steelhead DPS throughout it's range.

2. Southern DPS of North American Green Sturgeon

Due to the lack of general abundance information regarding the Southern DPS of North American green sturgeon, a variety of estimates must be utilized to determine the range of

potential effects resulting from the take of a small number of green sturgeon due to the proposed action. Compared to the estimated population sizes suggested by the CDFG tagging efforts (CDFG 2002b), juvenile and sub-adult captures passing Red Bluff Diversion Dam, and past IEP sampling efforts, the low level of take estimated from the proposed project would impact a very small proportion of the adult and sub-adult North American green sturgeon DPS in the Sacramento River watershed. Ratios of tagged white to green sturgeon in San Pablo Bay have generated population estimates averaging 12,499 sub-adult and adult green sturgeon. Captures of juvenile and sub-adult green sturgeon passing Red Bluff Diversion Dam have exceeded 2,000 individuals in some years. Incidental take of both adult and juvenile North American green sturgeon is expected to represent a very small proportion of the standing population and is not expected to appreciably reduce the likelihood of survival and recovery of the Southern DPS of North American green sturgeon.

C. Effects of the Proposed Action on Critical Habitat

The PCEs of critical habitat that will be adversely affected include freshwater rearing sites for juveniles and freshwater migration corridors for both juveniles and adults. Up to 0.06 acres of riparian vegetation would be disturbed as a result of construction activities as well as temporary occupation of the riverbed and water column by work trestles. The majority of these impacts are expected to be temporary due to the fact that all disturbed areas outside the actual footprint of the new bridge would be restored to their preconstruction conditions and any impacted riparian vegetation would be replaced with the planting of an appropriate assemblage of native riparian vegetation before the onset of the rainy season. Additionally, implementation of the proposed project would result in a permanent net increase of riverine habitat since this project would result in fewer piers being located within the channel than are there currently.

These effects to the PCEs of critical habitat may result in a temporary redistribution of some individual fish, primarily rearing juvenile steelhead; however, due to the temporary nature of these effects and the long-term improvement expected from reducing the number of piers in the main channel, the adverse effects that are anticipated to result from the proposed project are not of the type, duration, or magnitude that would be expected to adversely modify critical habitat to the extent that it could lead to an appreciable reduction in the function and conservation condition of the affected habitat. NMFS expects that nearly all of the adverse effects to critical habitat from this project will be of a short-term nature and will not affect future generations of listed fish beyond the construction period of the project.

VIII. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of Central Valley steelhead, the Southern DPS of North American green sturgeon, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the Navy Drive Bridge Replacement project, as proposed, is not likely to jeopardize the continued existence of threatened Central Valley steelhead or the threatened Southern DPS of North American green sturgeon, and is not likely to destroy or adversely modify the conservation condition of their designated critical habitat.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA 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. Harm is further defined by NMFS as an act which kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, 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 the purpose of, the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The listing of the Southern DPS of North American green sturgeon became effective on July 7, 2006, and some or all of the ESA section 9(a) prohibitions against take will become effective upon the future issuance of protective regulations under section 4(d). Because there are no section 9(a) prohibitions at this time, the incidental take statement, as it pertains to the Southern DPS of North American green sturgeon, does not become effective until the issuance of a final 4(d) regulation, as appropriate.

The measures described below are non-discretionary, and must be undertaken by Caltrans so that they become binding conditions of any grant, contract or permit, 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 contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the contract, 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 terms and conditions of this incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

NMFS anticipates incidental take of Central Valley steelhead and North American green sturgeon in the San Joaquin River through construction-related impacts at the project site. Specifically, NMFS anticipates that juvenile and adult steelhead and green sturgeon may be killed, injured, or harassed during construction activities. NMFS does not anticipate take of fry.

NMFS cannot, using the best available information, specifically quantify the anticipated amount of incidental take of individual Central Valley steelhead and North American green sturgeon because of the variability and uncertainty associated with the response of listed species to the effects of the project, the varying population size of each species, annual variations in the timing

of spawning and migration, and individual habitat use within the project area. However, it is possible to designate ecological surrogates for the extent of take anticipated to be caused by the project, and to monitor those surrogates to determine the level of take that is occurring. The two most appropriate ecological surrogates for the extent of take caused by the project are the amount and duration of pile driving conducted during project construction and the level of instream turbidity created by construction activities associated with the project.

1. Ecological Surrogates

- The analysis of the effects of the proposed project anticipates that the construction of the temporary trestle would require driving 42 steel H-piles over roughly six days (approximately 10 minutes driving time per pile, with 7 piles driven during an 8 hour work day), and the installation of the new bridge's substructure will require driving 10 CISS piles over a period of 5 to 10 days (approximately 30 minutes driving time per pile, with 1 or 2 piles driven during an 8 hour work day), adding up to a total of between 11 and 16 days of pile driving over a period of 5 months (June 1 through October 31).

- The analysis of the effects of the proposed project anticipates that turbidity levels will remain within the RWQCB standards referenced in the Description of the Proposed Action section, and that increased turbidity from project construction activities will be limited to the instream work window of June 1 through October 31, and may extend downstream as far as 600 meters.

If the specific parameters of these ecological surrogates are exceeded, the proposed project will be considered to have exceeded anticipated take levels, triggering the need to reinitiate consultation on the project.

B. Effect of the Take

NMFS has determined that the level of take resulting from the construction of the proposed project is not likely to jeopardize the continued existence of Central Valley steelhead or the Southern DPS of North American green sturgeon, and is not likely to destroy or adversely modify designated critical habitat for Central Valley steelhead.

C. Reasonable and Prudent Measures

NMFS has determined that the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize the incidental take of listed anadromous fish.

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on listed salmonids, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans and the Port of Stockton must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. Measures shall be taken to minimize the amount and duration of pile driving and its potential impacts on listed salmonids, and to monitor the range and magnitude of compression shock waves generated by pile driving operations.

    a. Caltrans and the Port of Stockton shall conduct acoustic monitoring within the water column and substrate of the San Joaquin River to determine the range and magnitude of compression shock waves generated by pile driving operations at the Navy Drive Bridge Replacement project. Acoustic monitoring must be designed to detect if, and at what range, pile driving activities generate noise levels found to be lethal to juvenile salmonids (208 dB).

2. Measures shall be taken to maintain, monitor, and adaptively manage all conservation measures throughout the life of the project to ensure their effectiveness.

    a. Caltrans/Port of Stockton shall provide an annual report summarizing construction activities, species status within 200 yards upstream and downstream of the bridge site, avoidance and/or minimization measures taken, the results of acoustic monitoring, and any observed incidents of take of listed species. These summary reports shall be submitted to NMFS by December 31 of each construction year.

    b. If a listed species is observed injured or killed by project activities, Caltrans/Port of Stockton shall contact NMFS within 48 hours at 650 Capitol Mall, Suite 8-300, Sacramento, CA 95815. Notification shall include species identification, the number of fish, and a description of the action that resulted in take. If possible, dead individuals shall be collected, placed in an airtight bag, and refrigerated with the aforementioned information until further direction is received from NMFS.

Updates and reports required by these terms and conditions shall be submitted to:

Supervisor
Sacramento Area Office
National Marine Fisheries Service
650 Capitol Mall, Suite 8-300
Sacramento CA 95814
FAX: (916) 930-3629
Phone: (916) 930-3600

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. These conservation recommendations include discretionary measures that Caltrans and the Port of Stockton can implement to avoid or minimize adverse effects of a proposed action on a listed species or critical habitat or regarding the development of information. NMFS provides the following conservation recommendations that would avoid or reduce adverse impacts to listed salmonids:

1. Caltrans should continue to 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 habitat restoration projects within the San Joaquin River.

To be kept informed of actions minimizing or avoiding adverse effects, or benefiting listed and proposed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations.

XI. REINITIATION OF CONSULTATION

This concludes formal consultation on the proposed Navy Drive Bridge Replacement project. Reinitiation of formal consultation is required if: (1) the amount or extent of take specified in any incidental take statement is exceeded; (2) 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; (3) the action, including the avoidance, minimization, and compensation measures listed in the *Description of the Proposed Action* section is subsequently modified in a manner that causes an effect to the listed species that was not considered in the biological opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

XII. LITERATURE CITED

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Enclosure 2

Magnuson-Stevens Fishery Conservation and Management Act

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

I. IDENTIFICATION OF ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended (U.S.C. 180 *et seq.*), requires that Essential Fish Habitat (EFH) be identified and described in Federal fishery management plans (FMPs). Federal action agencies must consult with NOAA's National Marine Fisheries Service (NMFS) on any activity which they fund, permit, or carry out that may adversely affect EFH. NMFS is required to provide EFH conservation and enhancement recommendations to the Federal action agencies.

EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purposes of interpreting the definition of EFH, "waters" includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means habitat required to support a sustainable fishery and a healthy ecosystem; and, "spawning, breeding, feeding, or growth to maturity" covers all habitat types used by a species throughout its life cycle. The proposed project site is within the region identified as EFH for Pacific salmon in Amendment 14 of the Pacific Salmon FMP.

The Pacific Fishery Management Council (PFMC) has identified and described EFH, Adverse Impacts and Recommended Conservation Measures for salmon in Amendment 14 to the Pacific Coast Salmon FMP (PFMC 1999). Freshwater EFH for Pacific salmon in the California Central Valley includes waters currently or historically accessible to salmon within the Central Valley ecosystem as described in Myers *et al.* (1998), and includes the San Joaquin Delta (Delta) hydrologic unit (*i.e.*, number 18040003). Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon (*O. tshawytscha*), and Central Valley fall-/late fall-run Chinook salmon (*O. tshawytscha*) are species managed under the Salmon Plan that occur in the San Joaquin Delta hydrologic unit.

Factors limiting salmon populations in the San Joaquin River include periodic reversed flows due to high water exports (drawing juveniles into large diversion pumps), loss of fish into unscreened agricultural diversions, predation by introduced species, and reduction in the quality and quantity of rearing habitat due to channelization, pollution, riprapping, *etc.* (Dettman *et al.* 1987; California Advisory Committee on Salmon and Steelhead Trout 1988, Kondolf *et al.* 1996a, 1996b).

A. Life History and Habitat Requirements

1. Pacific Salmon

General life history information for Central Valley fall-run Chinook salmon is summarized below. Further detailed information on Chinook salmon Evolutionarily Significant Units (ESUs) are available in the NMFS status review of Chinook salmon from Washington, Idaho, Oregon, and California (Myers *et al.* 1998), and the NMFS proposed rule for listing several ESUs of Chinook salmon (63 FR 11482).

Adult Central Valley fall-run Chinook salmon enter the Sacramento and San Joaquin Rivers from July through December and spawn from October through December while adult Central Valley late fall-run Chinook salmon enter the Sacramento and San Joaquin Rivers from October to April and spawn from January to April (U.S. Fish and Wildlife Service [FWS] 1998). Chinook salmon spawning generally occurs in clean loose gravel in swift, relatively shallow riffles or along the edges of fast runs (NMFS 1997).

Egg incubation occurs from October through March (Reynolds *et al.* 1993). Shortly after emergence from their gravel nests, most fry disperse downstream towards the Delta and into the San Francisco Bay and its estuarine waters (Kjelson *et al.* 1982). The remaining fry hide in the gravel or station in calm, shallow waters with bank cover such as tree roots, logs, and submerged or overhead vegetation. These juveniles feed and grow from January through mid-May, and emigrate to the Delta and estuary from mid-March through mid-June (Lister and Genoe 1970). As they grow, the juveniles associate with coarser substrates along the stream margin or farther from shore (Healey 1991). Along the emigration route, submerged and overhead cover in the form of rocks, aquatic and riparian vegetation, logs, and undercut banks provide habitat for food organisms, shade, and protect juveniles and smolts from predation. These smolts generally spend a very short time in the Delta and estuary before entry into the ocean. Whether entering the Delta or estuary as fry or larger juveniles, Central Valley Chinook salmon depend on passage through the Delta for access to the ocean.

II. PROPOSED ACTION

The proposed action is described in section II (*Description of the Proposed Action*) of the preceding biological opinion for threatened Central Valley steelhead (*Oncorhynchus mykiss*), threatened Southern Distinct Population Segment of North American green sturgeon (*Acipenser medirostris*), and designated critical habitat for Central Valley steelhead (Enclosure 1).

III. EFFECTS OF THE PROJECT ACTION

The effects of the proposed action on salmonid habitat (*i.e.*, Central Valley steelhead) are described at length in section V (*Effects of the Action*) of the preceding biological opinion, and generally are expected to apply to Pacific salmon EFH.

Effects to EFH stemming from construction activities that may contribute sediment and increase turbidity will be avoided or minimized by meeting Regional Water Quality Board objectives, Caltrans water pollution specifications, implementing applicable BMPs, staging equipment outside of the riparian corridor, limiting the amount of riparian vegetation removal, and replacing lost riparian vegetation at the project site.

EFH will be adversely affected by the disturbance of up to 0.06 acres of riparian vegetation as a result of construction activities as well as the occupation of the riverbed and water column by temporary work trestles and the columns of the new bridge's substructure. The majority of these impacts are expected to be temporary, as all disturbed areas outside the actual footprint of the new bridge would be restored to preconstruction conditions and any areas of disturbed vegetation would be replanted with native riparian vegetation. Additionally, implementation of the proposed project would result in a permanent net increase of riverine habitat since this project would result in fewer piers being located within the channel.

These effects to EFH may result in a temporary redistribution of some individuals, primarily migrating adult and rearing juvenile salmonids, but, due to the temporary nature of these disturbances, the adverse effects that are anticipated to result from the proposed project are not of the type, duration, or magnitude that would be expected to adversely modify EFH to the extent that it could lead to an appreciable reduction in the function and conservation role of the affected habitat. NMFS expects that nearly all of the adverse effects to EFH from this project will be of a short term nature and will not affect future generations of Pacific salmon beyond the construction period of the project.

IV. CONCLUSION

Based on the best available information, and upon review of the effects of the proposed Navy Drive Bridge Replacement project, NMFS believes that the construction and operation of the project features will have temporary adverse effects on EFH of Pacific salmon protected under MSA.

V. EFH CONSERVATION RECOMMENDATIONS

As the habitat requirements of Central Valley fall-run Chinook salmon within the action area are similar to those of the federally listed species addressed in the attached biological opinion, NMFS recommends that reasonable and prudent measures numbers 1 and 2 and their respective implementing terms and conditions listed in the incidental take statement prepared for Central Valley steelhead and the Southern DPS of North American green sturgeon in the associated biological opinion, be adopted as EFH conservation recommendations. Those terms and conditions which require the submittal of reports and status updates can be disregarded for the purposes of this EFH consultation as there is no need to duplicate those submittals.

VI. STATUTORY REQUIREMENTS

Section 305 (b) 4(B) of the MSA requires that the Federal lead agency provide NMFS with a detailed written response within 30 days, and 10 days in advance of any action, to the EFH conservation recommendations, including a description of measures adopted by the lead agency for avoiding, minimizing, or mitigating the impact of the project on EFH (50 CFR §600.920[j]). In the case of a response that is inconsistent with our recommendations, the lead agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreement with NMFS over the anticipated effects of the proposed action and the measures needed to avoid, minimize, or mitigate such effects.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2008-F-0078-1

MAY 1 2 2008

Ms. Margaret L. Lawrence
Chief, Environmental MPS & Local Assistance Branch
California Department of Transportation
District 10
P.O. Box 2048
Stockton, California 95201

Subject: Formal Consultation on the Navy Drive Bridge Replacement Project, San Joaquin County, California

Dear Ms. Lawrence:

This is in response to the California Department of Transportation's (Caltrans) October 1, 2007, letter requesting consultation with the U.S. Fish and Wildlife Service (Service) on the Port of Stockton's Navy Drive Bridge Replacement Project across the San Joaquin River in the City of Stockton in San Joaquin County, California. Your letter was received in our office on October 2, 2007. This document represents the Service's biological opinion on the effects of the action on the delta smelt (*Hypomesus transpacificus*) and its designated critical habitat. This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

The Service has determined that the project is not likely to adversely affect the riparian brush rabbit (*Sylvilagus bachmani riparius)* due to the limited amount of suitable habitat and highly disturbed nature of the project area. Although not included in the consultation request, the Service has determined the project is not likely adversely affect: the valley elderberry beetle (*Desmocerus californicus dimorphus*) due to absence of elderberry shrubs, the giant garter snake (*Thamnphis gigas*) due to lack of suitable aquatic habitat, and the riparian woodrat (*Neotoma fuscipes riparia*) due to the limited amount of suitable habitat and highly disturbed nature of the project area.

The following sources of information were used to develop this biological opinion: (1) the October 1, 2007, Caltrans request and associated documents including the biological assessment; (2) various correspondence between the Caltrans, the Port of Stockton and their consultants, and the Service; and (3) other information available to the Service.

TAKE PRIDE IN AMERICA

Consultation History

February 27, 2004:	The Service generated a species list for the applicant.
October 25, 2004:	Caltrans corresponded with the Service regarding the project.
April 26, 2006:	An updated species list was generated from the Service website.
March 29, 2007:	An updated species list was generated from the Service website.
April 2, 2007:	Caltrans corresponded with the Service.
October 2, 2007:	The Service received the consultation request and biological assessment from the Caltrans.
February 2008:	The Service and Caltrans exchanged phone calls and emails regarding the project.
March 4, 2008:	Caltrans emailed project information to the Service.
March 5, 2008:	The Service participated in a conference call with Caltrans, the Port of Stockton, and various consultants to discuss outstanding information requirements.
March 11, 2008:	Caltrans emailed the March 5, 2008, conference call notes to the Service.
March 20, 2008:	Caltrans emailed project information to the Service.

BIOLOGICAL OPINION

Description of the Proposed Action

Background

The project consists of constructing a bridge replacement structure upstream of the existing Navy Drive Bridge and the subsequent demolition of the existing Navy Drive Bridge. The project is specifically located in an industrial area (Port of Stockton) within the western boundary of the City of Stockton in San Joaquin County, California. The Port of Stockton is located south of the San Joaquin River Deep Water Ship Channel and west of Interstate 5 and State Route 4.

The existing Navy Drive Bridge, built in 1941, was constructed as a "swing" bridge that rotates on a central pier or support to allow boats continued passage. Historically, use along this portion of the San Joaquin River and associated bridge opening has occurred primarily to provide clearance for dredges performing levee maintenance from the 1950s through the 1970s and one construction project. Levee maintenance is now conducted from the land side. The last time the bridge opened was in 1978. Currently, navigational use along this portion of the San Joaquin River is comprised entirely of recreational boating and fishing activities from small, trailer-drawn boats. Future use is expected to be similar.

The Navy Drive Bridge is a critical link that currently serves as the only means of vehicle access between the Port of Stockton's East Complex and West Complex (Rough and Ready Island). Because the Port of Stockton is a goods movement terminal handling a wide variety of freight and raw materials, a high number of heavy trucks must use the Navy Drive Bridge. The Navy Drive Replacement Project objectives are to: (1) bring a structurally and functionally deficient bridge crossing up to current design standards; (2) reduce traffic congestion at the existing Rough and Ready Island access point; (3) enhance safety of traffic operations; and (4) remove height restrictions on vehicles using the bridge.

Replacement Navy Drive Bridge

Bridge and Alignment

The new bridge will be constructed upstream from the existing bridge. The south abutment of the replacement bridge will be placed next to the existing abutment. The new bridge will provide two northbound lanes, two southbound lanes, a 4-foot wide median, two 8-foot wide shoulders, and two 6-foot wide sidewalks with barriers. The overall width of the replacement bridge will be 80 feet. The overall length will increase from 271 feet to 302 feet. Lighting along the bridge will be provided by three double-arm light standards.

The bridge superstructure will consist of 24 61-inch deep precast girders with an 8-inch thick, cast-in-place deck. The bulb tee girders would be post-tensioned together longitudinally prior deck replacement to ensure continuity. The girders will have two different lengths (16 will be 88.5 feet and 8 will be 125 feet). The girders will be evenly spaced, with a structural depth of the entire bulb tee superstructure of 6.5 feet (including the deck, deck fillets, and deck cross slope).

Ten in-channel cast-in-steel-shell (CISS) piles will extend to an approximate elevation of -76 foot mean lower low water (MLLW) level. These piles frame into several 5.5-foot wide by 6-foot deep by 82-feet long drop bent caps. The ends of the bent caps will be tapered to accept future architectural nonstructural appurtenances. The abutment piles will be approximately 45-feet long and the wingwall piles will be about 40 feet long.

The alignment of Navy Drive within the Port of Stockton's West Complex will provide a tie into a separate project, the McCloy Avenue extension. The length of the West Complex approach and alignment will 990 feet.

The East Complex alignment and approach is approximately 830 feet long. The alignment begins at the end of the bridge and ends just short of the Washington Street/Navy Drive intersection. To accommodate the new East Complex approach, the entrance to the Stockton Police Department firing range must be relocated. Additionally, approximately 250 feet of the retaining wall will be required adjacent to the firing range. The height of the retaining wall will vary from 4 to 9 feet.

The Port of Stockton is not proposing additional bank protection, riprap, or stabilization as part of this project.

Bridge Construction

At the construction contractor's preference, the CISS piles will be installed by barge or a temporary trestle from each bank to the two in-channel bents (bridge support structures). If installed by barge, the barges will either be floated under the existing rail bridge and Navy Drive Bridge or assembled together from Flexi-Floats that are trucked into the site. A crane will then work off the barge to drive the steel shell and construct the piles. If installed by trestle, two short trestles will be constructed between the north and south river banks and the two in-channel bent. The temporary trestles will be approximately 80 feet long by 60 feet wide with temporary 16-inch steel piles vibrated or driven into the channel. A temporary deck structure would be constructed above the bents to support cranes and concrete trucks needed for the CISS pile construction and bent caps.

The CISS steel pile shells will likely be driven to depth using an impact hammer. Construction specifications will require that once each shell is driven, soil be removed from inside and disposed of off-site. A reinforcing cage will be placed in the shell and concrete will be placed inside of shell by the tremie method. Construction specifications will require that water taken off of the tremie lift will be discharged to a settling pond on shore where it will percolate into the soil. Any residue will be removed when construction is completed. Expected water volume will be 500 gallons per pile x 10 piles. Dewatering inside of the CISS is not required as water above the concrete is removed during the concrete placement process.

Following completion of the bents either the center span girders will be placed or the temporary trestles will be dismantled and removed. The contractor may choose to use the trestle to place the center girders or dismantle the trestle and place the center span girders from land after the shore spans are completed. After work is completed, the temporary trestle will be dismantled and the temporary piles will be vibrated out.

The abutments will be built in the dry as these are located behind the top of the levee bank and above the high water level. Relatively shallow excavations will be made (+13 feet from water level per Type Selection Report). CISS shells will be driven down and left in place and installed in the same manner as the in-water shells. Four small diameter Cast-in-Drilled Hole (CIDH) piles will support the ends of the wing walls. Specifications will require excavated soil from the CIDH piles will be disposed of off-site. Placement of reinforcing steel, concrete and water from the CIDH will be treated similar to the CISS piles. The CIDH holes may be up to 40 feet deep and may require dewatering of ground water.

Minor utility infrastructure in the project area may be relocated. Three electrical utility poles will be relocated as part of the realignment of the Navy Drive approach. The exact relocation will be determined on final design. A portion of the electrical lines may be moved to underground conduit within the road right of way. Any relocated poles would also be located within the future road right of way. The proposed bridge alignment will not require moving the existing three utilities that cross under the river to the west of the existing bridge. The replacement bridge will be designed to support (below deck) low voltage electrical lines, a water line, a gas line, and communications. All utilities will be protected from river traffic by the concrete girders.

In-water Schedule

The in-water work would begin July 1 and continue no later than November 30, as shown below.

In Water Construction Activity

Month	Activity	Duration
July	Install temporary trestle piling and trestles from north bank and south bank	4 weeks
August	Install south bent CISS piles	2 weeks
	Install north bent CISS piles	2 weeks
September	Construct south bent cap	4 weeks
October	Construct north bent cap	4 weeks
November	Remove temporary trestle	2-4 weeks

Existing Navy Drive Bridge Demolition

Demolition of the existing bridge will occur after completion of construction of the new bridge, to allow uninterrupted access to and from Rough and Ready Island while the replacement bridge is constructed. All in-water work will occur during the August 1 through November 30 delta smelt work window. Construction specifications will require that the contractor prevent all superstructure debris from entering the channel and will prohibit the use of blasting. The existing truss bridge will be sequentially demolished. The contractor will likely use a system of barges will either be floated under the existing rail bridge and Navy Drive Bridge or assembled together from Flexi-Floats that are trucked into the site. The house, guardrails, lights, stairs, and any other appurtenances may be removed to reduce weight. The concrete deck may also be demolished to remove weight. The debris will be trapped by the floats and brought to shore for off-site disposal. The truss will be cut into segments, lifted out, and set on land for dismantling and removal. The mechanicals will be removed from the center pier.

Construction specifications will require that the existing substructure be removed to one foot below the design mudline and that all debris be removed from the channel. To accomplish this, the contractor will likely first remove the interior walls of the center pier down to the top of the center pier footing. Demolished concrete will be removed from the center of the pier using an excavator or clamshell operating off of Flexi-Floats. Once the inside of the center pier is demolished, the exterior of the center pier will be demolished. Initially, an excavator fitted with a chipping tool will work the sides down with debris falling into the center of the pier. Approximately ten feet below water, divers using jackhammers will complete the demolition to the top of the footing (approximate elevation -15 feet MLLW). The concrete debris will be removed from the center of the pier using a clamshell as the demolition progresses.

The side piers will be demolished to just below the top of the existing bank using excavator with a chipper. Any concrete debris will be removed from the river using a clamshell. The abutments will be demolished to just below the top of the bank using conventional demolition equipment.

The timber fender system will be demolished and removed by pulling the piles, snapping them off just below the mudline, or cutting them off just below the mudline by divers using chainsaws. Construction specifications will require that demolished timber will be offloaded from floats and trucked to an offsite disposal.

Conservation and Minimization Measures

1. Best Management Practices (BMPs) will be implemented to minimize the potential for erosion associated with the discharge of sediments into the San Joaquin River. Typical BMPs include erecting silt fenced and placing hay bales around construction areas to help contain and reduce offsite sedimentation.

2. A site-specific Storm Water Pollution Prevention Plan (SWPPP) will be implemented to protect water quality.

3. During instream construction activities, no fill material, including concrete, will be allowed to enter the water column and channel disturbance will kept to a minimum. Furthermore, no portion of the existing bridge will be left in the channel.

4. All in-water construction associated with the replacement bridge will occur between July 1 and November 30. All in-water construction associated with bridge demolition will occur between August 1 and November 30.

5. A turbidity curtain will be used to isolate the work area. After applying the turbidity curtain, the Port of Stockton or its contractor will monitor turbidity and suspended solids during construction activities, and if levels exceed the Regional Water Quality Control Board's (RWQCB) Basin Plan standards, the Port of Stockton or its contractor will stop work until levels are within Basin Plan limits.

6. If construction and demolition activities result in the suspension and dispersion of oxygen demanding substances in the river, causing dissolved oxygen levels to decrease, the Port of Stockton will operate aeration equipment continuously during these activities and until such time following their cessation that potential dissolved effects have been eliminated.

7. The removal or disturbance of riparian vegetation will be kept to a feasible minimum. Any stream banks disturbed during construction will be returned to their preconstruction conditions and lost riparian vegetation will be replaced with an appropriate assemblage of native vegetation prior to the onset of the rainy season.

8. Depending on the results of planned geotechnical investigations, it may be possible to partially or entirely vibrate piles into the channel substrate. The contractor will use virbrational pile driving to the greatest extent feasible.

9. Pile driving activities will be designed to assure compliance with the interim criteria for Sound Exposure Levels less or equal to 187 decibels (re: 1 $\mu Pa^2 \cdot sec$) in any single strike and peak sound pressure less or equal to 208 decibels (re: 1 μPa_{peak}) in any single strike, measured at a distance of 32.8 feet from the source.

10. To reduce sound pressure levels to the greatest extent feasible, a cushioning block between and pile will be used.

11. Bubble curtains will be used at all permanent piles driven by impact hammers.

12. Effects to shallow water habitat will be compensated at a 3:1 through the purchase of shallow water habitat from a Service-approved delta smelt conservation bank or through an in-lieu species fund.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes the Port of Stockton, Navy Drive, the San Joaquin River, access roads, and stockpile and staging areas. The total area affected by the project is approximately 22.95 acres, of which 2.49 acres are riverine.

Status of the Species

The delta smelt was federally listed as a threatened species on March 5, 1993 (Service 1993). Critical habitat for delta smelt was designated on December 19, 1994 (Service 1994). The Sacramento-San Joaquin Delta Native Fishes Recovery Plan was completed in 1996 (Service 1996). The Five Year Status Review for the delta smelt was completed on March 31, 2004 (Service 2004).

Delta smelt are slender-bodied fish that typically reach 60-70 millimeter (mm) standard length (measured from tip of the snout to origin of the caudal fin), although a few may reach 120 mm standard length. The mouth is small, with a maxilla that does not extend past the midpoint of the eye. The eyes are relatively large; with the orbit width contained approximately 3.5-4 times in the head length. Small, pointed teeth are present on the upper and lower jaws. The first gill arch has 27-33 gill rakers and there are 7 branchiostegal rays (paired structures on either side and below the jaw that protect the gills). Counts of branchiostegal rays are used by taxonomists to identify fish. The pectoral fins reach less than two-thirds of the way to the bases of the pelvic fins. There are 9-10 dorsal fin rays, 8 pelvic fin rays, 10-12 pectoral fin rays, and 15-17 anal fin rays. The lateral line is incomplete and has 53-60 scales along it. There are 4-5 pyloric caeca. Live fish are nearly translucent and have a steely-blue sheen to their sides. Occasionally there may be one chromatophore (cellular organelle containing pigment) between the mandibles, but usually there is none. Delta smelt belong to the family Osmeridae, a more ancestral member of the order Salmoniformes which also includes the family Salmonidae (salmon, trout, whitefish, and graylings) (Moyle and Cech 1988).

Distribution. Delta smelt are endemic to the upper Sacramento-San Joaquin estuary. They occur in the Delta primarily below Isleton on the Sacramento River, below Mossdale on the San Joaquin River, and in Suisun Bay. They move into freshwater when spawning (ranging from January to July) and can occur in: (1) the Sacramento River as high as Sacramento, (2) the Mokelumne River system, (3) the Cache Slough region, (4) the Delta, and, (5) Montezuma Slough, (6) Suisun Bay, (7) Suisun Marsh, (8) Carquinez Strait, (9) Napa River, and (10) San Pablo Bay. It is not known if delta smelt in San Pablo Bay are a permanent population or if they are washed into the Bay during high outflow periods. Since 1982, the center of delta smelt abundance has been the northwestern Delta in the channel of the Sacramento River. In any month, two or more life stages (adult, larvae, and juveniles) of delta smelt have the potential to be present in Suisun Bay (Department of Water Resources (DWR) and Reclamation 1994; Molye 1976; Wang 1991). Delta smelt are also captured seasonally in Suisun Marsh.

Habitat Requirements. Delta smelt are euryhaline (a species that tolerates a wide range of salinities) fish that generally occur in water with less than 10-12 parts per thousand (ppt) salinity. However, delta smelt have been collected in the Carquinez Strait at 13.8 ppt and in San Pablo Bay at 18.5 ppt (DFG 2000). In recent history, they have been most abundant in shallow areas where early spring salinities are around 2 ppt. However, prior to the 1800's before the construction of levees that created the Delta Islands, a vast fluvial marsh existed in the Delta and the delta smelt probably reared in these upstream areas. During the recent drought (1987-92), delta smelt were concentrated in deep areas in the lower Sacramento River near Emmaton, where average salinity ranged from 0.36 to 3.6 ppt for much of the year (DWR and Reclamation 1994). During years with wet springs (such as 1993), delta smelt may continue to be abundant in Suisun Bay during summer even after the 2 ppt isohaline (an artificial line denoting changes in salinity in a body of water) has retreated upstream (Sweetnam and Stevens 1993). Fall abundance of delta smelt is generally highest in years when salinities of 2 ppt are in the shallows of Suisun Bay during the preceding spring ($p < 0.05$, $r = 0.50$) (Herbold 1994) (p is a statistical abbreviation for the probability of an analysis showing differences between variables, r is a statistical abbreviation for the correlation coefficient, a measure of the linear relationship of two variables). Herbold (1994) found a significant relationship between number of days when 2 parts per thousand was in Suisun Bay during April with subsequent delta smelt abundance ($p < 0.05$, $r = 0.49$), but noted that autocorrelations (interactions among measurements that make relationships between measurements difficult to understand) in time and space reduce the reliability of any analysis that compares parts of years or small geographical areas. It should also be noted that the point in the estuary where the 2 ppt isohaline is located (X2) does not necessarily regulate delta smelt distribution in all years. In wet years, when abundance levels are high, their distribution is normally very broad. In late 1993 and early 1994, delta smelt were found in Suisun Bay region despite the fact that X2 was located far upstream. In this case, food availability may have influenced delta smelt distribution, as evidenced by the *Eurytemora* found in this area by DFG. In Suisun Marsh, delta smelt larvae occur in both large sloughs and small dead end sloughs. New studies are under way to test the hypothesis that adult fall abundance is dependent upon geographic distribution of juvenile delta smelt. The core juvenile distribution, regardless of water year type, is usually centered upstream of X2 in eastern Suisun Bay and the lower Sacramento River to about Three-Mile Slough (Sweetnam 1999; Dege and Brown 2004).

Critical thermal maxima for delta smelt was reached at 25.4 degrees Celsius in the laboratory (Swanson et al., 2000); and at water temperatures above 25 degrees Celsius delta smelt are no longer found in the delta (DFG, pers. comm.).

Swimming Behavior. Observations of delta smelt swimming in a swimming flume and in a large tank show that these fish are unsteady, intermittent, slow speed swimmers (Swanson and Cech 1995). At low velocities in the swimming flume (<3 body lengths per second), and during spontaneous, unrestricted swimming in a 1 meter tank, delta smelt consistently swam with a "stroke and glide" behavior. This type of swimming is very efficient; Weihs (1974) predicted energy savings of about 50% for "stroke and glide" swimming compared to steady swimming. However, the maximum speed smelt are able to achieve using this mode of swimming is less than 3 body lengths per second, and the fish did not readily or spontaneously swim at this or higher speeds (Swanson and Cech 1995). Although juvenile delta smelt appear to be stronger swimmers than adults, forced swimming at 3 body lengths per second in a swimming flume was apparently stressful; the smelt were prone to swimming failure and extremely vulnerable to impingement (Swanson and Cech 1995). Delta smelt swimming performance was limited by behavioral rather than physiological or metabolic constraints (Brett 1976).

Life History. Wang (1986) reported spawning taking place in fresh water at temperatures of about 7°-15° Celsius (C). However, ripe delta smelt and recently hatched larvae have been collected in recent years at temperatures of 15°-22°C, so it is likely that spawning can take place over the entire 7°-22° C range. Temperatures that are optimal for survival of embryos and larvae have not yet been determined, although R. Mager, University of California at Davis (UCD), (unpublished data) found low hatching success and embryo survival from spawns of captive fish collected at higher temperatures. Delta smelt of all sizes are found in the main channels of the Delta and Suisun Marsh and the open waters of Suisun Bay where the waters are well oxygenated and temperatures relatively cool, usually less than 20°-22°C in summer. When not spawning, they tend to be concentrated near the zone where incoming salt water and out flowing freshwater mix (mixing zone). This area has the highest primary productivity and is where zooplankton populations (on which delta smelt feed) are usually most dense (Knutson and Orsi 1983; Orsi and Mecum 1986). At all life stages delta smelt are found in greatest abundance in the top 2 meters of the water column and usually not in close association with the shoreline.

Delta smelt inhabit open, surface waters of the Delta and Suisun Bay, where they presumably school. In most years, spawning occurs in shallow water habitats in the Delta. Shortly before spawning, adult smelt migrate upstream from the brackish-water habitat associated with the mixing zone to disperse widely into river channels and tidally-influenced backwater sloughs (Radtke 1966; Moyle 1976, 2002; Wang 1991). Migrating adults with nearly mature eggs were taken at the Central Valley Projects' (CVP) Tracy Pumping Plant, located in the south Delta, from late December 1990 to April 1991 (Wang 1991). In February 2000, gravid adults were found at both CVP and the State Water Projects' (SWP) fish facilities in the south Delta. Spawning locations appear to vary widely from year to year (DWR and Reclamation 1993). Sampling of larval smelt in the Delta suggests spawning has occurred in the Sacramento River, Barker, Lindsey, Cache, Georgiana, Prospect, Beaver, Hog, and Sycamore sloughs, in the San Joaquin River off Bradford Island including Fisherman's Cut, False River along the shore zone between Franks and Webb tracts, and possibly other areas (Wang 1991). In years of moderate to

high Delta outflow, smelt larvae are often most abundant in Suisun Bay and sloughs of Suisun Marsh, but it is not clear the degree to which these larvae are produced by locally spawning fish and the degree to which they originate upstream and are transported by river currents to the bay and marsh. Some spawning probably occurs in shallow water habitats in Suisun Bay and Suisun Marsh during wetter years (Sweetnam 1999 and Wang 1991). Spawning has also been recorded in Montezuma Slough near Suisun Bay (Wang 1986) and also may occur in Suisun Slough in Suisun Marsh (P. Moyle, UCD, unpublished data).

The spawning season varies from year to year, and may occur from late winter (December) to early summer (July). Pre-spawning adults are found in Suisun Bay and the western delta as early as September (DWR and Reclamation 1994). Moyle (1976, 2002) collected gravid adults from December to April, although ripe delta smelt were common in February and March. In 1989 and 1990, Wang (1991) estimated that spawning had taken place from mid-February to late June or early July, with peak spawning occurring in late April and early May. A recent study of delta smelt eggs and larvae (Wang and Brown 1993 as cited in DWR and Reclamation 1994) confirmed that spawning may occur from February through June, with a peak in April and May. Spawning has been reported to occur at water temperatures of about 7° to 15° C. Results from a UCD study (Swanson and Cech 1995) indicate that although delta smelt tolerate a wide range of temperatures (<8° C to >25° C), warmer water temperatures restrict their distribution more than colder water temperatures.

Delta smelt spawn in shallow, fresh, or slightly brackish water upstream of the mixing zone (Wang 1991). Most spawning occurs in tidally-influenced backwater sloughs and channel edgewaters (Moyle 1976, 2002; Wang 1986, 1991; Moyle *et al.* 1992). Although delta smelt spawning behavior has not been observed in the wild (Moyle *et al.* 1992), some researchers believe the adhesive, demersal eggs attach to substrates such as cattails, tules, tree roots, and submerged branches in shallow waters (Moyle 1976, 2002; Wang 1991).

Laboratory observations have indicated that delta smelt are broadcast spawners (DWR and Reclamation 1994) and eggs are demersal (sinks to the bottom) and adhesive, sticking to hard substrates such as: rock, gravel, tree roots or submerged branches, and submerged vegetation (Moyle 1976, 2002; Wang 1986). At 14°-16° C, embryonic development to hatching takes 9 -14 days and feeding begins 4-5 days later (R. Mager, UCD, unpublished data). Newly hatched delta smelt have a large oil globule that makes them semi-buoyant, allowing them to maintain themselves just off the bottom (R. Mager, UCD, unpublished data), where they feed on rotifers (microscopic crustaceans used by fish for food) and other microscopic prey. Once the swimbladder (a gas-filled organ that allows fish to maintain neutral buoyancy) develops, larvae become more buoyant and rise up higher into the water column. At this stage, 16-18 mm total length, most are presumably washed downstream until they reach the mixing zone or the area immediately upstream of it. Growth is rapid and juvenile fish are 40-50 mm long by early August (Erkkila *et al.* 1950; Ganssle 1966; Radtke 1966). By this time, young-of-year fish dominate trawl catches of delta smelt, and adults become rare. Delta smelt reach 55-70 mm standard length in 7-9 months (Moyle 1976, 2002). Growth during the next 3 months slows down considerably (only 3-9 mm total), presumably because most of the energy ingested is being directed towards gonadal development (Erkkila *et al.* 1950; Radtke 1966). There is no correlation between size and fecundity, and females between 59-70 mm standard lengths lay

1,200 to 2,600 eggs (Moyle *et al.* 1992). The abrupt change from a single-age, adult cohort during spawning in spring to a population dominated by juveniles in summer suggests strongly that most adults die after they spawn (Radtke 1966 and Moyle 1976, 2002). However, in El Nino years when temperatures rise above 18° C before all adults have spawned, some fraction of the unspawned population may also hold over as two-year-old fish and spawn in the subsequent year. These two-year-old adults may enhance reproductive success in years following El Nino events. In a near-annual fish like delta smelt, a strong relationship would be expected between number of spawners present in one year and number of recruits to the population the following year. Instead, the stock-recruit relationship for delta smelt is weak, accounting for about a quarter of the variability in recruitment (Sweetnam and Stevens 1993). This relationship does indicate, however, that factors affecting numbers of spawning adults (e.g., entrainment, toxics, and predation) can have an effect on delta smelt numbers the following year.

Delta smelt feed primarily on (1) planktonic copepods (small crustaceans used by fish for food), (2) cladocerans (small crustaceans used by fish for food), (3) amphipods (small crustaceans used by fish for food) and, to a lesser extent, (4) on insect larvae. Larger fish may also feed on the opossum shrimp (*Neomysis mercedis*). The most important food organism for all sizes seems to be the euryhaline copepod (*Eurytemora affinis*), although in recent years the exotic species, *Pseudodiaptomus forbesi*, has become a major part of the diet (Moyle *et al.* 1992). Delta smelt are a minor prey item of juvenile and subadult striped bass (*Morone saxatilis*) in the Sacramento-San Joaquin Delta (Stevens 1966). They also have been reported from the stomach contents of white catfish (*Ameiurus catus*) (Turner 1966 *in* Turner and Kelley (editors) 1966) and black crappie (*Pomoxis nigromaculatus*) (Turner 1966 *in* Turner and Kelley 1966) in the Delta.

Threats to Species. The smelt is endemic to Suisun Bay upstream of San Francisco Bay and throughout the Delta, in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties, California. Historically, the smelt is thought to have occurred from Suisun Bay and Montezuma Slough, upstream to at least Verona on the Sacramento River, and Mossdale on the San Joaquin River (Moyle *et al.* 1992, Sweetnam and Stevens 1993).

Since the 1850s, however, the amount and extent of suitable habitat for the delta smelt has declined dramatically. The advent in 1853 of hydraulic mining in the Sacramento and San Joaquin rivers led to an increase in siltation and the alteration of the circulation patterns of the Estuary (Nichols *et al.* 1986, Monroe and Kelly 1992). The reclamation of Merritt Island for agricultural purposes, in the same year, marked the beginning of the present-day cumulative loss of 94% of the Estuary's tidal marshes (Nichols *et al.* 1986, Monroe and Kelly 1992). The extensive levee system in the Delta has led to a loss of seasonally flooded habitat and significantly changed the hydrology of the Delta ecosystem, restricting the ability of suitable habitat substrates to re-vegetate.

Delta smelt were once one of the most common pelagic (living in open water away from the bottom) fish in the upper Sacramento-San Joaquin estuary, as indicated by its abundance in DFG trawl catches (Erkkila *et al.* 1950; Radtke 1966; Stevens and Miller 1983). Delta smelt abundance from year to year has fluctuated greatly in the past, but between 1982 and 1992 their population was consistently low. The decline became precipitous in 1982 and 1983 due to extremely high outflows and continued through the drought years 1987-1992 (Moyle *et al.* 1992).

In 1993, numbers increased considerably, apparently in response to a wet winter and spring. During the period 1982-1992, most of the population was confined to the Sacramento River channel between Collinsville and Rio Vista (D. Sweetnam, DFG unpublished data). This was still an area of high abundance in 1993, but delta smelt were also abundant in Suisun Bay. The actual size of the delta smelt population is not known. However, the pelagic life style of delta smelt, short life span, spawning habits, and relatively low fecundity indicate that a fairly substantial population probably is necessary to keep the species from becoming extinct. Recreation in the Delta has resulted in the presence and propagation of predatory non-native fish such as striped bass. Additionally, recreational boat traffic has led to a loss of habitat from the building of docks and an increase in the rate of erosion resulting from boat wakes. In addition to the loss of habitat, erosion reduces the water quality and retards the production of phytoplankton in the Delta.

In addition to the degradation and loss of estuarine habitat, delta smelt have been increasingly subject to entrainment, upstream or reverse flows of waters in the Delta and San Joaquin River, and constriction of low salinity habitat to deep-water river channels of the interior Delta (Moyle *et al.* 1992). These adverse conditions are primarily a result of the steadily increasing proportion of river flow being diverted from the Delta by the Projects, and occasional droughts (Monroe and Kelly 1992).

Reduced water quality from agricultural runoff, effluent discharge and boat effluent has the potential to harm the pelagic larvae and reduce the availability of the planktonic food source. When the mixing zone is located in Suisun Bay where there is extensive shallow water habitat within the euphotic zone (depths less than four meters), high densities of phytoplankton and zooplankton may accumulate (Arthur and Ball 1978, 1979, 1980). The introduction of the Asian clam (*Potamocorbula amurensis)*, a highly efficient filter feeder, presently reduces the concentration of phytoplankton in this area.

Population Dynamics and Trends. According to seven abundance indices which provide information on the status of the delta smelt, this species was consistently at low population levels through the 1980's (Stevens *et al.* 1990). These same indices also showed a pronounced decline from historical levels of abundance (Stevens *et al.* 1990). For a large part of its annual life span, this species is associated with the freshwater edge of the mixing zone, where the salinity is approximately 2 ppt. (also described as X2) (Ganssle 1966, Moyle *et al.* 1992, Sweetnam and Stevens 1993). The relationship between the portion of the smelt population west of the Delta as sampled in the summer townet survey and the natural logarithm of Delta outflow from 1959 to 1988, indicates the summer townet index increased dramatically when outflow was between 34,000 and 48,000 cubic feet per second, placing X2 between Chipps and Roe islands (DWR and Reclamation 1994).

Specifically, the summer townet abundance index constitutes one of the more representative indices because the data have been collected over a wide geographic area (from San Pablo Bay upstream through most of the Delta) for the longest period of time (since 1959) (DFG 2001). The summer townet abundance index measures the abundance and distribution of juvenile delta smelt and provides data on the recruitment potential of the species (DFG 2001). Since 1983, (except for 1986, 1993, and 1994), this index has remained at consistently lower levels than

previously found (DFG 2001). These consistently lower levels correlate with the 1983 to 1992 mean location of X2 upstream of the confluence (DFG 2001). The final summer townet index for 2000 was 8.0, a decline from the 11.9 index for the 1999 summer townet. Both of these indices represent an increase from the 1998 index of 3.3. These higher townet indices were followed by the 2001 (3.5), 2002 (4.7), 2003 (1.6), 2004 (2.9), 2005 (0.3), 2006 (0.4) indices which were well below the pre-decline average of 20.4 (1959-1981, no sampling in 1966-68) (DFG 2007).

The second longest running survey (since 1967), the fall midwater trawl survey (FMWT), measures the abundance and distribution of late juveniles and adult delta smelt in a large geographic area from San Pablo Bay upstream to Rio Vista on the Sacramento River and Stockton on the San Joaquin River (Stevens *et al.* 1990, DFG 1999). The FMWT indicates the abundance of the adult population just prior to upstream spawning migration (DFG 1999). The index calculated from the FMWT uses numbers of sampled fish multiplied by a factor related to the volume of the area sampled (DFG 1999). Until recently, except for 1991, this index has declined irregularly over the past 20 years (DFG 1999). Since 1983, the delta smelt population has exhibited more low FMWT abundance indices, for more consecutive years, than previously recorded (DFG 1999). The 1994 FMWT index of 101.2 was a continuation of this trend (DFG 1999). This occurred despite the high 1994 summer townet index for reasons unknown (DFG 1999). The low 1995 summer townet index value of 3.3 was followed by a high FMWT index of 839 reflecting the benefits of higher flows due to an extremely wet year (DFG 1999, 2001). The 1999 FMWT index of 717, which is an increase from 1998's index (417.6), is the third highest since the start of decline of delta smelt abundance in 1982 (DFG 1999). The FMWT abundance index (127) for 1996 represented the sixth lowest on record (DFG 1999). The 1997 abundance index (360.8) almost tripled since the 1996 survey, despite the low summer townet index (4.0) (DFG 1999, 2001).

Both 2001 TNS and FMWT abundance indices for delta smelt decreased from 2000 (Souza and Bryant 2002, DFG 1999 and 2001). The 2001 TNS delta smelt index (3.5) is less than 1999 (11.9) and 2000 (8.0) but comparable to recent years (1995, 1997, and 1998) when the index ranged from 3.2 to 4.0 (Souza and Bryant 2002, DFG 2001). The 2001 FMWT delta smelt index (603) decreased by 20% from 2000 (756) (Souza and Bryant 2002, DFG 2001). Both surveys exhibited an overall trend of decline in the last three years, but this decline seems more pronounced in the TNS where the 2001 delta smelt index is 95% lower than the greatest index of record (62.5) in 1978 (Souza and Bryant 2002, DFG 2001). The 2002 TNS was 4.7 and then dropped to 1.6 in 2003. The 2002 FMWT index (139) was the seventh lowest on record and the 2003 index was 210. The 2004 TNS index increase to 2.9 but then fell in 2005 to 0.3. The 2004 and 2005 FMWT abundance indices fell to their lowest levels of 74 and 26 respectively. The lowest indices on record for both surveys occurred in 2005 (DFG 2007).

In response to the recent dramatic declines of several species in the Delta, the Interagency Ecological Program (IEP) was instructed to prepare and implement a series of studies to define and understand the nature of the declines, known as the Pelagic Organism Decline (POD). A conceptual model has been constructed based on three factors acting individually or in concert to lower pelagic productivity. They are: 1) contaminants, 2) introduced or invasive species, and 3) water project operations including diverting water for use in Southern California. A triage

approach was chosen for 2005 to gain preliminary information that could identify potential causes of these population declines, and to help prioritize future investigations (DFG and DWR 2005).

The Delta Smelt Larval Survey (DSLS), an additional survey initiated in 2005 by DFG, will help determine timing, distribution, and abundance of larvae within the upper San Francisco Estuary. The new survey will also help estimate larval delta smelt losses and determine the magnitude of entrainment of larval delta smelt at the CVP and SWP intakes.

Delta Smelt Critical Habitat

In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR § 424.12(b)).

The Service is required to list the known primary constituent elements together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

1. space for individual and population growth, and for normal behavior;

2. food, water, air, light, minerals, or other nutritional or physiological requirements;

3. cover or shelter;

4. sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and

5. generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

In designating critical habitat for the delta smelt, the Service identified the following primary constituent elements essential to the conservation of the species: physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration. Specific areas that have been identified as important delta smelt spawning habitat include Barker, Lindsey, Cache, Prospect, Georgiana, Beaver, Hog, and Sycamore sloughs and the Sacramento River in the Delta, and tributaries of northern Suisun Bay.

Larval and juvenile transport. Adequate river flow is necessary to allow larvae from upstream spawning areas to move to rearing habitat in Suisun Bay and to ensure that rearing habitat is maintained in Suisun Bay. To ensure this, X2 must be located westward of the confluence of the Sacramento-San Joaquin Rivers, located near Collinsville (Confluence), during the period when larvae or juveniles are being transported, according to historical salinity conditions. X2 is important because the "entrapment zone" or zone where particles, nutrients, and plankton are "trapped," leading to an area of high productivity, is associated with its location. Habitat conditions suitable for transport of larvae and juveniles may be needed by the species as early as

February 1 and as late as August 31, because the spawning season varies from year to year and may start as early as December and extend until July.

Rearing habitat. An area extending eastward from Carquinez Strait, including Suisun, Grizzly, and Honker bays, Montezuma Slough and its tributary sloughs, up the Sacramento River to its confluence with Three Mile Slough, and south along the San Joaquin River including Big Break, defines the specific geographic area critical to the maintenance of suitable rearing habitat. Three Mile Slough represents the approximate location of the most upstream extent of historical tidal incursion. Rearing habitat is vulnerable to impacts of export pumping and salinity intrusion from the beginning of February to the end of August.

Adult migration. Adequate flow and suitable water quality is needed to attract migrating adults in the Sacramento and San Joaquin river channels and their associated tributaries, including Cache and Montezuma sloughs and their tributaries. These areas are vulnerable to physical disturbance and flow disruption during migratory periods.

Critical habitat for the delta smelt is bounded and contained within the legal definition of the Delta. Sherman Island is within the boundaries of the legal Delta and is therefore within designated critical habitat for the delta smelt.

Environmental Baseline

Two annual monitoring efforts, the Spring Kodiak Trawl (SKT) and the 20-mm surveys, document the distribution of delta smelt adults and larvae, respectively, in the Central and South Delta (DFG 2007). In addition, salvage at the SWP and CVP are used as an indicator of delta smelt presence in the South Delta. Based on the available data, the Service is reasonably certain that the delta smelt occur within the action area.

Distribution. Adult delta smelt movements upstream into the Delta from Suisun Bay starts in November/December and adults may be present through May. Salvage of adult delta smelt at the pumping facilities commonly occurs in January and occasionally in early December, showing known timing of movement of delta smelt into the South Delta. However, delta smelt likely to move into the Delta earlier than this. Salvage of adult delta smelt usually tapers off in April and rarely occurs after May. The annual SKT samples pelagic fish at several fixed stations in the Delta and usually starts in mid-January and ends in May. Stations within the Central and South Delta include stations located from the mouth of San Joaquin River through the Stockton Deep Chip Channel south to the City of Stockton, in Middle and Old Rivers, and in Franks Tract. Of these, station 906 is located just downstream from the construction site while station 910 is located upstream.

The SKT surveys shows that the delta smelt can be distributed throughout the Central and South Delta, but the range and distribution of delta smelt vary widely between years. For instance, the 2007 SKT did not sample delta smelt at stations in the Central and South Delta while the 2004 SKT sampled delta smelt throughout the South Delta, including stations 906 and 910 (DFG 2007). The factors affecting distribution may include flows in Old and Middle Rivers and flow changes in the San Joaquin River (USGS unpublished data). Further, there is a large inherent

variation in the survey and the SKT may not be representative of distribution during low abundance. For instance, delta smelt were salvaged at the state and Federal pumping facilities in 2007 despite the failure to sample delta smelt in the SKT (DFG 2007, Gartz in lit. 2007). This shows that some delta smelt had entered the South Delta in 2007. In addition, larvae may be sampled at upstream stations in the San Joaquin River even though no adult have been sampled at these stations.

Adult delta smelt is believed to spawn in the central Delta sloughs from February through August based on presence and growth rate of larvae. However, little is known of the microhabitat where spawning occurs but it has been assumed that the delta smelt spawn in shallow water areas having submersed aquatic plants and other suitable substrates and refugia. These shallow water areas have been identified in the Delta Native Fishes Recovery Plan (Recovery Plan) (Service 1996) as essential to the long-term survival and recovery of delta smelt and other resident fish. A no net loss strategy of delta smelt population and habitat is proposed in this Recovery Plan.

Once hatched, river flows and tides disperse and transport larvae throughout the Delta and eventually to the low salinity zone (2 parts per million) in the lower Delta and Suisun Bay. The CDFG annually conducts larvae and juvenile surveys, the 20-mm survey, at fixed stations throughout the Delta from March and into July (Figure 2). The survey, while collecting fish larvae less than 20 mm in size, is only fully efficient in collecting fish larvae that are of 20-mm length or longer. In early spring and summer, the delta smelt larvae and juveniles are found in the San Joaquin, Old, and Middle Rivers; by Clifton Court forebay; Franks Tract; and by the mouth of the San Joaquin River. Larvae and juveniles are commonly collected in San Joaquin River just down stream of Empire Tract (station 906) and may be collected as far upstream as the Stockton Deep Water Channel by the City of Stockton (station 912). With the exception of 2006 and 2007, when no larvae where sampled in the south Delta, the 20-mm trawl has captured larvae in the South Delta starting mid-March. Delta smelt larvae/juveniles may continue to be sampled through July. However, by mid-June, the 20-mm trawl rarely samples juveniles at stations located by or upstream of Empire Tract (DFG 2007). Results from the 20-mm trawl shows that the juveniles continue to grow in the Central and South Delta and the majority of juvenile delta smelt sampled are 20 mm or longer by mid-June.

The summer townet abundance index is conducted during June through August throughout the Delta and measures the abundance and distribution of juvenile delta smelt. Distribution data from this survey shows that the delta smelt in summer is concentrated around Susisun Bay with no delta smelt being sampled in the south Delta (DFG 2007).

The delta smelt is adapted to living in the highly productive Estuary where salinity varies spatially and temporally according to tidal cycles and the amount of freshwater inflow. Despite this tremendously variable environment, the historical Estuary probably offered relatively consistent spring transport flows that moved delta smelt juveniles and larvae downstream to the mixing zone (Peter Moyle, U.C. Davis pers. comm.). Since the 1850's, however, the amount and extent of suitable habitat for the delta smelt has declined dramatically. The advent in 1853 of hydraulic mining in the Sacramento and San Joaquin rivers led to increased siltation and alteration of the circulation patterns of the Estuary (Nichols *et al.* 1986, Monroe and Kelly 1992). The reclamation of Merritt Island for agricultural purposes, in the same year, marked the

beginning of the present-day cumulative loss of 94 percent of the Estuary's tidal marshes (Nichols *et al.* 1986, Monroe and Kelly 1992).

Abundance. The number of adult delta smelt entering the Central and South Delta vary between years, and is likely dependent on both the overall delta smelt abundance and the proportion of the overall population that enters the San Joaquin River portion of the delta relative to the Sacramento River portion. However, it seems reasonable to assume that overall abundance also will influence central and south Delta abundance. The summer townet survey abundance index has, except for three years since 1983 (1986, 1993, and 1994), remained at consistently lower levels than experienced previously. Besides measuring abundance and distribution, the summer townet abundance index also provides data on the recruitment potential of the species. The fall midwater trawl (FMWT) provides an indication of the abundance of the adult population just prior to upstream spawning migration. Indicia for the delta smelt FMWT index can vary dramatically between years, e.g. the 1993 index was 1073 while the 1994 index dropped to 102 (Figure 2). Some of this variation is likely related to inherent variation in the sampling method. However, as noted in the status of the species section, peak delta smelt indicia have been consistently lower after 1983 than pre 1983. Further, delta smelt indicia from 2001 to current have consistently been among the lowest ever recorded. The FMWT index does not provide information on specific areas of the Delta, and how the index relates to adult delta smelt abundance in the Central and South Delta is not clear.

The distribution of delta smelt in the Delta will also affect the abundance of the fish in the Central and South Delta. For instance, in 2004 adult delta smelt seemed distributed throughout the Delta, including station 906 and 910, while in 2007 most adult delta smelt were mainly found in Montezuma Slough, Sacramento River, and Sacramento Deep Water Ship Channel of the north Delta (SKT survey: DFG 2007). Thus, the combination of a very low overall population abundance and patchy distribution likely resulted in very low numbers of adult delta smelt in the South Delta during 2005/2006 and 2006/2007.

In addition to the degradation and loss of estuarine habitat, the delta smelt has been increasingly subject to entrainment, upstream or reverse flows of waters in the Delta and San Joaquin River, and constriction of low salinity habitat to deep-water river channels of the interior Delta (Moyle *et al.* 1992). These adverse conditions are primarily a result of drought and the steadily increasing proportion of river flow being diverted from the Delta by the CVP and SWP (Monroe and Kelly 1992). There is a relationship between the portion of the delta smelt population west of the Delta as sampled in the summer townet survey and the natural logarithm of Delta outflow from 1959 to 1988 (Department of Water Resources and U.S. Bureau of Reclamation 1994). This relationship indicates that the summer townet survey index increased dramatically when outflow was between 34,000 and 48,000 cfs which placed X2 between Chipps and Roe islands. Placement of X2 downstream of the Confluence, and Chipps and Roe islands provides delta smelt with low salinity and protection from entrainment, allowing for productive rearing habitat that increases both smelt abundance and distribution.

The results of seven surveys conducted by the IEP corroborate the dramatic decline in delta smelt. Existing baseline conditions, as mandated for delta smelt under the Service's consultations on CVP operations (Service 1994b, 1995), provide sufficient Delta outflows from

February 1 through June 30 to allow larval and juvenile delta smelt to move out of the "zone of influence" of the CVP and SWP pumps, and provide them low salinity, productive rearing habitat. This zone of influence has been delineated by DWR's Particle Tracking Model and expands or contracts with CVP and SWP combined pumping increases or decreases, respectively (DWR and Reclamation 1993). With tidal effects contributing additional movement, the influence of the pumps may entrain larvae and juveniles as far west as the Confluence.

According to seven abundance indices designed to record trends in the status of the delta smelt, this species was consistently at low population levels during the last ten years (Stevens *et al.* 1990). These same indices also show a pronounced decline from historical levels of abundance (Stevens *et al.* 1990). The summer townet abundance index constitutes one of the more representative indices because the data have been collected over a wide geographic area (from San Pablo Bay upstream through most of the Delta) for the longest period of time (since 1959). The summer townet abundance index measures the abundance and distribution of juvenile delta smelt and provides data on the recruitment potential of the species. Except for three years since 1983 (1986, 1993, and 1994), this index has remained at consistently lower levels than experienced previously. As indicated, these consistently lower levels correlate with the 1983 to 1992 mean location of X2 upstream of the Confluence, Chipps and Roe islands.

The second longest running survey (since 1967), the fall midwater trawl survey (FMWT), measures the abundance and distribution of late juveniles and adult delta smelt in a large geographic area from San Pablo Bay upstream to Rio Vista on the Sacramento River and Stockton on the San Joaquin River (Stevens *et al.* 1990). The fall midwater trawl provides an indication of the abundance of the adult population just prior to upstream spawning migration. The index that is calculated from the FMWT survey uses numbers of sampled fish multiplied by a factor related to the volume of the area sampled. Until recently, except for 1991, this index has declined irregularly over the past 20 years. Since 1983, the delta smelt population has exhibited more low fall midwater trawl abundance indices, for more consecutive years, than previously recorded. The 1994 FMWT index of 101.7 is a continuation of this trend. This occurred despite the high 1994 summer townet index for reasons unknown. The 1995 summer townet was a low index value of 319 but resulted in a high FMWT index of 898.7 reflecting the benefits of large transport and habitat maintenance flows with the Bay-Delta Accord in place and a wet year. The abundance index of 128.3 for 1996 represented the fourth lowest on record. The abundance index of 305.6 for 1997 demonstrated that the relative abundance of delta smelt almost tripled over last years results, and delta smelt abundance continued to rise, peaking in 1999 to an abundance index of 863, only to fall back down to the low abundance. The lowest indices on record for both surveys occurred in 2005. The summer townet index was 0.3 and the FMWT index was 26 (DFG 2005). The 2006 summer townet index for delta smelt is 0.4 with FMWT at 41 (DFG 2006). The 2007 summer townet index for delta smelt is 0.3 with FMWT at 28 (DFG 2007).

The action area is within critical habitat for the delta smelt and occurrences have been recorded in the San Joaquin River. The action area contains components that can be used by the listed feeding, rearing, movement, and other essential behaviors. Therefore, the Service has determined it is reasonable to conclude the delta smelt inhabits the proposed action area, based on the biology and ecology of the species, and presence of suitable habitat.

Effects of the Proposed Action

The bridge replacement will result in permanent effects to shallow water habitat. The entire project footprint is approximately 22.95 acres with 3.15 acres of riverine, bank, and riparian habitat. The applicant's preliminary assessments suggest that the project may result in 531 square feet (0.01 acre) net gain in shallow water habitat (from removing the existing concrete support), but would also result in 11,280 square feet (0.26 acre) of shallow water habitat coming under the influence of the shadow zone of the new bridge. Thus, the net adverse effect of the project on shallow water habitat is estimated at 10,699 square feet (0.24 acre). This habitat effect will be compensated at a 3:1 ratio through the purchase of delta smelt shallow water habitat from a Service-approved conservation bank or through an in-lieu species fund. Kimball Island Mitigation Bank, the only Service-approved delta smelt conservation bank, is sold out of shallow water habitat credits. The Service and the Center for Natural Lands Management have set up an in-lieu fund to compile funds for the acquisition and protection of delta smelt habitat.

Construction and demolition activities within the San Joaquin River channel, above the channel, and in adjacent upland areas will result in direct effects to delta smelt. These activities include but are not limited to: demolition of underwater portions of the existing bridge, building of temporary trestles, ground clearing, bank excavation, backfilling, earthmoving, stockpiling and/or compaction, grading, and concrete work.

Increased sedimentation rates could result if fine sediment is discharged to streams or mobilized within channel during project activities. Increased sedimentation may adversely affect water quality and substrate composition. Periods of localized, high suspended sediment concentrations and turbidity owing to channel disturbance can result in a reduction of feeding opportunities for delta smelt, and clogging and abrasion of gill filaments. In addition, increased sediment loading can degrade food-producing habitat downstream of the project area. It can also interfere with photosynthesis of aquatic flora and displace aquatic fauna.

The movement of the construction equipment and exposure of bare soil could result in increased turbidity and impaired water quality. Toxic substances including gasoline, lubricants, and other petroleum-based products could enter the water courses as a result of spills or leakage from machinery or storage containers. Toxins could also be released from sediments at the site. These toxins could have an immediate or delayed lethal or sub-lethal effect on various smelt life stages and may also affect the reproductive success of the delta smelt. Futhermore, when surface water comes in contact with uncured concrete, alkaline substances may leach in the water, resulting in increases in the natural hydrogen ion concentration (pH). Rapid changes in pH can have adverse affects on delta smelt. However, adverse effects on water quality are minimized through implementation of a SWPPP that will include an erosion control and restoration plan, a water quality monitoring plan, a hazardous materials management plan, and BMPs.

Pile driving activities will create underwater sound pressure levels that may adversely affect delta smelt. While the proposed project will target specific Sound Exposure Levels that are estimated to be below the threshold to cause adverse effects to salmonids little is known about the sensitivity on delta smelt.

Indirect effects to delta smelt may occur as a result of the project. Storm water runoff and traffic accidents on Navy Drive Bridge, under both existing and proposed conditions, can be reasonably be expected to occur and will result in the introduction of pollutants into the San Joaquin River. Light from the three double-arm light standard in the new bridge median can have a disorienting effect on delta smelt and may increase predation.

Delta Smelt Critical Habitat

This opinion on the critical habitat for the delta smelt does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR § 402.02. Instead, we have relied upon the statue and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U. S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to the proposed critical habitat.

Delta smelt critical habitat encompasses the Delta, including the San Joaquin River at the project site. Implementation of the proposed project will affect delta smelt critical habitat via loss of shallow water habitat. However, it is expected that these effects will be fully compensated for off-site. Also, the affected critical habitat will be relatively small compared to the entire designated critical habitat.

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.

Any continuing or future non-Federal diversions of water that may entrain adult or larval fish would have cumulative effects to the smelt. Water diversions through intakes serving numerous small, private agricultural lands contribute to these cumulative effects. These diversions also include municipal and industrial uses. State or local levee maintenance may also destroy or adversely modify spawning or rearing habitat and interfere with natural long term habitat-maintaining processes (Service 2000).

Additional cumulative effects result from the impacts of point and non-point source chemical contaminant discharges. These contaminants include but are not limited to selenium and numerous pesticides and herbicides as well as oil and gasoline products associated with discharges related to agricultural and urban activities. Implicated as potential sources of mortality for smelt, these contaminants may adversely affect fish reproductive success and survival rates. Spawning habitat may also be affected if submersed aquatic plants, used a substrates for adhesive egg attachment, are lost due to toxic substances.

Other cumulative effects could include: wave action in water channels caused by boats may degrade riparian and wetland habitat and erode banks; the dumping of domestic and industrial garbage may present hazards to the fish because they could become trapped in the debris, injure

themselves, or ingest the debris; golf courses reduce habitat and introduce pesticides and herbicides into the environment; oil and gas development and production remove habitat and may introduce pollutants into the water; agricultural uses on levees reduce riparian and wetland habitats; and grazing activities may degrade or reduce suitable habitat, which could reduce vegetation in or near waterways. These cumulative effects further contribute to reducing the respective environmental baselines for the delta smelt.

Conclusion

After reviewing the current status of the delta smelt, environmental baseline for the species, the effects of the proposed action, and the cumulative effects on the species, it is the Service's biological opinion that the proposed construction of the Navy Drive Bridge Replacement Project, as described herein, is not likely to jeopardize the continued existence of the delta smelt. The proposed action is located in delta smelt critical habitat; however, it will not be adversely modified or destroyed by the proposed action.

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 harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including 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 incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by Caltrans so they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity that is covered by this incidental take statement. If Caltrans (1) 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, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service expects that incidental take of smelt will be difficult to detect or quantify for the following reasons: the small size of smelt eggs and larvae; their occurrence in aquatic habitat

makes them difficult to detect; and the low likelihood of finding dead or impaired specimens. An unquantifiable number of delta smelt eggs, larvae and adults may be killed, harmed, or harassed as a result of the construction activities. Accordingly, the Service is quantifying take incidental to the project as all delta smelt inhabiting the project area that will be affected by the proposed action. Approximately 0.24 acre of the 2.49 acres of aquatic habitat will be shallow water habitat that will be permanently affected by the proposed action. The 2.49 acres of riverine habitat within the larger action area will be temporally effected by vibration and noise from pile driving and construction related activities. Upon implementation of the following reasonable and prudent measures, incidental take associated with the demolition of the existing bridge and construction of the new bridge will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the delta smelt. The proposed action is located in delta smelt critical habitat, however, critical habitat will not be adversely modified or destroyed.

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the snake.

1. Caltrans shall implement the project as described in the biological assessment and this biological opinion and reduce effects to listed species.

2. Caltrans shall ensure the applicant's compliance with this biological opinion.

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 measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):

    a. The applicant shall minimize the potential for harm, harassment, or killing of delta smelt resulting from project related activities by implementation of the Conservation and Minimization Measures as described in the biological assessment and appearing in the Project Description of this biological opinion.

    b. The applicant shall make the terms and conditions in this biological opinion a required term in all contracts for the project that are issued to all contractors.

c. The applicant shall deposit $28,800.00 (0.72 acre [3:1 ratio] worth of conservation credits) into the Delta Smelt Conservation Fund. A copy of the Conservation Fund receipt must be provided to the Corps and the Service prior to the initial date of construction.

2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

   a. If requested, during or upon completion of construction activities, the on-site biologist, and/or the applicant's representative shall accompany Service or California Department of Fish and Game personnel on an on-site inspection of the site to review project effects to the delta smelt and its habitat.

   b. Caltrans shall ensure the applicant complies with the Reporting Requirements of this biological opinion.

Reporting Requirements

A post-construction compliance report prepared by the monitoring biologists must be submitted to the Deputy Assistant Field Supervisor of the Endangered Species Program at the Sacramento Fish and Wildlife Office within thirty (30) calendar days of the final date of completion of construction or within thirty (30) calendar days of the initial date of any break in construction activity lasting more than thirty (30) calendar days. This report shall detail (i) dates that groundbreaking at the project started and the project was completed; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the delta smelt if any; (v) occurrences of incidental take of delta smelt; and (vi) other pertinent information.

Caltrans must require the project applicant to immediately report to the Service any information about take or suspected take of federally-listed species not authorized in this biological opinion. The project applicant must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. Dead individuals of any listed species shall be placed in a Zip-lock® bag containing a pieced of paper with the date, time and location where the specimen was found, the name of the person who found it in permanent ink, and then placed in a freezer in a secure location. The Service contact persons are Chris Nagano, Deputy Assistant Field Supervisor, at (916) 414-6600, and Scott Heard, Resident Agent-in-charge of the Service's Law Enforcement Division at (916) 414-6660.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. The Service recommends Caltrans develop and implement restoration measures in area designated in the Delta Fishes Recovery Plan (Service 1996).

2. The Service recommends Caltrans develop procedures that minimize the effects of all other in-water activities on delta smelt.

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed Navy Drive Bridge Replacement Project. As provided in 50 CFR § 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, as previously described, or the requirements under the incidental take section are not implemented; (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 to the listed species or critical habitat that was not considered in this opinion; and/or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this biological opinion for the Navy Drive Bridge Replacement Project, please contact Kim Squires or Ryan Olah of my staff at (916) 414-6625.

Sincerely,

for Cay C. Goude
Acting Field Supervisor

cc:
Henry McKay, Port of Stockton, Stockton, California
Maria Rea, National Marine Fisheries Service, Sacramento, California
Scott Wilson, California Department of Fish and Game, Yountville, California

LITERATURE CITED

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Appendix I – CNDDB, CNPS, USFWS Lists

Selected Elements by Scientific 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
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SSC
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2.2?	1B.2
Atriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1	S1	1B.1
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S2	2.3
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S2	
California macrophylla round-leaved filaree	PDGER01070	None	None	G2	S2	1B.1
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2.1
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G4	S2.2	1B.2
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2.2	1B.2
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10050	None	None	G4G5	S2	2.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sagittaria sanfordii	PMALI040Q0	None	None	G3	S3	1B.2
Sanford's arrowhead						
Symphyotrichum lentum	PDASTE8470	None	None	G2	S2	1B.2
Suisun Marsh aster						
Thamnophis gigas	ARADB36150	Threatened	Threatened	G2G3	S2S3	
giant garter snake						

Record Count: 24

CNPS California Native Plant Inventory of Rare and Endangered Plants

Plant List

10 matches found. *Click on scientific name for details*

Search Criteria

Found in Quad 37121H3

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	1B.2	S2	G2T2
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	S2.2?	G3T2
Atriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	1B.2	S2	G2
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	1B.1	S1	G1
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb	2.3	S2	G5
California macrophylla	round-leaved filaree	Geraniaceae	annual herb	1B.1	S2	G2
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.1	S1	G1
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb	1B.2	S2.2	G4
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	S2.2	G5T2
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb	1B.2	S3	G3

Suggested Citation

California Native Plant Society (CNPS). 2013. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society. Sacramento, CA. Accessed on Friday, March 01, 2013.

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Information
- About the Inventory
- About the Rare Plant Program
- CNPS Home Page
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Contributors
- Jenkins Family
- Bilisoly Bequest Grant
- California Natural Diversity Database
- The Calflora Database
- Studio Simple
- TRC

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CNPS California Native Plant Inventory of Rare and Endangered Plants

Plant List

7 matches found. *Click on scientific name for details*

Search Criteria

Found in Quad 37121H4

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	2.1	S2	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	4.2	S3.2	G4T3
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb	1B.2	S2.2	G4
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	S2.2	G5T2
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	S2	G2
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	2.1	S2	G4G5
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	1B.2	S2	G2

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U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 130301023154

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
- vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
- valley elderberry longhorn beetle (T)

Lepidurus packardi
- vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
- green sturgeon (T) (NMFS)

Hypomesus transpacificus
- Critical habitat, delta smelt (X)
- delta smelt (T)

Oncorhynchus mykiss
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
- Central Valley spring-run chinook salmon (T) (NMFS)
- winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
- California tiger salamander, central population (T)

Rana draytonii
- California red-legged frog (T)

Reptiles

Thamnophis gigas
- giant garter snake (T)

Mammals

Sylvilagus bachmani riparius
- riparian brush rabbit (E)

Plants

Cordylanthus palmatus
- palmate-bracted bird's-beak (E)

Quads Containing Listed, Proposed or Candidate Species:

STOCKTON WEST (462A)

HOLT (462B)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning

process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be May 30, 2013.

Appendix J – List of Technical Studies

List of Technical Studies with Approval Date

Air Technical Study - June 2012

Air Conformity Study – Not yet approved

Natural Environment Study – March 2012

Biological Assessment – September 2007

Supplemental Historic Property Survey Report – May 2012

Finding of Adverse Effect – May 2006

Memorandum of Agreement – April 2008

Preliminary Geotechnical Services Report – April 2003

Noise Study Report – May 2012

Final Traffic Operations Report – August 2011

Visual Impact Assessment – March 2012

Water Quality Assessment Report – March 2012

Initial Site Assessment – June 2012

Programmatic Section 4(f) Evaluation – Not yet approved