

# **DUMBARTON BRIDGE (#35-0038) SEISMIC RETROFIT PROJECT**

San Mateo and Alameda County, California  
04-SM 84, PM 28.5/30.15  
04-ALA 84, PM 0.0/1.2  
EA 1A5220



## **Initial Study with Mitigated Negative Declaration (CEQA) and Environmental Assessment (NEPA) with Findings of No Significant Impact (FONSI)**

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

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



**September 2009**



04-SM 84, PM 28.5/30.15  
04-ALA 84, PM 0.0/1.2  
EA 1A5220

Seismic Retrofit of the Dumbarton Bridge between the City of Fremont in Alameda County and the City of Menlo Park and East Palo Alto in San Mateo County, 04-SM 84, PM 28.5/30.15; 04-ALA 84, PM 0.0/1.2

**INITIAL STUDY with  
Mitigated Negative Declaration (CEQA)  
and  
ENVIRONMENTAL ASSESSMENT (NEPA)**

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

THE STATE OF CALIFORNIA  
Department of Transportation

9/2/09

Date of Approval

  
BIJAN SARTIPI  
District Director  
California Department of Transportation



**CALIFORNIA DEPARTMENT OF TRANSPORTATION  
FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

FOR

**Dumbarton Bridge Seismic Retrofit Project**

The California Department of Transportation (Caltrans) has determined the Proposed Project Alternative will have no significant impact on the human environment. This FONSI is based on the attached Dumbarton Bridge Seismic Retrofit Project Environmental Assessment (EA) which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

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

9/2/09

\_\_\_\_\_  
Date



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BIJAN SARTIPI  
District Director  
District 4

California Department of Transportation



**Mitigated Negative Declaration (CEQA)**  
Pursuant to: Division 13, Public Resources Code

***Project Description***

The California Department of Transportation (Department) and the Bay Area Toll Authority (BATA) propose to retrofit the Dumbarton Bridge to meet current seismic safety design standards. The Dumbarton Bridge is part of State Route (SR) 84 and connects the City of Fremont in Alameda County to the City of Menlo Park and East Palo Alto in San Mateo County.

***Determination***

The Department has prepared an Initial Study for this project, and following public review, has 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 farmlands/timberlands, growth, mineral resources, population and housing (relocation) or land use.

In addition, the proposed project would have no significant effect on cultural resources, energy, emergency services, air quality, geology and soils, growth, hazardous waste and materials, hydrology and floodplains, storm water runoff, traffic and transportation, noise, utilities, and visual/aesthetics resources.

The proposed project would have no significant adverse effect on biological resources because the proposed mitigation measures to restore and revegetate all temporary and permanent affected wetlands and other waters of the United States would reduce potential effects to less than significant.

  
\_\_\_\_\_  
BIJAN SARTIPI  
District Director  
District 4  
California Department of Transportation

9/2/09  
\_\_\_\_\_  
Date



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# Chapter 1- Proposed Project

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## 1.1. INTRODUCTION

The California Department of Transportation (Department) and the Bay Area Toll Authority (BATA) propose to retrofit the Dumbarton Bridge (#35-0038) to meet current seismic safety design standards. The Dumbarton Bridge is part of State Route (SR) 84 and connects the City of Fremont in Alameda County with the Cities of Menlo Park and East Palo Alto in San Mateo County. The project spans approximately 2.85 miles of SR 84 as it crosses the southern portion of San Francisco Bay (Figure 1.1).

The Dumbarton Bridge serves as a major east/west connector between I-880 in Alameda County and SR 101 in San Mateo County. The bridge is the southernmost of the toll bridges that span the San Francisco Bay in California. The eastern terminus of the bridge is in Fremont, and the western terminus is in Menlo Park. The bridge provides access for approximately 61,000 trips across the bridge between Alameda and San Mateo County each day.

## 1.2. BACKGROUND

The Dumbarton Bridge spans approximately 8,600 feet and connects the City of Fremont on the eastern side of San Francisco Bay to the borders of the Cities of Menlo Park and East Palo Alto on the western side (Figure 1). It accommodates three lanes of traffic in each direction and has a separate bicycle lane in each direction. The bridge has five main components: A Main Channel crossing at the middle of the bridge, an Approach Structure at each end of the main crossing, and a Trestle Structure at the end of each Approach Structure.

Construction of the Dumbarton Bridge was completed in 1982 and is the second bridge built at this location. The first was a drawbridge built in 1927 and was located south of the existing Dumbarton Bridge. The center drawbridge portion of the bridge was removed, leaving the two ends which became fishing piers, each extending approximately 2,000 feet into the Bay.

The western pier referred to as the “Ravenswood Pier” was closed indefinitely. The eastern pier referred to as the “Dumbarton Pier” is located within the Don Edwards San Francisco Bay National Wildlife Refuge (DENWR). A section of Marshlands Road which provides access to the Dumbarton fishing pier is usually closed to vehicles during the nesting season (typically from April 1 to August 31) for the threatened western snowy plover, when they nest and lay eggs near the road leading to the pier. The Dumbarton Pier is a popular fishing location from sunrise to sunset and is managed by the U. S. Department of Fish and Wildlife Service.

South of the old Dumbarton Pier is Southern Pacific's Dumbarton cutoff train bridge that was closed in 1982. This abandoned train bridge is identified in regional transportation plans as a future commuter rail. The Hetch Hetchy Aqueduct, which transports much of San Francisco's water supply from the Sierra Nevada Mountains, crosses San Francisco Bay just north of the old train bridge.

### **1.3 PURPOSE AND NEED**

#### **Purpose**

The purpose of the project is to address seismic safety deficiencies and current safety design standards and to provide a seismically upgraded vehicular crossing at the Dumbarton Bridge.

#### **Need**

The existing Dumbarton Bridge does not meet current roadway operational and safety design standards. Improvements are needed to provide safety for bridge users during a maximum credible earthquake (MCE), and to improve operational and safety design features to meet current standards to the greatest extent possible.

#### **Maximum Credible Earthquake**

The Maximum Credible Earthquake is the maximum earthquake predicted to affect a given location based on the known lengths of the active faults in the vicinity. On the basis of research conducted since the 1989 Loma Prieta earthquake, U. S. Geological Survey (USGS) and other scientists conclude that there is a 70 percent probability of at least one magnitude 6.7 or greater quake, capable of causing widespread damage, striking the San Francisco Bay region before 2030. Major quakes may occur in any part of this rapidly growing region. This finding emphasizes the urgency for all communities in the Bay region to continue preparing for earthquakes.

An MCE on either the San Andreas or Hayward fault would be expected to inflict far greater damage to the Dumbarton Bridge than was experienced in the 1989 Loma Prieta earthquake. This is due to the potential for the epicenter of an event on either the San Andreas or Hayward fault to be closer to the bridge, as well as an expected greater magnitude of the MCE compared to the Loma Prieta earthquake (magnitude 7.1). It is estimated that an MCE with an 8.0 magnitude would generate in excess of 30 times more energy than the Loma Prieta earthquake. The reopening of the existing Dumbarton Bridge to traffic following an MCE would likely be limited or probably precluded without the seismic safety improvements proposed for the Dumbarton Bridge Project.

## 1.4 PROJECT DESCRIPTION

The Dumbarton Bridge seismic retrofit activities would occur within the existing Caltrans right-of-way (ROW). The project proposal involves strengthening the slab bridge frames, columns, piles and bent caps. The scope of work for the main components of the bridge are identified below:

### Main Channel Crossing

The Main Channel Crossing spans from Piers 16 to 31 and is 3,150 feet long. Work at these piers consists of strengthening columns, column connections, footings, and cross frames. Work in the Main Channel also includes retrofitting hinges in specific spans and bent caps of the bridge and replacing existing deck joints with a special seismic joint system to accommodate seismic movements (Figure 1.2).

### Approach Structure

The proposed retrofit of specific piers on the west approach of the bridge and the east approach will occur in shallow water. Work includes strengthening column connections, pile caps, bent caps, footings and the superstructure (Figure 1.3). In order to strengthen the column connections to the pile caps and footings, temporary isolation of the bridge Piers will be necessary and can be achieved by placing sheet piles around each pier to form a cofferdam. Pumping water out of the contained area, will create a dry area around each column into which concrete collars will be added to strengthen the connections. The sheet piles for the cofferdams will be placed with a vibratory driver instead of a traditional impact pile driver to reduce noise.

Work on the Approach Structure and the Main Channel crossing components will be enabled by the construction of temporary trestles that parallel the existing Dumbarton Bridge. These will be built on steel pipe piles temporarily placed into the bay floor with vibratory hammers to reduce noise. The temporary trestles will provide platforms for other retrofit activities. The Ravenswood Pier would be removed as part of the western temporary trestle construction. The eastern temporary trestle would be built between the existing Dumbarton Pier and the bridge. The temporary trestles are expected to be built simultaneously on the eastern and western ends of the bridge.

### Trestle Structure

The trestle structures are the anchor for the bridge and are located on land. They are 600 feet long and composed of twenty 30-foot long spans. The project proposes to strengthen the existing slab bridge frames, replace the existing deck joints with a seismic joint system, and provide a concrete seat extender and new footing for the trestle structures (Figure 1.4). Part of this strengthening will come from the placement of 14 permanent steel pipe piles; 7 each on the northern and southern side of each of the two trestle structures

**Comment [dlh1]:** This was the first mention of these temporary trestles. It was confusing for the reader to have them listed under the "Trestle Structure" heading because they have ABSOLUTELY nothing to do with the on-land permanent trestles. So I moved this paragraph under the Approach Structure heading and then noted that these temp trestles will be built to enable work crews to get to these over-water portions of the bridge and do the work.

The Ravenswood Pier would be removed as part of the western temporary trestle construction. The eastern temporary trestle would be built between the existing Dumbarton Pier and the bridge. The temporary trestles are expected to be built simultaneously on the eastern and western ends of the bridge.

### **Temporary Barrier**

The project includes construction of a temporary barrier to prevent high-tide water at Mosley Tract from encroaching onto the northern frontage road on the western end of the bridge and the project area. The highest tides in the Bay inundate Moseley Tract to the immediate north of the project area and onto the roadway. The temporary barrier would reduce high-tide flooding during construction of the trestle portion of the project and allow the access road to remain open. The barrier has a concrete wall portion and an earthen berm portion. It also has a steel sheet pile that will be driven into the ground adjacent to the barrier to prevent seepage of water.

An underground drainage system, including pipes and a pumphouse, would be installed to pump rain water out of what would then be an enclosed area behind the wall. The outflow from this drainage system will be pumped onto a patch of riprap to be placed into the intertidal area of San Francisco Bay. After the project is constructed, all existing roads, parking lots, and SR 84 near and on the bridge would be repaved.

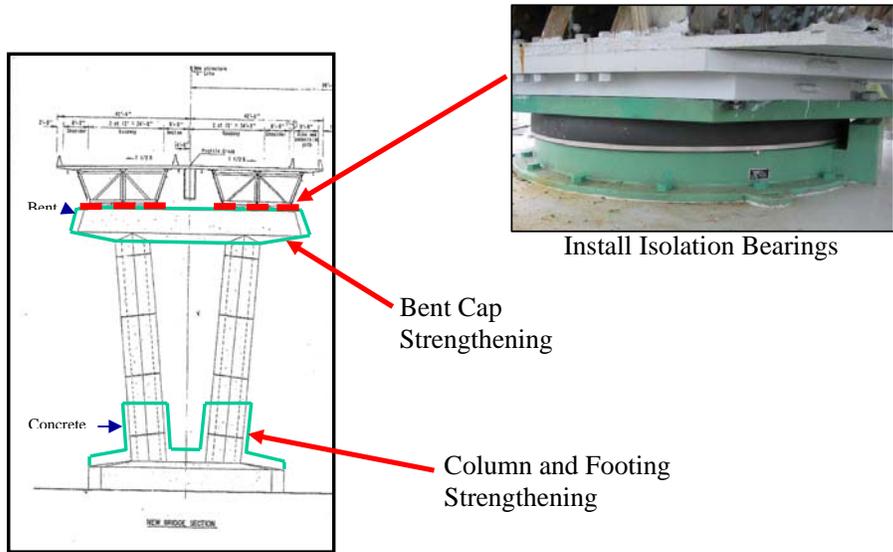
### **Project Schedule and Work Window**

The proposed seismic retrofit will begin in the summer of 2010 and continue for approximately three years. Pile-driving activities for construction of the temporary trestles (in-water) would begin in July 2010 and will be completed within a year.

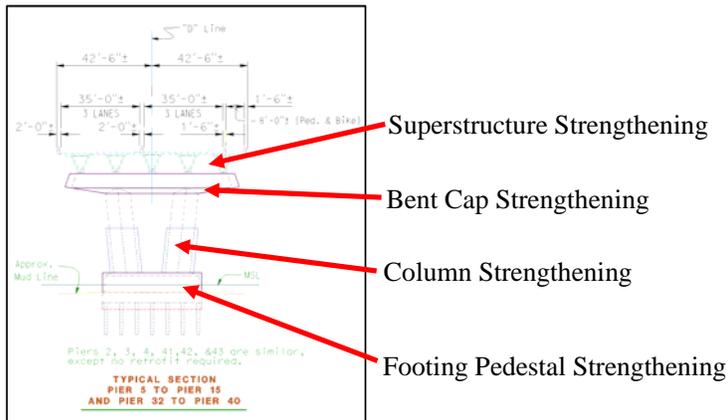
On-land pile driving to place the 48-inch permanent piles along the bridge trestle structures would occur over several weeks and would be timed to avoid impacts to nesting special-status bird species. The pile driving will be timed to avoid the March 1 to September 30 bird (multi-species) breeding season. Vibratory hammers will be used for in-water pile driving as opposed to impact hammers to reduce underwater noise impacts. In accordance with NMFS, the use of vibratory hammers would eliminate the need for a work window for seasonal avoidance of several species of fish.



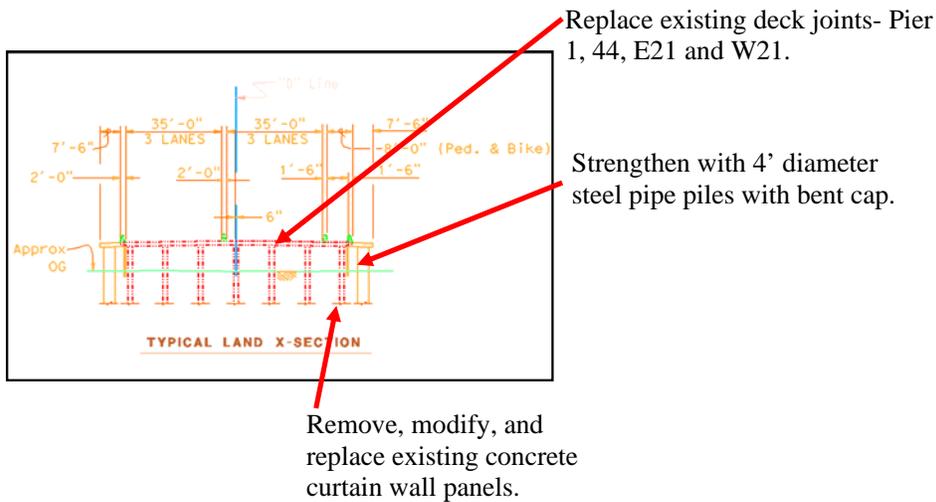
**Figure 1.2 Main Channel Crossing**



**Figure 1.3 East and West Approach**



**Figure 1.4 Trestle Retrofit**



## 1.5 PROJECT ALTERNATIVES

### Build Alternative

The Build Alternative would address the Dumbarton Bridge seismic and safety design deficiencies by retrofitting the structure. This would provide a safety vehicular crossing during a seismic event with a magnitude approaching the MCE. The proposed seismic retrofit project for the Dumbarton Bridge would meet current design and safety standards.

Earlier versions of the Build Alternative were revised to reduce its biological effects and other environmental impacts. The initial plans used impact pile drivers for the temporary trestles, but were replaced with vibratory drivers to reduce noise-related impacts on fish and marine mammals. Seasonal avoidance of certain endangered or threatened bird species was incorporated to reduce disturbance-related impacts.

### No-Build Alternative

The No-Build Alternative would retain the existing Dumbarton Bridge, but it would not meet the project purpose and need criteria. The No-Build Alternative would not provide the seismic safety and design standards for a MCE for the existing bridge.

## **1.6 PROJECT COST AND FUNDING SOURCE**

The preliminary cost for the Dumbarton Bridge Seismic Retrofit Project is estimated at \$361 million. The project is programmed for the fiscal year 2009/2010 under BATA, Regional Measure 1 Toll Bridge Funds.

## **1.7 PERMITS AND APPROVAL NEEDED**

The following permits, reviews, and approvals would be required for project construction:

- Section 401 Water Quality Certification from the Regional Water Quality Control Board;
- Section 404 Nationwide Permit from the U. S. Army Corps of Engineers;
- Bay Area Conservation and Development Commission (BCDC) permit;
- National Oceanic and Atmospheric Administration (NOAA)'s National Marine Fisheries Service (NMFS): Marine Mammal Protection Act Incidental Harassment Agreement (IHA);
- California Department of Fish and Game (CDFG) Consistency Determination for species that are dually listed under the federal and California Endangered Species Acts (CESA) and under the California law; and
- Biological Opinions (BO) with a Section 7 incidental take permit from the U. S. Fish and Wildlife Service (USFWS).



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

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As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered, but no potential for adverse impacts were identified.

- Air Quality
- Farmlands / Timberlands
- Hydrology and Floodplain
- Community Impacts
- Climate Change
- Growth
- Visual / Aesthetics
- Land Use and Planning
- Cultural Resources
- Mineral Resources
- Noise
- Paleontology
- Public Utilities and Services
- Recreation

The remainder of Chapter 2 includes environmental issues that require further consideration or discussion.

### No Adverse Impact Determination Summary

**Air Quality:** The project is a seismic safety retrofit project and not a capacity increasing roadway project, which could affect air quality.

**Farmlands / Timberlands:** The project does not affect farmland or timberlands.

**Hydrology and Floodplain:** The project is not located within a 100-year floodplain.

**Community Impacts:** The project will not affect community character and cohesion nor change public access, divide neighborhoods, separate residences from community facilities, change the quality of life or increase urbanization or isolation. The project will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12808 regarding environmental justice. The project does not require the relocation of buildings.

**Climate Change:** The project does not increase capacity or alter travel patterns. Consequently, there will be no adverse effects on the climate.

**Growth:** This project is a seismic safety retrofit for the Dumbarton Bridge and the proposed improvements do not alter or affect growth within the project vicinity.

**Visual / Aesthetics:** The project could cause some subtle and recognizable visual changes on the bridge. These changes will not degrade the appearance of the bridge nor create unsightly conditions.

**Land Use and Planning:** This seismic retrofit project does not affect land use or local planning policies.

**Mineral Resources:** There are no mineral resource operations within the project vicinity.

**Noise:** The project is not likely to result in traffic noise impacts. There may be noise effects associated with construction activities and are discussed in the biological section and the construction impacts section.

**Paleontology:** There are no paleontological resources within the project area.

**Recreation:** The project will not affect any major designated recreational facilities.

**Traffic/Transportation:** The project will not cause an increase in traffic that is substantial in relation to the traffic load and capacity of the existing bridge and SR 84 highway. It does not conflict with plans, or programs for bicycling or other alternative transportation means.

**Utilities/ Emergency Services:** Relocation of utilities will be required during the construction of the project. The retrofit design requires the existing utilities located on the bridge to be elevated along with the construction of the bridge. The relocation of utilities on land will be restored to pre-existing conditions or better after construction. Standard Caltrans procedures for coordinating temporary service disruptions during construction will be implemented for this project.

## **2.1 HUMAN ENVIRONMENT**

### **2.1.1 TRAFFIC AND TRANSPORTATION / PEDESTRIAN AND BICYCLE FACILITIES**

#### **Regulatory Setting**

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

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

### **Affected Environment**

The bridge will be closed on certain scheduled weekends to continue uninterrupted construction on the bridge. During this time, bicycle and pedestrian access on the bridge will be closed. Local streets and arterials will also be affected during construction.

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

A shuttle will be provided to reroute cyclist and pedestrians around the bridge when the bridge is scheduled to be closed. The existing bicycle and pedestrian access will remain intact post-construction. A comprehensive Transportation Management Plan (TMP) will be prepared to maintain circulation on the bridge and on local streets and arterials during construction on the bridge.

## **2.1.2 CULTURAL RESOURCES**

### **Regulatory Setting**

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include: The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U. S. Department of Transportation Act, which regulates the “use” of land from historic properties.

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

### **Affected Environment**

A review of associated project files, maps, and records from previous investigations housed at District 4 indicates that the project area is not sensitive for archaeological resources.

Prior to the finalization of the project footprint, a project study area was used for research and survey efforts. This study area was larger than what was later finalized as the Area of Potential Effect (APE). In accordance with the PA, the APE was established in consultation with Caltrans Office of Cultural Resource Studies' Professionally Qualified Staff (PQS). Caltrans staff conducted an architectural field reconnaissance on May 22, 2008 and June 25, 2008. The archaeological APE encompasses all proposed areas of direct impact, including existing and proposed right-of-way, staging areas, and easements. The Architectural APE includes the area bound by the Archaeological APE, as well as any other built properties immediately adjacent to the project in order to take into account the potential for indirect effects.

Caltrans Cultural Resources Professionally Qualified Staff (PQS) screened this undertaking, concluding that the project has no potential to affect historic properties. All Section 106 requirements were fulfilled by complying with the Caltrans Section 106 PA, 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 Program in California.*

The project APE contains the remains of the 1927 Dumbarton Bridge. The bridge was found to be exempt from historic evaluation due to the fragmentation of the structure as part of an abandoned bridge. The bridge was partially demolished and the Ravenswood Pier and Dumbarton Pier are the only remnants of the 1927 bridge infrastructure. The Ravenswood Pier has been permanently closed since 1994.

## **Environmental Consequences**

No prehistoric or historic archaeological resources were identified within the project boundaries. However, it may be possible that buried archaeological deposits exist. If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be halted and 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 PRC 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 the Office Chief of Cultural Resource Studies at Caltrans, to 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.

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

No avoidance, minimization, or mitigation is required for historic properties. The results of the archival review and the existing modified and disturbed environmental context of the project setting provided the determination that the project will have no effect on historic properties.

## **2.2 PHYSICAL ENVIRONMENT**

### **2.2.1 WATER QUALITY AND STORM WATER RUNOFF**

#### **Regulatory Setting**

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (Corps) to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the Statewide permit, and projects performed by other entities on Department right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects over 1 acre require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. Department activities less than 1 acre require a Water Pollution Control Program.

### **Affected Environment**

A Water Quality Report and Storm Water Data Report were completed for this project in April 2009. The project is within the San Francisco Bay Watershed to the north and the Coyote Watershed to the south. The northwest portion of the project is in the San Mateo Bayside Drainage Basin and the northeast portion of the project is within the East Bay Cities Drainage Basin. Similarly, the southwest portion of the project is within the Palo Alto Drainage Basin and the southeast portion of the project is within the Fremont Bayside Drainage Basin.

Coyote Creek and the Guadalupe River are two of the many creeks and rivers that feed into the southern portion of the San Francisco Bay. Storm water from the eastern and western termini of the bridge currently discharges into the bay, which eventually flows underneath the Golden Gate Bridge and into the Pacific Ocean.

### **Environmental Consequences**

There are three primary types of water quality-related environmental impacts from this project: (1) direct changes to San Francisco Bay, (2) indirect impacts from changes in storm water runoff, and (3) groundwater impacts. In addition to the water quality impacts, these may have potential effects on the biological resources, which are discussed in Section 2.3.

San Francisco Bay could be directly affected by various in-water project activities. These activities include driving temporary piles, driving sheet piles, dewatering the cofferdams, removing the Ravenswood Pier, and removing the temporary trestles. All of these will briefly increase the turbidity of the water. However, the water of San Francisco Bay is already quite turbid and shallow, and these changes would not be substantially adverse.

The second effect is the potential change in the quality of the storm water runoff from the project area.

The excavation of soil for construction of the High Tide Barrier and the low wall may affect storm water, which may also occur with the increase of impervious surfaces from the repavement of the existing roads, parking lots, and the east or west approach of the bridge.

The third effect would be changes to groundwater. Groundwater will also be encountered during excavation for the High Tide Barrier and the low wall and the main concern or issue is anticipated to be sediment.

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

Construction Site BMPs, Permanent Design Pollution Prevention BMPs, Permanent Treatment BMPs, and Maintenance BMPs have been prepared as avoidance and minimization measures to maintain water quality standards within the project area. Permanent Treatment BMPs will be further investigated during the design phase. A Storm Water Pollution Prevention Program (SWPPP) will document the water pollution control practices. Paved areas will be kept to a minimum to attenuate peak discharges and reduce water quality impacts.

An underground drainage system, including pipes and a pumphouse, will be installed to pump rain water out of what will be the enclosed area behind the low wall.

Groundwater will be tested for potential contamination as part of the hazardous waste site investigation. Proper handling and disposal of the ground water will be based on the levels of contaminants identified in the Site Investigation Report. Temporary containment systems shall be proposed in combination with other sediment removal measures to reduce sediment loads to acceptable thresholds for discharge into the Bay. Groundwater that is unsuitable for discharge into the Bay will be hauled offsite for disposal.

## **2.2.2 GEOLOGY / SOILS / SEISMIC / TOPOGRAPHY**

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

### **Affected Environment**

A Geotechnical Site Characterization Report was prepared for this project in November 2008. The Dumbarton Bridge spans the southern San Francisco Bay in the central Coast Ranges. It lies within the southern San Francisco Bay-Santa Clara Valley, which is a relatively shallow structural valley bound by the Santa Cruz Mountains to the west and the East Bay Hills to the east.

The sediment underlying the bridge is part of the late Pleistocene to Holocene deposition and represents the typical San Francisco Bay geology. Based on current investigations, the principal

strata include: Fill or silty clay and silty sand underlying the Trestles at both ends of the bridge; Young Bay Mud (YBM) or marine clay generally found underneath both Approaches and Trestles; Posey sand or river sand throughout the bridge alignment; San Antonio Formation (SAF), a stiff clay from elevation -40 feet to -80 feet; Old Bay Mud (OBM) very stiff to hard marine clay at -70 feet to -140 feet elevation; Alameda Formation, a very dense sand and gravel and very hard clay found below -190 elevation; and Franciscan Formation, sedimentary bedrock found at an elevation of -600 feet.

The soils within the project area have a high water table, low permeability, and are either ponded or flooded during the rainy season. The western sections of the project area contain Novato Clay. The Novato series is found in tidal marshes along the margins of the bay and are poorly drained soils. The eastern section of the project area contains Reyes Clay. The Reyes series is silty clay protected by levees causing flooding during periods of severe storms and high tides. The Reyes series are poorly drained soils.

The San Francisco Bay Area is one of the more seismically active regions of California. There are seven active faults (San Andreas, Hayward, Rodgers Creek, Calaveras, Green Valley, Concord, and Franklin) within 35 miles of the project area. These faults have generated large historical earthquakes resulting in major surface disturbances. The two major faults near the project area are the San Andreas fault and the Hayward fault. The San Andreas fault is approximately 10 miles west of the project and the Hayward fault is about eight miles to the east. Major earthquakes have occurred on both faults.

### **Environmental Consequences**

During a significant seismic event, the project area would be exposed to hazards such as fault rupture, strong ground shaking, subsidence (a gradual shrinking to a lower level), and liquefaction. The Posey sand stratum, which is located throughout the bridge alignment, may be susceptible to liquefaction during a seismic event.

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

All project-related construction activities will be in accordance with the California Building Code, which requires a structure to be built to withstand an 8.0 MCE. Further, project design and construction will comply with measures set forth by the California Division of Mines and Geology Guidelines for Evaluating and Mitigating Seismic Hazards.

## **2.2.3 HAZARDOUS WASTE / MATERIALS**

### **Regulatory Setting**

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

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

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

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

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

### **Affected Environment**

The project area includes drainage outfall from multiple commercial and industrial communities and historic mining sites. The south bay is considered a sediment trap that receives sediment from the central bay. Due to these sources, it is possible that the sediment near the bridge contains pollutants.

The Ravenswood Pier is a concrete deck supported by concrete bents and metal stringers. Potential hazardous materials at the pier include lead paint, asbestos bearings and joint material, contaminated debris (inorganic and organic pollutants), and bird guano.

The upland portions of the project are built on fill which allow a shift of the alignment of the highway north of the old roadway. Based on soil test results along portions of the new alignment, the imported fill does not appear to contain contaminants.

### **Environmental Consequences**

Sediment from the Bay will be excavated during the construction of concrete bolsters on specific piers. Inappropriate disposal of the sediment could result in contamination at the disposal site.

During the Ravenswood Pier demolition and construction of the temporary work trestle, material containing asbestos, deteriorated lead paint, and other debris could be released into the environment.

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

There are no known sources of contamination in the project area. Sediment samples will be collected and analyzed to determine appropriate and safe work practices and disposal sites for excavated bay sediment. The material will be disposed at a licensed waste management facility.

A pre-demolition inspection of Ravenswood Pier will be performed to determine if hazardous materials are present. When required by law, hazardous material will be removed from the structure before demolition. Lead paint disturbed while dismantling the structure will be contained for appropriate disposal; any hazardous wastes will be disposed in conformance with federal, state, and local laws.

## **2.3 BIOLOGICAL ENVIRONMENT**

This section of the environmental document addresses concerns regarding plant and animal species, special-status species, marine mammals regulated habitats and wetlands and other waters of the United States as they relate to the proposed project. This project may affect the federally, listed as, threatened green sturgeon, the Central California Coast (CCC) steelhead and the western snowy plover. Critical habitats for the green sturgeon and the CCC steelhead may also be affected. The federally threatened Point Reyes bird's beak is listed as rare by the California Native Plant Society (CNPS) and has the potential to occur within the project study area.

The biological resources discussed in this IS/EA are based on the Natural Environment Study (NES), March 2009, which was prepared for the proposed Dumbarton Bridge Seismic Retrofit Project.

## **2.3.1 NATURAL COMMUNITIES**

### **Regulatory Setting**

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

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section 2.3.5 and wetlands and other waters are discussed in section 2.3.2.

### **Affected Environment**

The project study area includes both upland and wetland vegetation communities. The study area also includes roads and other developed areas, as well as aquatic habitat in the waters of San Francisco Bay and developed salt ponds.

### ***Upland Communities***

The upland vegetation community within the project study area is primarily ruderal. Ruderal communities are highly disturbed areas that host opportunistic weedy plants. These areas line the parking lots and roadsides and were created using fill from past construction.

### ***Wetland Communities***

The wetland plant communities include pickleweed, iceplant and both native and invasive species of cordgrass. Pickleweed and iceplant are found in marsh communities and along the shores of the Bay and on the levees of the salt ponds. The western shoreline of the bridge and mudflats around southern San Francisco Bay are dominated by smooth cordgrass and its hybrid.

### ***Aquatic Habitats***

The piles of the Dumbarton Bridge, Ravenswood Pier, and Dumbarton Pier provide a limited amount of hard substrate habitat within the project area, for including barnacles, tunicates, hydroids and bryozoans. The softer and more common mud substrate habitat of the bay floor supports bivalves which is a sessile invertebrate. These organisms are much more common in the north portions of the Bay that are dominated by rocky substrate.

### **Salt Ponds**

Privately owned salt ponds are within and adjacent to the project study area. The ponds are used to isolate and evaporate water, leaving the salt for commercial collection. These salt ponds provide habitat for wetland plants.

### **Environmental Consequences**

Upland and wetland vegetation communities, roads and other developed areas, as well as aquatic habitat in the waters of San Francisco Bay and developed salt ponds could be temporarily affected by construction activities from the proposed project. The small amount of upland and wetland vegetation would be temporarily disturbed and then restored. In the bay, there would be short-term and highly localized increases in turbidity and temporary losses of patches of soft substrate (mud) habitat where the temporary trestles and cofferdams would be placed. These range from just a few square feet to several hundred square feet, but these areas are not contiguous but are instead spread out over a large area.

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

The applicable General Avoidance and Minimization Measures listed in Appendix C will be implemented for the natural communities within the project study area.

## **2.3.2 WETLANDS AND OTHER WATERS OF THE U. S.**

### **Regulatory Setting**

Wetlands and other waters are protected under several laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, 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 subject to 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 no discharge of dredged or fill material can 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. U.S. Army Corps of Engineers (USACE) manages the Section 404 permit program with oversight by the U. S. Environmental Protection Agency (EPA).

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

At the state level, wetlands and waters are regulated primarily by the Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission or the San Francisco Bay Conservation and Development Commission may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCB were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. (Please see the Water Quality section for additional details.)

### **Affected Environment**

There is .477 acre of potentially jurisdictional wetlands and .460 acre of other waters of the U. S. within the project study area of the San Francisco Bay.

### **Environmental Consequences**

Piles driven into a sparse patch of emergent pickleweed vegetation will result in permanent impacts to approximately 450 square feet (0.01 acre) of what is technically a wetland. The remainder of the wetlands within the construction area will incur temporary impacts from construction vehicles and equipment access.

Other waters of the U. S. in the intertidal portions of San Francisco Bay would be temporarily and permanently affected by the placement of riprap to dissipate and disperse the drainage. This riprap is 500 square feet (0.01 acre) of permanent impact and is permanent fill in the San Francisco Bay, but is not expected to degrade the function of the local ecosystem.

The proposed flood barrier would be placed on the shoulder of the road, and would retain the highest tides that flood the frontage road. This would result in a small amount of permanent fill that is considered other waters of the the U. S.

Many of the Dumbarton Bridge columns and piers will be strengthened by adding concrete collars. This would add 0.05 acre of fill to the San Francisco Bay. The installation of the construction trestles would result in the temporary disturbance of the bay floor and brief periods of sediment suspension.

The cofferdams and the footprint of the temporary piles to support the temporary trestles would collectively constitute 0.20 acre of temporary impacts on San Francisco Bay, a jurisdictional other water of the U.S.

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

Much of the potentially jurisdictional wetlands and other waters of the U. S. will not be directly affected by construction. Environmentally sensitive areas (ESAs) would be established to minimize indirect effects to wetland areas and other waters of the U. S.

The General Avoidance and Minimization Measures listed in Appendix C will be implemented during construction. The measures most applicable to wetlands and other waters include soil erosion/sediment control, restrictions on equipment placement, water quality, fill materials, excavated material, riprap and revegetation.

### **Compensatory Mitigation**

Compensatory Mitigation is proposed for the restoration and revegetation of all permanent affected wetlands under the jurisdiction of the USACE as well as the BCDC and the RWQCB.

The RWQCB has required a 2:1 mitigation ratio, and the USACE requires a 1:1 ratio. Since the total permanently impacted area is 0.07 acre, the required mitigation area is 0.14 acre, of which 0.02 acre must be wetland. The removal of Ravenswood Pier and the berm that supports its anchorage provides 0.15 acre of suitable restoration habitat that Caltrans will use to provide at least 0.02 acre of wetland and 0.12 acre of tidal mudflats. This will satisfy all required mitigation.

## **2.3.3 PLANT SPECIES**

### **Regulatory Setting**

The U. S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of

regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section 2.3.5 in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

The federally threatened Point Reyes bird's beak is listed as fairly endangered by the California Native Plant Society (CNPS) and has the potential to occur within the project study area.

### **Affected Environment**

#### ***Point Reyes Bird's Beak***

Point Reyes bird's beak is an annual herb that flowers from June through October. This plant is listed by the CNPS as fairly endangered in California and rare, threatened, or endangered elsewhere. This plant is found in coastal salt marshes. No focused surveys within the project area have been conducted to date.

### **Environmental Consequences**

Little or no disturbance of suitable Point Reyes bird's beak habitat is anticipated within the project area.

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

Preconstruction focused plant surveys will be conducted in the project study area. If the Point Reyes Bird's Peak is detected during focused preconstruction surveys, further avoidance and minimization methods will be determined in coordination with CDFG.

## 2.3.4 ANIMAL SPECIES

### Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U. S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administrations (NOAA) (commonly known as the National Marine Fisheries Service ((NMFS) and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.5. All other special-status animal species are discussed below, including CDFG fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act (FWCA)
- Marine Mammal Protection Act (MMPA)
- Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA)

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

This section includes discussions of individual species protected under these regulations and of essential fish habitat (EFH), which is protected under the jurisdiction of NMFS through the MSFCMA.

### State Bird Species

Four state special-status bird species have the potential to occur within the project study area:

- Alameda song sparrow
- Northern harrier
- San Francisco (salt marsh)- common yellowthroat
- Black skimmer

### Affected Environment

The area potentially affected is suitable nesting and foraging habitat for these species, and includes the levees, grasses, and marshes in and around the project area. While the project would

have little temporary or permanent impact on the physical composition of these habitats, there would be construction noise during brief periods of pile driving. No focused surveys were conducted for the state bird species listed above. During field visits by a qualified biologist, there were no species observed within the project study area.

### **Environmental Consequences**

If a special status-bird species is present within the project study area, the species could incur direct or indirect impacts due to pile-driving noise and disturbance. These effects are expected to primarily be disturbance and disruption of nesting, but little chance of physical injury or mortality.

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

Implementation of biological monitoring, seasonal avoidance, barrier fences, and revegetation along with the General Avoidance and Minimization Measures (Appendix C) will minimize impacts to state listed bird species within the project vicinity and study area.

### **Federal and State Mammal Species**

Three federal and state special-status mammal species have the potential to occur within the project study area:

- Salt marsh wandering shrew
- Pacific harbor seal
- California sea lion

No surveys were conducted for these species. The Pacific harbor seal and California sea lion is known to be present based on observations and documentation in several databases. Southern San Francisco Bay, including the project study area, is not a regular or commonly used foraging area for gray whales, thus project construction activities are not expected to affect foraging habitat for whales within the bay.

### **Affected Environment**

#### ***Salt Marsh Wandering Shrew***

The Salt marsh wandering shrew is a state species of concern. Its presence was inferred after a review of historical and contemporary occurrence records (using the databases described in the Natural Environment Study) and an evaluation of the habitat requirements. No focused surveys were conducted for this species was not observed during field visits. The areas on either side of the western bridge abutment within the project study area may contain suitable habitat for the salt marsh wandering shrews.

## **Environmental Consequences**

The project could have direct or indirect impacts due to pile-driving noise and disturbance. Noise could cause temporary or permanent hearing loss of individuals while the permanent piles are being driven. Direct physical injury (e.g. from trampling) is possible but unlikely given the mouse-proof barriers and other avoidance and minimization measures described below.

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

Implementation of the temporary mouse-proof barrier (MPB) [see section 2.3.5], construction monitoring, and revegetation along with the General Avoidance and Minimization Measures (Appendix C) will reduce potential negative effects to the salt marsh wandering shrew populations and habitat, as well as the salt marsh harvest mouse within the project study area.

## **Affected Environment**

The potentially affected environments are the same for the Pacific harbor seal and the California sea lion.

### ***Pacific Harbor Seal***

The Pacific harbor seal is protected under the federal Marine Mammal Protection Act (MMPA). It is one of five subspecies of *Phoca vitulina*, the common harbor seal. The species is found in near-shore coastal and estuarine habitats from Baja California to Alaska, and from Russia to Japan. They generally do not migrate annually but instead display year-round site fidelity, although they have been known to swim several hundred miles to find food or suitable habitat. Seals within the bay engage in limited seasonal movements associated with foraging and breeding activities, and seals in southern San Francisco Bay may make daily northward foraging migrations.

A number of studies have estimated marine mammal numbers in the San Francisco Bay. A study conducted before and during seismic retrofit work on the Richmond–San Rafael Bridge (RSRB) in northern San Francisco Bay included extensive monitoring of marine mammals at points throughout the bay, including its central and southern portions. Although the study focused on seals, all other observation of marine mammals were recorded. Monitoring occurred from May 1998 to September 2005. The RSRB study concluded that at least 500 seals populate San Francisco Bay. This estimate agrees closely with previous seal counts in the bay, which ranged from 524 to 641 seals from 1987 to 1999.

Although generally solitary in the water, harbor seals come ashore at communal sites known as “haul-outs,” which are used for resting, thermoregulation, birthing, and nursing pups. Haul-out sites are relatively consistent from year to year, and females have been recorded returning to their own natal haul-out when breeding. Bay haul-out sites that support some of the largest concentrations of seals include Mowry Slough south of Dumbarton Bridge (approximately 4 miles south of the project site), Corte Madera Marsh, Castro Rocks, and Yerba Buena Island in

the Central Bay (all approximately 25 to 35 miles north of the project site). The seal haul-out site closest to the project area is at Newark Slough, approximately 2.7 miles south of the project site, near the junction of Newark Slough and Plummer Creek. Although the Newark Slough haul-out is a known pupping site, relatively few harbor seals use the site. Both Newark and Mowry sloughs are used by seals continuously year-round but have significantly higher numbers of seals during pupping and molting seasons (spring and summer).

### **California Sea Lion**

California sea lions are protected under the MMPA. They are endemic to the northern Pacific Ocean, breeding in southern California and along the Channel Islands during the spring. After the breeding season, males migrate up the Pacific Coast and enter the bay. They are extremely intelligent and social. Group hunting is common, and they may cooperate with other species such as dolphins when hunting large schools of fish. RSRB monitors sighted at least 90 California sea lions in the North Bay and at least 57 in the Central Bay. Sea lions are year-round residents of the Bay, though their total numbers fluctuate seasonally. Sea lions haul out primarily at Pier 39, near Fisherman's Wharf in San Francisco. An estimated 1,105 animals were observed in September 2001 at Pier 39, and winter numbers are generally over 500 animals. In the bay, they feed primarily on Pacific herring, northern anchovy, and sardines. In San Francisco Bay, sea lions haul out primarily on floating docks at Pier 39 in the Fisherman's Wharf area of San Francisco. In addition to the Pier 39 haul-out, California sea lions haul out on buoys and similar structures throughout the San Francisco Bay but only rarely forage in its southern reaches.

### **Environmental Consequences**

As many as 300 Pacific harbor seals may travel daily under the Dumbarton Bridge and may be affected by construction activities on the bridge. The number of seals affected by this project will vary seasonally. No permanent impacts to habitat are proposed or would occur as a result of this project. However, a temporary, small-scale loss of foraging habitat may occur under the Dumbarton Bridge during pile-driving activities. Sound energy released during pile-driving would have the potential to disturb fish causing them to leave the area. As a result, the affected area could reduce temporary foraging value to harbor seals. Conversely, very few California sea lions use southern San Francisco Bay for foraging, and no known sea lion haul-outs exist in the area.

Impacts to the Pacific harbor seals and California sea lions and their habitats near the Dumbarton Bridge may occur due to the noise from placement of trestles, piles, and cofferdams into the water. NMFS has established regulatory noise level limits that affect marine mammals enough to warrant an Incidental Harassment Authorization (IHA). These limits are Level A harassment, which causes injury, and Level B harassment, which causes disturbance.

In anticipation of the need for an IHA from NMFS extensive assessment of noise was conducted. The results of the analysis are presented in the NES and summarized in Appendix F. The other

potential impacts (water quality or physical habitat disturbance) on marine mammals are not expected to be significant enough to adversely affect these species.

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

Implementation of a Marine Mammal Monitoring Program (MMMP) will be developed in consultation with NMFS before construction. Use of a vibratory hammer will minimize the effects of noise on marine mammals by reducing “in-water” sound levels where harm or injury could occur. Boating exclusion zones would be established 800 feet outside of all known marine mammal haul-outs. Personnel on project-related watercraft would be required to receive marine mammal training. General Avoidance and Minimization Measures (Appendix C) will also be implemented to avoid adverse effects to marine mammals within the project study area.

### **Affected Environment**

#### ***Essential Fish Habitat***

The southern portion of San Francisco Bay is an Essential Fish Habitat (EFH) under the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) and serves as habitat for 14 species (see project NES, March 2009) of commercially important fish and sharks. These are federally managed under two fisheries management plans (FMP): the Pacific Groundfish FMP and the Coastal Pelagic FMP. This portion of the Bay is an EFH for the species of coastal pelagic, Pacific groundfish, and Chinook salmon.

### **Environmental Consequences**

Removal of the Ravenswood Pier will eliminate a human-made structure that serves as potential cover for species within this EFH. All species of the Coastal Pelagic FMP and most species of the Pacific Groundfish FMP that have designated EFH in the southern San Francisco Bay are not cover-dependent species. The removal of cover is not expected to have an adverse effect on habitat for most of these fish. Lingcod, brown rockfish, calico rockfish, and cabezon are the exceptions, as these are cover-dependent species that may rely on the pier for habitat.

Pile-driving activities have the potential to affect habitat by increased turbidity and noise. It is expected that the avoidance behavior associated with pile-driving and other project activities will not adversely affect the critical habitat in the study area to function as a migration corridor.

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

BMPs will be implemented to minimize the potential of hazardous materials spills, prevent the entry of debris into the waters of the bay, and minimize sedimentation and erosion into the bay. All piles driven into the bay will be of materials that will not leach hazardous chemicals into the water. The General Avoidance and Minimization Measures (Appendix C) will be implemented as needed.

## **Affected Environment**

### **Birds**

The migratory birds in the project area are protected by a single regulation, the Migratory Bird Treaty Act (MBTA). While there are only a few different marine mammal species, with discrete ecological requirements, many species of migratory birds may inhabit the area and would typically use similar resources. Thus, migratory birds were grouped into two categories: (1) those that use the project area only for foraging and (2) those that nest in and adjacent to the project area. Migratory birds that fall into the “foragers” category are migratory shorebirds and waterfowl that may stop by during their migrations between the northern and southern hemisphere or may overwinter in the Bay Area annually. Hundreds of species of migratory shorebirds and waterfowl have been documented in the San Francisco Bay Area regularly. Cliff swallows, barn swallows, double crested cormorants, and several migratory shorebirds and waterfowl that breed in the area would be considered nesting birds and are covered under the MBTA.

During site surveys, several cliff swallow and/or barn swallow nests were observed along the side of both the eastern and western trestle structures. Double-crested cormorants have been observed using the electricity transmission towers alongside the bridge as rookery (nesting) sites. Foraging shorebirds use mudflats and salt marshes within the project study area, while waterfowl, both dabbling and diving ducks, may be present in any of the number of salt ponds adjacent to the bridge.

### **Environmental Consequences**

Direct impacts to migratory birds resulting in a “take” of individuals would be avoided. Potential indirect impacts to migratory birds would occur as a result of noise and would vary depending on the species.

Impacts to foraging migratory birds would be limited to “behavioral avoidance” of suitable foraging habitat during pile-driving activities. Other potential impacts to birds include masking of communication and permanent or temporary loss of hearing. These impacts would be unlikely with the avoidance and minimization measures.

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

Implementation of biological monitoring, preconstruction surveys, seasonal avoidance and exclusion techniques along with the General Avoidance and Minimization Measures (Appendix C) will ensure the project avoids or minimizes potential negative effects to migratory birds and habitat within and adjacent to the project study area.

## 2.3.5 THREATENED AND ENDANGERED SPECIES

### Regulatory Setting

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

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (CDFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code. In addition to being listed as either endangered or threatened, a species may receive an additional level of protection identified under CESA, as “fully protected.” A state fully protected species is one for which an incidental take permit may not be issued. A proposed project must entirely avoid take of those species “fully protected” under CESA.

There are seven federally listed endangered or threatened animal species within the proposed Dumbarton Bridge Retrofit Project area. Under the jurisdiction of the USFWS, the species are the salt marsh harvest mouse, the California least tern, the California brown pelican, the California clapper rail, and the Western snowy plover. Under the jurisdiction of the NMFS, the species are the green sturgeon and the Central California Coast (CCC) steelhead. In addition, critical habitat has been designated for the CCC steelhead and proposed for the green sturgeon. Some species are

dually listed under both the federal and state laws: the California brown pelican, California clapper rail, the California least tern, and the salt marsh harvest mouse. For these species, a Consistency Determination will be required from the CDFG. The peregrine falcon (fully protected), the white-tailed kite (fully protected), and the California black rail (threatened and fully protected) are listed under the California Environmental Species Act, but not the federal ESA.

### **Federal and State Bird Species**

Three federal and four state special-status bird species have the potential to occur within the project study area.

### **Federal Bird Species**

#### **Affected Environment**

##### ***Western Snowy Plover***

The western snowy plover was listed as a threatened species by the USFWS in April 1993. No critical habitat has been designated for the western snowy plover. A reconnaissance-level habitat assessment was conducted along both ends of the bridge in July 2008. Although no western snowy plovers were seen on either end, the species is known to nest in the Don Edwards San Francisco Bay National Wildlife Refuge (DENWR), located less than 0.1 mile from the eastern end of the project site as well as in the salt pond at Ravenswood Marsh and Dumbarton Marsh, less than 1 mile from the proposed project vicinity.

In the past, nesting within DENWR was documented in highly disturbed sites along the sides of Marshland Road, the main access road into the project area on the southeastern end. The access road on the northeastern end must also be considered potential nesting habitat, although ample habitat exists along the adjacent levees.

##### ***California Clapper Rail***

The California clapper rail was listed as an endangered species by the USFWS in October 1970. Several documented occurrences of this species are known from the immediate vicinity of the project study area. The presence of suitable nesting and foraging habitat adjacent to the project study area suggests that California clapper rail may be present near the project area.

##### ***California Least Tern***

##### ***California Brown Pelican***

There are no known nesting sites for the California brown pelican and the California least tern within the project study area. Both species were listed by USFWS as endangered in 1970. The brown pelican was recently proposed by the USFWS for delisting because its population is

growing so rapidly in so many places. These bird species may occur in the vicinity and the project study area during the breeding season.

### **Environmental Consequences**

The project could have direct or indirect impacts on the federally listed bird species due to pile-driving noise and disturbance. The three main categories of noise impacts that can affect birds are behavioral changes, damage to hearing, and masking of communication signals. Masking is of greatest concern for these species because suitable nesting and foraging habitats are present within or adjacent to the project study area. Suitable nesting or forage habitats are well within auditory range of the construction noise. The disturbance caused by the vehicle noise and exclusionary fencing, including temporary loss of habitat, is an adverse effect.

California clapper rail: No direct impact to suitable foraging habitat for the California clapper rail through the destruction and/or alteration of pickleweed habitat is anticipated. On-land construction could result in direct harm or injury to individuals. Potential indirect impacts to the species include noise caused by construction, which could disturb nesting birds nearby.

California brown pelican: Noise from pile-driving may lead to behavioral avoidance of suitable foraging habitat for the California brown pelican; however, ample foraging habitat would not be affected by noise in areas adjacent to the project area.

California least tern: The proposed project could result in temporary impacts to suitable foraging habitat for the species over open water habitat as a result of noise from construction. However, foraging habitat is ample surrounding the BSA, and it is likely that the California least tern would avoid using the work area during construction for foraging. The proposed project would not cause effects of this type.

Western snowy plover: The proposed project is not likely to result in direct impacts to nesting or foraging habitat for the species through the alteration and/or destruction of habitat. No direct impacts to individuals of the species are anticipated. Potential indirect impacts to the western snowy plover include disturbance from construction and vehicle-access noise. Because of the exclusion fencing, noise-related disturbances, and temporary loss of recently used habitat, if the species is present and nesting along or near Marshlands Road (the southern access road) in the DENWR, the western snowy plover would be the most affected of these species.

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

Use of a vibratory hammer would reduce water sound levels below where harm or injury will occur. Implementation of biological monitoring, preconstruction surveys, seasonal avoidance, barrier fences, passive exclusion, and revegetation (see NES for details) along with the General Avoidance and Minimization Measures will minimize effects to federally listed bird species within the project vicinity and study area.

## **State Bird Species**

### **Affected Environment**

#### ***White-tailed Kite***

White-tailed kite is a fully protected species in California. The bird may occasionally forage in the project study area, but no suitable breeding habitat for this species was identified. No white-tailed kites were observed within the study area during surveys for other species and no focused surveys were conducted for this species.

#### ***American Peregrine Falcon***

The American peregrine falcon is state-listed endangered and state fully protected species. Peregrines generally feed and breed near water and may occasionally forage within the study area of the proposed project. However, this species is not known to breed in the project vicinity. Two American peregrine falcons were observed on the underside of the bridge during a site visit on October 15, 2008, but no nests were observed during any prior or subsequent site visits. No focused surveys were conducted for this species.

#### ***California Black Rail***

The California black rail is a state-listed threatened and fully protected species. Suitable foraging and nesting habitat is present in the pickleweed marsh on the southwestern side of the project study area. There are documented occurrences of this species in the immediate project. Suitable habitat within and adjacent to the project study area suggests that California black rail may be present. This species could be adversely affected by construction noise and is assumed present within the project study area. No focused surveys were conducted for this species.

### **Environmental Consequences**

Much like the federally listed bird species, potential indirect impacts to the state bird species include noise caused by construction, which could disturb nesting. The three main categories of noise impacts on birds are behavioral modifications, damage to hearing, and masking of communication signals. Masking is of greatest concern for the California black rail because suitable foraging and nesting habitat exist within auditory range of the project construction activities. Use of the vibratory driver will greatly reduce the distances over which noise levels would be high enough to affect birds. Further, limiting pile-driving to the nonbreeding season of the California black rail, if practicable, would reduce this disturbance to a less-than-significant level.

The project is not likely to result in direct impacts to nesting or foraging habitat for the species through the alteration and/or destruction of habitat. No direct impacts to individuals of the species are anticipated if avoidance and minimization measures are implemented.

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

Implementation of biological monitoring, preconstruction surveys, seasonal avoidance and exclusion techniques (see NES for details) along with the General Avoidance and Minimization Measures (Appendix C) will ensure the project avoids or minimizes potential adverse effects to the state bird species listed above and their habitats within and adjacent to the project study area. The mouse proof barrier will also provide safety for the California black rail because it uses the same habitat as the California clapper rail. The Department will work with CDFG to develop suitable measures to protect the American peregrine falcons prior to project construction.

## **Affected Environment**

### ***Salt Marsh Harvest Mouse***

The salt marsh harvest mouse was listed as an endangered species by the USFWS in October 1970. The mouse is a cover-dependent species that inhabits tidal and diked salt marshes characterized by dense stands of pickleweed or the peripheral halophyte zone. Some daily movement from marsh to high-elevation grasslands may occur in spring or summer or when adjacent grasslands provide protection from predators during high tide or flood events. Salt marsh harvest mice are thought to feed on seed, grass, and forbs, including pickleweed and saltgrass. No critical habitat has been designated for the salt marsh harvest mouse. Based on field surveys, trapping data, passage barriers and a visual assessment of aerial imagery, there is no connectivity between areas of known occurrences of potentially suitable habitat within the project study area along the northern portion of the eastern bridge abutment. The area south of the western bridge abutment is the only area within the project study area that could contain salt marsh harvest mice.

## **Environmental Consequences**

Potential direct impacts, such as injury or mortality, to individual salt marsh harvest mice will be avoided through implementation of the proposed avoidance and minimization measures. The proposed project could still have direct or indirect impacts due to pile-driving noise and disturbance. Most prominently, noise could cause temporary or permanent hearing loss. Using the vibratory hammer, construction noise from pile driving on land is expected to reach 95 peak dB within 50 feet of pile-driving activities. Some small mammals have been known to lose hearing due to exposure to high noise levels, although this varies greatly by species. The nearest known populations to pile-driving locations are approximately 1 mile away, far enough that these impacts are not expected.

The proposed project would also result in the permanent loss of a small area of marginally suitable pickleweed habitat within the surface water depression wetland on the northern edge of the eastern bridge trestle structure. The area of permanent loss would be less than 500 square feet (less than 0.1 acre), although temporary loss during construction would occur in this entire area. Because this area is not currently suitable or accessible habitat, there would be no impacts to mouse habitat.

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

Implementation of the temporary mouse-proof barrier (MPB), construction monitoring and revegetation (see NES for details) along with the General Avoidance and Minimization Measures (Appendix C) will reduce potential adverse effects to the salt marsh harvest mouse populations and habitat within the project study area.

Prior to construction, a temporary salt marsh harvest mouse-proof barrier will be erected to prevent the potential movement of individuals into the construction zone. The MPB fences will consist of corrugated metal fencing a minimum of 1 foot taller than adjacent vegetation and buried 1 foot deep into the soil to prevent mice from burrowing under them. ESA fencing on the construction side of this barrier will ensure increased visibility and awareness of protected areas. To ensure proper exclusion, the MPB must terminate at permanent passage barriers (e.g., permanent water, high levee) at both ends. The MPB will be installed in such a manner that it will not exclude salt marsh harvest mice from upland refuge habitat in the area. The MPB will be installed in such a manner that it will not exclude salt marsh harvest mice from upland refuge habitat in the area. In addition, MPB will be placed so that individuals would not become trapped within the area. The USFWS has recommended and approved the use of MPB fences to prevent transient or occasional salt marsh harvest mice in the construction zone at a recent nearby project (SR 84 Bayfront Expressway Widening Project – CA DOT, District 4, 04222-004871).

## **Affected Environment**

### ***Green Sturgeon***

The southern distinct population segment (DPS) of green sturgeon was federally listed as threatened on April 6, 2006. A review of literature and the 2008 Calfish database verified that juvenile sturgeon occur throughout the Sacramento River Delta and San Francisco Bay. During the spring months, sturgeons are regularly caught by sport fishermen from the Dumbarton Public Fishing Pier. The green sturgeon are present throughout all marine portions of the project area.

On September 5, 2008, the NMFS issued a proposal to designate critical habitat for green sturgeon. This proposal includes the designation of specific rivers, estuaries, and coast areas as critical habitat for this species. Under this proposal ruling, the entire San Francisco Bay below mean higher high water including the proposed Dumbarton Bridge Retrofit project study area would be designated as critical habitat.

### ***Central California Coast Steelhead***

The CCC steelhead DPS was listed as a threatened species on August 18, 1997. Critical habitat for the CCC steelhead was designated by the NMFS in 2005. The designation includes natal spawning and rearing waters, migration corridors, and estuarine areas that serve as rearing areas. The project study area includes the only migration corridor that allows returning spawners access to drainages of the southern San Francisco Bay. Outmigrating juveniles must pass through the

project area, foraging in the process. Juveniles may also be undergoing the process of smoltification during this time. The migration season for the CCC steelhead is typically from November 30 to June 15.

### **Environmental Consequences**

The project has the potential to directly but temporarily affect green sturgeon individuals through behavioral changes, injury associated with the underwater noise generated during pile-driving activities as well as through water quality impacts and temporary modifications to aquatic habitat. Permanent impacts from noise-related mortality are possible but unlikely. Based on the sound analysis, the proposed project will not generate peak noise above the 206 dB regulatory limit for peak noise. The cumulative noise regulatory criteria would be exceeded within 175 feet of each pile driven with a vibratory hammer. Similarly, vibratory installation of the cofferdam sheet piles would generate noise levels that do not exceed the peak criteria but exceed the SEL criteria within 100 feet of the pile. These noise levels may exclude green sturgeon from the affected area, reducing the availability of forage habitat within the project area. Given the small size of the affected area and the wide availability of suitable habitat for this species in the project vicinity, this temporary loss of habitat is not expected to have a significant adverse affect on individuals or the species.

The removal of the Ravenswood Pier has the potential to permanently alter local habitat because this structure may provide cover for green sturgeon. This impact is expected to be minimal because cover is not a critical habitat element for this species.

The project would temporarily remove a small amount of benthic foraging habitat in areas where temporary trestle piles are placed. However, these affected areas would not be contiguous, but rather intermittent and dispersed over a long and relatively narrow area. Driving temporary piles into the bay floor and later removing the piles and the existing supports of the Ravenswood Pier could cause sediment to be suspended in the water column and temporarily increase turbidity. Any increase in turbidity from placement or removal of piles would be localized around each pile and short in duration.

The impacts on CCC steelhead would be similar to the green sturgeon if pile-driving occurred during the migration of adult steelhead into the freshwater streams or the outmigration of smolts in the southern San Francisco Bay. If pile driving occurs during the periods when CCC steelhead are not in the southern San Francisco Bay, there would be no impacts. Juvenile CCC steelhead may use the project study area as foraging habitat during outmigration. There is a potential for high-intensity noise to temporarily affect these fish and exclude them from suitable habitat in a manner similar to green sturgeon. This temporary loss of habitat is not expected to have a significant adverse effect on juvenile CCC steelhead.

In addition to impacts on the fish species themselves, the designated critical habitat for CCC steelhead and the proposed critical habitat for green sturgeon would be affected similarly. However, the relative low magnitude of these impacts would not adversely affect the ability to support their respective species.

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

The proposed General Avoidance and Minimization Measures listed in Appendix C would reduce impacts to the CCC steelhead and the green sturgeon as well as their habitats. As noted, BMPs will be implemented to minimize the potential of hazardous materials spills (e.g., fuels, solvents), prevent the entry of debris into the waters of the bay, and minimize sedimentation and erosion into the bay. The following measures, some of which were described above, are repeated here for clarity.

- Water quality will be maintained when temporary piles or the existing support piers for the Ravenswood Pier are removed. The piles will be cleaned of excess mud either on a barge or on the temporary trestle. No waste from the cleaning process will be released into the bay.
- Low tides expose large amounts of tidal mud flats in the eastern and western thirds of the bay. Driving piles during low tides would reduce the number of piles that are driven into the bay floor through the water column. This would reduce the cumulative sound pressure levels in the waters of the bay.
- Potential impacts could be further minimized by slowly ramping up the intensities of pile-driving efforts at each pile's location. Initially soft taps of the hammer driver could act as a form of warning to any fish in the area, and would drive them out of the area as sound intensities gradually increase.
- Vibratory drivers will be used to drive the sheet piles to install the cofferdams around the piers. Vibratory drivers generate a lower peak sound level but can still produce substantial cumulative sound levels.
- Piles for the temporary trestle will be driven with a vibratory driver. A hammer driver would still be required to test the piles in their final positions, but using the vibratory driver would reduce the potential for noise- or barotrauma-related impacts on SDPS green sturgeon and other marine animal species.
- Scheduling construction activities to avoid migration periods of both juvenile and adult CCC steelhead would benefit individual fish, but would not change the capability of the critical habitat to support the species.

## 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 noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

### Affected Environment

#### ***Smooth Cordgrass***

Smooth cordgrass is a non-native invasive species that hybridizes with the native Pacific cordgrass. Mudflats around southern San Francisco Bay are dominated by smooth cordgrass and its hybrid. Recently, a patch, approximately 0.15 acre in size on the western shoreline of the bay was removed as part of the San Francisco Estuary Institute’s Invasive Spartia Eradication Program.

### Environmental Consequences

The invasion of the non-native smooth cordgrass and its hybrid are dominant within the project study area and inhibits the growth of the native, local species of Pacific cordgrass and the cordgrass stands.

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

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as noxious weeds. 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 to prevent the spread of invasive smooth cordgrass and eradication strategies to be implemented should an increase in an area occupied by smooth cordgrass occur.

## 2.4 CONSTRUCTION IMPACTS

### Affected Environment

During the retrofit project, a minimum of two lanes are anticipated to remain open throughout the project limits with the exception of the bridge closed for a minimum of two holiday weekends. Temporary fill maybe placed to build construction access, working benches and footing for the flood barrier and low wall foundation. Construction staging and storage will occur within the project footprint and have been studied as part of the environmental process. Material and equipment storage will not be visible within the foreground of the highway, or visually screened where required. In addition, all areas disturbed by construction, staging and storage shall be revegetated immediately following completion of construction.

A Transportation Management Plan (TMP) will be required for this project. The TMP is a special program that is implemented during construction to minimize and prevent delay and inconvenience to emergency response vehicles and the traveling public. The proposed construction and improvements will include temporary roadwork, which require lane closures or detouring.

The TMP for this project will be developed and refined during the final design phases, supported by detailed traffic studies to evaluate traffic operations. The need for necessary lane closures during off-peak hours or at night, or short-term detour routes, will be identified as required. The TMP typically will include press releases to notify and inform motorists, businesses, community groups, local entities, and elected officials of upcoming closures or detours. Various TMP elements, such as portable Changeable Message Signs and California Highway Patrol Construction Zone Enhanced Enforcement Program (COZEEP) may be utilized to alleviate and minimize delay to the traveling public. The TMP will also serve to notify all emergency service providers in the project corridor of the project construction schedule, lane closures, and detours.

### Light and Glare Impacts

No substantial long-term light and glare impacts were identified. Construction at night could result in glare impacts that interfere with safe navigation by motorists.

### Temporary or Periodic Increase in Ambient Noise Levels

No temporary or permanent noise barriers are recommended for this project (with the exception of biological resources). Construction activities for the proposed project could result in noise levels greater than the existing noise levels. Since construction activities would move around the respective project areas as construction proceeds, it is unlikely that any one location would experience high noise levels continuously for extended periods of time.

The impact from construction activities would be temporary and can be reasonably minimized by implementing provisions in Section 7-1.01I, "Sound Control Requirements" of the Caltrans Standard Specifications and the following measures:

- Keep noisy equipment and haul roads away from sensitive receptors, where feasible.
- Keep the community informed of upcoming especially noisy construction activities and establish a field office to handle noise complaints.
- Avoid construction activities during nighttime and weekends, when possible.
- Consider constructing noise barriers as first items of work, where feasible.
- Use of stockpiled dirt as earth berms, where feasible.
- Erect temporary noise barriers, if necessary.
- Comply with any local noise ordinances.

### **Air Quality**

The proposed project would generate air pollutants during construction. Trucks and construction equipment emit hydrocarbons, oxides of nitrogen, carbon monoxide and particulates. Most pollution will consist of wind-blown dust generated by excavation, grading, hauling and various other activities. The impacts from the above activities would vary from day to day as construction progresses. The Special Provisions and Standard Specifications of the construction contract will include requirements to minimize or eliminate dust through the application of water or dust palliatives.

Recent studies have raised significant concerns about the health risks associated with emissions from diesel construction equipment. For PM<sub>10</sub>, PM<sub>2.5</sub> or air toxics, there currently are no microscale requirements that are applicable at the project level for the temporary impacts in the construction phase.

The California Air Resources Board through its Diesel Risk Reduction Program has implemented, and will implement additional control measures that affect the construction phase of the project and, as regulations, are implemented through Standard Specification 7-1.01F. These include: truck idling limitations; stationary and portable engine emission control programs; accelerated low-sulfur fuel availability; public vehicle fleet accelerated retrofit and replacement regulations; (pending) private truck fleet regulations; and (pending) off-road equipment fleet accelerated retrofit and replacement regulations. This program will reduce risks to public health through the reduction of construction and operational emissions.

### **Traffic, Transportation and Bicycle**

The bridge will be closed on certain scheduled weekends to continue uninterrupted construction on the bridge. During this time, bicycle and pedestrian access on the bridge will be closed. Local streets and arterials will also be affected during construction. All efforts will be made to minimize

lane closures or detours to reduce impacts to the traveling public. Night-time work and lane closures can be expected during construction. Flaggers and message signs may be used to warn travelers of anticipated delays or closures. These issues will be addressed in the Traffic Management Plan (TMP) to be developed prior to construction. These impacts are considered temporary and not significant.

**Water Quality**

Please see Water Quality (section 2.2.1) for temporary construction impacts.



## Chapter 3 – Comments and Coordination

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Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. This chapter summarizes the results of the Department's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

### Consultation and Coordination with Public Agencies

Alameda County Transportation Authority (ACTIA)  
Bay Area Conservation and Development Commission (BCDC)  
Bay Area Toll Authority (BATA)  
California Department of Fish and Game (CDFG)  
City of East Palo Alto  
City of Fremont  
City of Menlo Park  
City of Newark  
Don Edwards San Francisco Bay National Wildlife Refuge (DENWR)  
Federal Highway Administration (FHWA)  
National Marine Fisheries Service (NMFS)  
National Oceanic and Atmospheric Administration (NOAA)  
Native American Heritage Commission (NAHC)  
U. S. Army Corps of Engineers (USACE)  
U. S. Coast Guard (USCG)  
U. S. Fish and Wildlife Service (USFWS)  
Regional Water Quality Control Board (RWQCB)  
San Mateo County Transportation Authority (SMCTA)  
State Historic Preservation Officer (SHPO)

### Location for Viewing the Environmental Document

Caltrans  
111 Grand Avenue  
Oakland, CA 94623

Menlo Park Library  
800 Alma Street  
Menlo Park, CA 94025

East Palo Alto Library  
2415 University Avenue  
East Palo Alto, CA 94303

Fremont Main Library  
2400 Stevenson Boulevard  
Fremont, CA 94538

An electronic version is available at the following web address:

[www.dot.ca.gov/dist4/envdocs.htm](http://www.dot.ca.gov/dist4/envdocs.htm)

## **Organizations and Individuals Contacted**

A list of organizations and individuals receiving a copy of the draft document are in Chapter 5.

## **Comments and Responses**

The IS/EA for the Dumbarton Bridge Retrofit Project was available for public review and comment from June 15, 2009 to July 15, 2009. One comment was received by email from the National Marine Fisheries Service (NMFS) for the Antioch Bridge Seismic Retrofit project. The comment indicated a need for an expanded analysis of impacts to marine mammals for the Dumbarton Bridge Seismic Retrofit project as well. A copy of this comment (email) is below. Expanding the discussions and providing additional information and details in Section 2.2.1- Water Quality and Storm Water Runoff, Section 2.3- Biological Environment, and the addition of Appendix F should be sufficient for NMFS to issue the Incidental Harassment Authorization (IHA). A vertical line on the left side margin of a page indicates changes or revisions. General revisions throughout the IS/EA are also identified by a vertical line on the left side margin.

### ***Comment e-mail from NMFS***

**Jaclyn Daly <Jaclyn.Daly@noaa.gov>**

06/25/2009 12:35 PM

Hello Zachary and Maureen,

Attached are NMFS' comments on the Antioch and Dumbarton Bridge Draft EAs with respect to Caltran's analysis on the impact to marine mammals from each project. For NMFS Protected Resources Silver Spring office, to issue a Marine Mammal Protection Act Incidental Harassment Authorization (IHA), we must comply with the National Environmental Policy Act (NEPA) as the issuance of an IHA is a Federal action in itself. To fulfill the requirements of NEPA, we may adopt another Agency's EA if it adequately describes the proposed action, list of Alternatives, affected environment and environmental impacts from each alternative regarding marine mammals. At this point, both EAs are not sufficient for NMFS' purposes.

I received the Antioch Bridge Draft EA first, made comments, and asked our acting NEPA coordinator for comments when I was sent the Dumbarton Bridge EA. Both documents are essentially the same with only minor differences on the proposed action, action area, etc. Regarding marine mammals, the descriptions are almost identical. Therefore, all comments made on the Antioch Bridge EA should be applied to the Dumbarton Bridge EA. These comments are made on the yellow "sticky notes" within the attached Antioch Draft EA pdf. In addition, I have provided an

additional Word document as further guidance on what sufficient discussions regarding marine mammals should entail.

If you have any questions, please feel free to ask as you are incorporating comments. I would much rather be of assistance now and see a Final EA that we can adopt rather than a Final be distributed which we can not use. For the next couple weeks, the only days I will not be in the office are July 2 and 3.

Regards,  
Jaclyn

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Jaclyn Daly  
Fishery Biologist

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Web: [www.nmfs.noaa.gov/pr](http://www.nmfs.noaa.gov/pr)



Anticoh Bridge\_Draft EA\_NMFS edits.pdf NMFS EA Guidance for Caltrans.doc



## Chapter 4 – List of Preparers

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### **Caltrans**

#### **Office of Environmental Analysis**

Ed Pang  
Maureen A. Murphy

#### **Office of Natural Sciences and Permits**

Margaret Gabil  
Robert Atanasio

#### **Office of Cultural Resources**

Elizabeth Krase  
Maureen Zogg

#### **Office of Landscape Architecture**

Bryan Walker  
Keith Suzuki

#### **Office of Environmental Engineering**

Charles Smith  
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#### **Office of Project Management**

Mo Pazooki  
Shahrdad Mahini

#### **Office of Toll Bridge Design**

Humayun Syed  
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#### **Office of Geotechnical Design**

Mohammad Dehghen  
Rifaat Nashed  
Sid Pawar

#### **Consultant**

Maria Sedghi, URS, Inc.  
David Halsing, URS, Inc.



## Chapter 5 - Distribution List

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In compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), this document was distributed to key interested agencies and key elected and appointed officials, as well as to all parties requesting it. The document was made available to the local libraries in Fremont, Newark, East Palo Alto, and Menlo Park. A list of agencies and individuals that received the Initial Study/Environmental Assessment follows.

### State Legislature

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California State Assemblyman  
Alberto Torrico  
39510 Paseo Padre Parkway, Suite 280  
Fremont, CA 94538

California State Senator  
Leland Yee, Ph.d., District 8  
400 South El Camino Real, Suite 630  
San Mateo, CA 94402

### Federal Agencies

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Mr. Wayne Nastri  
Regional Administrator  
U.S. Environmental Protection Agency  
75 Hawthorne Street  
San Francisco, CA, 94105

Federal Emergency Management Agency,  
California Governor's Office  
Federal Transit Administration,  
Region 9  
201 Mission Street, Suite 2210  
San Francisco, CA 94105

USFWS  
Steve Thomson, Operations Manager  
2800 Cottage Way  
Sacramento CA 95825

National Marine Fisheries Service  
Northern California Habitat Conservation  
Manager  
777 Sonoma Avenue, Room 325  
Santa Rosa, CA 95404-6515

U. S. Geological Survey  
345 Middlefield Road, MS 370  
Menlo Park, CA 94027

USFWS  
Don Edwards San Francisco Bay  
National Wildlife Refuge  
9500 Thornton Avenue  
Newark, CA 9456

U.S. Army Corps of Engineers  
1455 Market Street, Room 923  
San Francisco, CA 94103

Ms. Diane Feinstein, U. S. Senator  
One Post Street, Suite 2450  
San Francisco, CA 94104

Ms. Barbara Boxer, U. S. Senator  
1700 Montgomery Street, Suite 240  
San Francisco, CA 94111

### State Agencies

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California Environmental Protection Agency  
1001 I Street  
P.O. Box 2815  
Sacramento, CA 95812-2815

California Department of Parks and Recreation  
State Historic Preservation Officer  
P. O. Box 942896  
Sacramento, CA 94896-0001

California Department of Fish and Game  
DFG Headquarters  
1416 Ninth Street  
Sacramento, California 95814

California Highway Patrol  
2434 Whipple Road  
Hayward, CA 94544

Metropolitan Transportation Commission  
Steve Heminger, Executive Director  
101 8<sup>th</sup> Street  
Oakland, CA 94607

Native American Heritage Commission  
915 Capitol Mall, Room 364  
Sacramento, CA 95814

Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

State Clearinghouse  
Terry Roberts, Director  
1400 Tenth Street  
Sacramento, CA 95814

### **Alameda County Agencies and Officials**

---

Alameda County Planning Department  
Attn: Lisa Ashe  
224 W. Winton Ave, Suite 111  
Hayward, CA 94544

Alameda County Fire Department  
Fire Chief William J. McCammon  
835 East 14<sup>th</sup> Street, Suite 200  
San Leandro, CA 94577

Alameda County Planning Department  
Chris Bazar, Director  
224 W. Winton, Room 111  
Hayward, CA 94544

Donald J. LaBelle, County of Alameda  
Director of Public Works  
399 Elmhurst Street  
Hayward, CA 94544

Alameda County Sheriff's Office  
1401 Lakeside Drive, 12<sup>th</sup> Floor  
Oakland, CA 94612

Alameda County Improvement  
Transportation Authority  
Christine Monsen, Executive Director  
426 17<sup>th</sup> Street, Suite 100  
Oakland, CA 94612-2814

AC Transit  
General Manager  
1600 Franklin Street  
Oakland, CA 94612

### **City of East Palo Alto Agencies and Officials**

---

Patricia Foster, Mayor  
444 Garden Street  
East Palo Alto, CA 94303

Brad Tarr, Acting Planning Manager  
1960 Tate Street  
East Palo Alto, CA 94303

### **City of Menlo Park Agencies and Officials**

---

Heyward Robinson, Mayor  
701 Laurel Street  
Menlo Park, CA 94025

Arlinda Heineck  
Community Development Director  
Planning Division  
City of Menlo Park  
701 Laurel Street  
Menlo Park, CA 94025

Randolph Craig  
Assistant Transportation Engineer  
Bicycle Commission  
City of Menlo Park  
701 Laurel Street  
Menlo Park, CA 94025

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### **City of Fremont Agencies and Officials**

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Bob Wasserman, Mayor  
P.O. Box 5006  
Fremont, CA 94537-5006

City of Fremont Planning Division  
39550 Liberty Street  
Fremont, CA 94538

City Manager's Office  
Fred Diaz, City Manager  
3300 Capitol Avenue  
Fremont, CA 94538

Fremont Fire Department  
Administration Offices  
3300 Capitol Avenue, Building B  
Fremont, CA 94538

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### **City of Newark Agencies and Officials**

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David W. Smith, Mayor  
City of Newark, CA  
City Administration Building  
37101 Newark Blvd.

Terrence Grindall  
Community Development Director  
City of Newark, CA  
City Administration Building  
37101 Newark Blvd.  
Newark, CA 94560

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### **San Mateo County Agencies and Officials**

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Lisa Grote, Planning Director  
455 County Center, 2nd Floor  
Redwood City, CA 94063

Bay Rail Alliance  
3921 East Bayshore Road  
Palo Alto, CA 94303

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### **Other Agencies and Organizations**

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Association of Bay Area Governments  
Henry L. Gardner, Executive Director  
P.O. Box 2050  
Oakland, CA 94604-2050

California Native Plant Society  
East Bay Chapter  
P. O. Box 5597 Elmwood Station  
Berkeley, CA 94705

Bay Area Bicycle Coalition  
PO Box 2214  
Novato, CA 94948-2214

## **Libraries**

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Fremont Main Library  
2400 Stevenson Boulevard  
Fremont, CA 94538

East Palo Alto Library  
2415 University Avenue  
East Palo Alto, CA 94303  
650.321.7712

Menlo Park Library  
800 Alma Street  
Menlo Park, CA 94025

# Appendix A CEQA Checklist

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Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Initial Study/Environmental Assessment. Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or compensation measures can be found under the appropriate topic headings in Chapter 2.

## Environmental Significance Checklist

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included in Section VI following the checklist. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts.

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

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**II. AGRICULTURE RESOURCES:** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
<b>III. AIR QUALITY:</b> Where available, the significance criteria established by the applicable air quality management or air pollution control district might be relied upon to make the following determinations. Would the project:				X
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				X
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 that exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X
<b>IV. BIOLOGICAL RESOURCES:</b> 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?			X	

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?			X	
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?		X		
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?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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?				X

**V. CULTURAL RESOURCES:** Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X

**VI. GEOLOGY & SOILS:** Would the project:

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			X	
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	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?				X
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?				X
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?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

**VII. HAZARDS AND HAZARDOUS**

**MATERIALS:** Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
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?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 area?				X
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?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
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?				X

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**VIII. HYDROLOGY AND WATER QUALITY:**

Would the project:

a) Violate any water quality standards or waste discharge requirements?				X
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 that would not support existing land uses or planned uses for which permits have been granted)?				X
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?				X
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 that would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Otherwise substantially degrade water quality?				X
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?				X
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X
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?				X
j) Inundation by tsunami, or mudflow?				X
<b>IX. LAND USE AND PLANNING:</b> Would the project:				
a) Physically divide an established community?				X
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?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
<b>X. MINERAL RESOURCES:</b> 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?				X
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?				X
<b>XI. NOISE:</b> 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?				X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
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?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
<hr/>				
<b>XII. POPULATION AND HOUSING:</b> 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)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
<hr/>				
<b>XIII. PUBLIC SERVICES:</b>				
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?				X
Police protection?				X
Schools?				X
Parks?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Other public facilities?				X
<b>XIV. RECREATION:</b>				
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?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X
<b>XV. TRANSPORTATION/TRAFFIC:</b> Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
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?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation?				X
<b>XVI. UTILITIES AND SERVICE SYSTEMS:</b>				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
cause significant environmental effects?				
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?				X
d) Have sufficient water supplies available to serve the project from existing or new entitlements and resources?				X
e) Result in a determination by the wastewater treatment provider that 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?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X

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**XVII. 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, 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?			X	
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)?				X
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?				X

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# Appendix B Title VI Policy Statement

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**DEPARTMENT OF TRANSPORTATION**  
OFFICE OF THE DIRECTOR  
1120 N STREET  
P. O. BOX 942873  
SACRAMENTO, CA 94273-0001  
PHONE (916) 654-5266  
FAX (916) 654-6608  
TTY (916) 653-4086



*Flex your power!  
Be energy efficient!*

January 14, 2005

## TITLE VI POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

  
WILL KEMPTON  
Director



## Appendix C    General Avoidance and Minimization Measures

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To avoid and minimize effects to sensitive species and their habitats within the project study area and the project effect area, the following general measures will be implemented as needed:

- Standard Caltrans Best Management Practices (BMPs), including Stormwater Pollution Prevention Plans, will be applied to protect individuals of these species and their habitat(s) from pollution due to fuels, oils, lubricants, and other harmful materials. Vehicles and equipment that are used during project activities will be fueled and serviced in a “safe” area (i.e., outside of sensitive habitats) in a manner that will not affect federally protected species within the project study area or their habitats. Spills, leaks, and other problems of a similar nature will be resolved immediately to prevent unnecessary effects. A plan for the emergency cleanup of any spills of fuel or other material will be available onsite and adequate materials for spill cleanup will be maintained on site.
- Physical disturbance to existing habitats will be limited to the project study area. All staging and stockpiling areas and other facilities will be located outside the project study area in environmentally clear areas (e.g., existing parking lots) as selected by the construction contractor. Existing ingress and egress points, especially existing parking areas, would be used as designated and limited laydown and short-term material storage areas.
- Project proponents will reduce the amount of disturbance within the project study area to the minimum necessary to accomplish the project. Any removed topsoil will be stockpiled, covered, and encircled with silt fencing separately from other soil to prevent loss or movement of the soil into habitats of federally protected species as well as to maintain and preserve the seed bank. All disturbed soils will undergo erosion control treatment prior to the rainy season and after construction is terminated. Treatment typically includes temporary seeding with native species and sterile straw mulch. All disturbed ground will be graded and restored to its pre-project condition.
- Project proponents will exercise every reasonable precaution to protect listed species and their habitat(s) from construction byproducts and pollutants such as construction chemicals, fresh cement, saw-water, or other deleterious materials. Water containing materials such as mud, silt, or concrete from construction activities will be treated by filtration, retention in a settling pond, or other similar measure. Fresh cement or concrete will not be allowed to enter San Francisco Bay. Construction pollutants will be collected and transported to an authorized upland disposal area, as appropriate, and according to all relevant federal, state, and local laws and regulations.

- All hazardous material will be stored offsite in properly designated containers in a storage area with an impermeable membrane between the ground and the hazardous material. The storage area will be encircled by a berm to prevent the discharge of pollutants to ground water or runoff into federally listed species habitats. Short-term laydown of hazardous materials for immediate use will be permitted with the same anti-spill precautions. A plan for the emergency cleanup of any hazardous material will be available on site and adequate materials for spill cleanup will be maintained onsite.
- All construction material including wastes, debris, sediment, rubbish, vegetation, trash, and fencing will be removed from the site when the project is completed and transported to an authorized disposal area, as appropriate, and according to all relevant federal, state, and local laws and regulations.
- One or more USFWS and NMFS approved biological monitors knowledgeable about sensitive and special-status species and habitats within the project study area vicinity will conduct surveys before and during construction activities to inspect exclusion fencing and verify absence of listed species. The monitor will be present at all times during the pile-driving phases of construction, as well as during and after cleanup activities.
- Vibratory pile-driving will be used to reduce the effects of sound energy on fish and other aquatic species so that sound levels are below where harm or injury could occur.
- Weekly focused surveys for each ESA or CESA-listed bird species will be conducted during the nesting season within a 100-yard buffer of the project study area. If nesting special status bird species are located within the buffer, construction will be halted at that location and the USFWS notified.

Avoidance and minimization measures listed below are for disturbances other than physical disruption that would be limited to those caused by noise.

- All permanent piles would be driven prior to the nesting seasons of listed bird species.
- During nesting seasons of listed bird species, if seasonal avoidance is not feasible, temporary trestle piles and the cofferdams' sheet piles would be driven with a vibratory hammer instead of an impact hammer out to 800 feet from shore to reduce noise levels.
- Much of the nearshore temporary trestle vibratory pile-driving would occur at low tide and thus out of water, greatly reducing underwater noise levels.
- Vibratory hammers used to install temporary trestles in the nearshore areas during bird nesting season will reduce hydroacoustic effects.
- The sheet piles that would be used to create the cofferdams around the piers would be placed using vibratory drivers instead of impact hammers to reduce peak noise levels.

## Appendix D List of Acronyms

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APE – Area of Potential Effect  
BA – Biological Assessment  
BATA – Bay Area Toll Authority  
BCDC - Bay Area Conservation and Development Commission  
BMPs – Best Management Practices  
BO – Biological Opinion  
CCC Steelhead – Central California coast steelhead  
CDFG – California Department of Fish and Game  
CEQA – California Environmental Quality Act  
CESA – California Endangered Species Act  
CNPS – California Native Plant Society  
CWA – California Water Act  
DENWR - Don Edwards San Francisco Bay National Wildlife Refuge  
Department – California Department of Transportation  
DPS – Distinct Population Segment  
EFH - Essential Fish Habitat  
EPA – Environmental Protection Agency  
ESA – Environmental Sensitive Area  
FEDA – Federal Endangered Species Act  
FHWA – Federal Highway Administration  
GHG – Green House Gas  
IHA – Incidental Harassment Act  
FMP - Fisheries Management Plan  
IPCC – Intergovernmental Panel on Climate Change  
MBTA – Migratory Bird Treaty Act  
MCE – Maximum Credible Earthquake  
MLD - Most Likely Descendent  
MMMP - Marine Mammal Monitoring Program  
MND – Mitigated Negative Declaration

MPB - mouse-proof barrier  
MSFCMA - Magnuson-Stevens Fisheries Conservation and Management Act  
NAHC - Native American Heritage Commission  
NEPA – National Environmental Policy Act  
NES – Natural Environment Study  
NHPA – National Historic Preservation Act  
NMFS – National Marine Fisheries Service  
NOAA – National Oceanic and Atmospheric Administration  
NPDES – National Pollution Discharge Elimination System  
PA – Section 106 Programmatic Agreement  
ROW – Right of Way  
RWQCB – Regional Water Quality Control Board  
SHPO – State Historic Preservation Officer  
SWDR – State Water Department of Resources  
SWPPP – Storm Water Pollution Prevention Program  
SWRCB – State Water Resources Control Board  
TMP – Transportation Management Plan  
USACE – United States Army Corps of Engineers  
USFWS – United States Fish and Wildlife Service  
VIA – Visual Impact Assessment

## Appendix E List of Technical Studies

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Biological Assessment (draft), NOAA, October 2008  
Biological Assessment, USFWS, January 2009  
Cultural Resources Review of the Dumbarton Bridge, September 17, 2008  
Dumbarton Bridge Hazardous Materials and Waste Summary, November 2008  
Geotechnical Site Characterization Report, November 2008  
Incidental Harassment Authorization Request, March 2009  
Jurisdictional Wetland Delineation Report, November 2008  
Natural Environment Study, March 2009  
Project Study Report, April 2009  
Storm Water Data Report, April 2009  
Tidal Impacts to Frontage Road Adjacent to Mosley Tract, July 2008  
Water Quality Report, April 2009



# Appendix F Biological Effects of Sound on Marine Mammals and Avoidance, Minimization and/or Mitigation Measures and Monitoring and Reporting

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## Biological Effects of Sound on Marine Mammals

Marine mammals use hearing and sound transmission for vital life functions. The introduction of sound into their environment could be disruptive to those behaviors. Sound (hearing and vocalization/echolocation) serves four primary functions for odontocetes, including (1) providing information about the environment (2) communication (3) prey detection, and (4) predator detection. The distances to which the construction noise associated with the project are audible depend on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and the sensitivity of the receptor.

The effects on marine mammals from pile driving may include one or more of the following: masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical effects. In assessing the potential effects of noise, there are four criteria for defining zones of influence. These zones are discussed from greatest influence to least influence:

- The zone of hearing loss, discomfort, or injury is the area in which the received sound level is potentially high enough to cause discomfort or tissue damage to auditory or other systems. The possible effects of a damaging sound level are a temporary threshold shift, a temporary loss in hearing, a permanent threshold shift, and a loss in hearing at specific frequencies or deafness. Non-auditory physiological effects or injuries that can theoretically occur in marine mammals exposed to strong underwater sound are stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage. These effects would be considered Level A harassment; applicable NMFS noise level criteria for this type of harassment are 180 dB for cetaceans and 190 dB for pinnipeds.
- The zone of masking is the area in which noise may interfere with the detection of other sounds, including communication calls, prey sounds, and other environmental sounds. This effect would be considered Level B harassment; the applicable criteria for the zone where this effect occurs are 160 dB for impact noise and 120 dB for continuous noise.

- The zone of responsiveness is the area in which animals react behaviorally or physiologically. The behavioral responses of marine mammals to sound depend on a number of factors, including (1) the acoustic characteristics of the noise source of interest, (2) the physical and behavioral state of the animals at the time of exposure, (3) the ambient acoustic and ecological characteristics of the environment, and (4) the context of the sound (e.g., does it sound like a predator?). However, temporary behavioral effects are often simply evidence that an animal has heard a sound and may not indicate lasting consequence for exposed individuals. These types of effects would be considered Level B harassment, (160 dB for impact noise and 120 dB for continuous noise).
- The zone of audibility is the area in which the marine mammal may hear the noise. Marine mammals as a group have functional hearing ranges of 10 Hz to 180 kilohertz (kHz), with best thresholds near 40 dB. Study data show reasonably consistent patterns of hearing sensitivity in three groups: small odontocetes (such as the harbor porpoise), medium-sized odontocetes (such as the beluga and killer whales), and pinnipeds (such as the harbor seal). The hearing capabilities of the species discussed in this document are described below. No criteria apply to this zone because it is difficult to determine the audibility of a particular noise for a particular species. This zone does not fall within the sound range of a take as defined by NMFS.

In water, harbor seals are typically sensitive to sounds ranging from about 1 kHz to 60 kHz with thresholds between 60 and 85 dB. Sensitivity above 60 kHz is typically poor, and the threshold increases to above 120 dB for maximum frequencies of 180 kHz. California sea lions have a narrower sensitivity range at high frequencies but are more sensitive than harbor seals to underwater noise at low frequencies—they are typically sensitive to sounds from approximately 1 to 30 kHz with a threshold of 80 dB. Outside these limits, the threshold increases to 115 dB for frequencies as low as 300 Hz and to 145 dB for frequencies as high as 70 kHz. When not in water, harbor seals are most sensitive to sounds ranging from about 2 kHz to 20 kHz with thresholds between 40 and 50 dB. California sea lions have a slightly greater sensitivity and higher frequency cut-off than harbor seals. Sea lions are typically sensitive to sounds from approximately 1 to 20 kHz with a threshold of 30 to 50 dB.

### **General Impacts of Sound on Marine Mammals**

In observations at from other previous project sites, including the Bay Bridge retrofit work, harbor seals were not visibly disturbed by the driving of large steel piles into the bay. Up to 85 seals per monitoring period hauled out at Yerba Buena Island. The typical response of hauled-out seals to pile driving was a head alert (during initial pile-driving activity only) or watching the activity, and in water they calmly swam in and out of the established 500-meter safety zone with no sign of an avoidance response. Responses to other disturbances, such as helicopter noise, boat traffic, and kayaks included head alerts and flushing. During the same

period, sea lions responded to pile driving by swimming rapidly out of the area, regardless of the size of the pile-driving hammer or the presence or absence of sound attenuation devices.

Disturbances to harbor seals in the vicinity of Dumbarton Bridge may similarly have temporary effects on the daily migration of seals under the bridge or temporarily inhibit them from foraging near the bridge. However, limiting pile driving to 30 to 60 minutes per day would allow for minimal disruption of foraging or dispersal habitat under or near the bridge. No impacts to foraging or haul-out for sea lions are anticipated because very few sea lions use the South Bay for foraging and no known sea lion haul-outs exist in the South Bay.

During both the pupping and molting seasons, hauled-out seals are especially vulnerable to stresses caused by human disturbance. During this time, they react negatively to humans coming within 300 to 570 feet and may abandon their haul-outs or experience reduced reproductive success. Therefore, the protection of their remaining haul-outs is an important measure for the preservation of this species. During the Bay Bridge project, seals at the Yerba Buena Island haul-out initially alerted during pile driving at a distance of approximately 0.94 miles, but quickly became acclimatized to repeated pile driving.

Hauled-out seals at Newark Slough or other South Bay haul-outs are not expected to be affected by project-related activities. Noise-generating activities would occur at or adjacent to the Dumbarton Bridge, at least 2.72 miles from the nearest harbor seal haul-out. Sea lions do not haul out in the South Bay; therefore, sea lion haul-outs would not be affected by this project.

### **Project Activity Impacts on Marine Mammals**

The primary and most significant source of underwater noise during construction would be pile driving for temporary work trestles in water and permanent support piles on land. The vibratory hammer will be used for the temporary work trestle piles, but the impact driver would be used on land. The majority of the temporary trestle piles would be driven in the bay in water less than 10 feet deep and at low tides, but pile driving would take place entirely out of the water. The permanent piles at the bridge trestle structures would be driven on land but close enough to shore to potentially generate significant underwater noise. The in-water sheet piles for the cofferdams would also be driven with a vibratory hammer, but would require less energy to drive and would thus produce less noise.

To ensure that no marine mammal is subjected to Level A harassment, a safety zone of 60 feet around pile-driving activity will be enforced. No pile driving of any type will occur within this zone until it has been clear of marine mammals for at least 15 minutes before the commencement of pile-driving activity. This conservative safety zone will ensure the protection of any cetacean that may enter the project vicinity and is more than three times the distance necessary to ensure that seals (the most likely marine mammal to be encountered) and sea lions are not subject to Level A harassment.

Temporary Trestle Piles: Temporary construction access trestles will be built simultaneously on the east and west ends of the bridge. These trestles will be supported by 24-inch-diameter steel piles. Three to 6 piles, placed around 1 or 2 piers, will be driven per day, with a total of approximately 1,000 temporary piles into the bay. Each pile is expected to take 10 to 15 minutes to place, for a total of 30 to 90 discontinuous minutes of pile-driving noise per day, some of which would be above water due to tides.

Permanent Piles at Bridge Trestle Structures: The trestle structures on the eastern and western ends of the bridge will each have seven 48-inch-diameter steel pipe piles driven on land with an impact driver along both the north and the south side of the structures. Because sound from these piles would propagate mostly through mud substrate, sound levels would not exceed 190 dB RMS in water. It is possible that levels could exceed 180 dB RMS very near the shore (less than 50 feet) at the highest tides.

Summary of Affected Area: Expected in-water pile-driving noise and distances to the various harassment criteria sound levels are summarized in the table below. Within these distances, some of the behavioral or physical impacts discussed above are anticipated.

**Expected Noise and Distances to Marine Mammal Harassment Criteria**

Pile Size and type	Pile Location/ Installation Method	Distances to Criteria Sound Levels (feet)			
		120 dB <sup>1</sup>	160 dB <sup>2</sup>	180 dB <sup>3</sup>	190 dB <sup>4</sup>
24-inch steel pipe piles for temporary trestles	Water/Vibratory	17,000	N/A	10	X
Sheet piles for cofferdam	Water/Vibratory	7,392	N/A	5	X
48-inch steel pipe piles at trestle structures	Land/Impact	N/A	1,475	100	X

<sup>1</sup> Lower limit of Level B harassment for pinnipeds and cetaceans with vibratory hammers.

<sup>2</sup> Lower limit of Level B harassment for pinnipeds and cetaceans with impact hammers.

<sup>3</sup> Lower limit of Level A harassment for cetaceans with impact hammers.

<sup>4</sup> Lower limit of Level A harassment for pinnipeds with impact hammers.

All criteria sound levels are reported in dB re 1 µPa.

dB = decibel

NA = not applicable

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

Avoidance and minimization measures were coordinated with NMFS. Caltrans submitted an application for an IHA for potential impacts to marine mammals. The IHA outlined the following measures to minimize impacts:

- Work would occur only during daylight hours (0700 to 1900 hours).

- A marine mammal monitoring program would be developed in consultation with NMFS before construction as outlined below in the Monitoring and Reporting Section. A work plan that describes the elements of the monitoring program will be prepared. The monitoring program will include marine mammal safety zones that will be strictly enforced. As part of this program, a marine mammal monitor or monitors would survey the area either from a survey boat, the Dumbarton Bridge, or land-based locations with excellent views of the safety zones before starting pile-driving equipment. Pile driving would not begin until no marine mammals (pinnipeds or cetaceans) have not been sighted within a designated safety zone for at least 15 minutes before the initiation of pile driving. Section 7 describes the proposed safety zones for each type of pile. These proposed safety zone distances would ensure that no marine mammal would be subject to Level A harassment.
- Pile driving would begin with a soft start to allow any marine mammals to leave the area before commencement of major pile-driving activities.
- Boating exclusion zones would be maintained 800 feet outside of all known marine mammal haul-outs. This distance is calculated based on the largest average distance (718 feet) at which watercraft elicited alarm responses, including head alerts and flushes, during the RSRB marine mammal monitoring project (Green et al. 2006).
- Personnel on project-related watercraft will be required to receive marine mammal education, which will include information on regulations regarding distances that must be maintained between watercraft and marine mammals, behavior relative to marine mammals, steering of watercraft so as not to approach marine mammals head-on, and reporting of marine mammal sightings.

## **Monitoring and Reporting**

Caltrans will develop a monitoring plan to collect data for each distinct marine mammal species observed in the project area during the construction period. Marine mammal behavior, the overall numbers of individuals observed, the frequency of observation, and the time corresponding to the daily tidal cycle would be included in the plan. Monitoring would occur at higher tide levels when piles are being driven in water. The following information provides details for the proposed monitoring plan:

- Hydroacoustic monitoring would be conducted by a qualified monitor during pile-driving activities when piles are being driven in water greater than 3 feet in depth. Details would be developed during work plan preparation, but might include monitoring one pile in every set of 3 piles during installation of the temporary trestles. A reference location would be established at the estimated 180 dB contour (distance of 230 feet from the pile driving). Sound measurements would be taken at the reference location and at locations every 20 feet until the 180 dB level is determined. Measurements would be taken at two depths: one in mid water column and one near the bottom but at least 3 feet above the bottom, unless obstructions (such as land) force a variation in depth or number of

measurements. Marine mammal safety zones would be adjusted to maintain a safety zone outside of 180 dB, according to the results of this monitoring. Additional acoustical monitoring details will be developed in conjunction with NMFS prior to the start of construction.

- Biological monitoring will be conducted by qualified biologists approved by NMFS.
- Biological monitoring will occur before the first day of the survey to establish baseline data.
- Specific details of the biological monitoring will be developed in conjunction with NMFS during work plan preparation, but will likely include monitoring when piles are being driven (where the water depths are greater than 3 feet). Observation periods will encompass different tide levels and hours of the day. Monitoring of marine mammals around the construction site will be conducted using high-quality binoculars (e.g., Zeiss, 10 × 42 power).
- Data collection will consist of counts of all pinnipeds and cetaceans by species, a description of behavior (based on the Richmond Bridge Harbor Seal Survey classification system), sex and age class (if possible), location, direction of movement, type of construction that is occurring, time that pile driving begins and ends, any acoustic or visual disturbance, and time of the observation. Environmental conditions such as wind speed, wind direction, visibility, temperature, tide level, current, and sea state (described using the standard Beaufort sea scale) would also be recorded.
- Biological monitoring would occur from appropriate monitoring locations, including the Dumbarton Bridge, the shore, or watercraft, so as to maintain an excellent view of the safety zone and adjacent areas during the survey period. Monitors would be equipped with radios or cell phones for maintaining contact with other researchers or work crews, Global Positioning System units for determining observation locations, and range finders to determine distance to marine mammals, boats, buoys, and construction equipment.
- Any marine mammal carcass found in the area would be tagged, and the species, and if possible, age, sex, and cause of death would be recorded and reported to Caltrans who would report it to NMFS.
- Weekly monitoring reports that summarize the monitoring results, construction activities, and environmental conditions would be submitted to Caltrans for transmittal to NMFS.
- A final report would be submitted to NMFS 90 days after completion of the proposed project.
- Additional biological monitoring details may be considered during preparation of the monitoring plan.

Further modifications and implementation of the Marine Mammal Monitoring Program (MMMP) will be developed as needed in consultation with NMFS before construction begins.

