



Natural Environment Study

Bolsa Chica Roadway Embankment Reconstruction Project

SR-1 Between Warner Avenue and Seapoint Avenue

12-ORA-1 PM 28.7-29.7

EA 0K0100

August 2009



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August 2009

STATE OF CALIFORNIA
Department of Transportation

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Summary

The Bolsa Chica Roadway Embankment Reconstruction Project (project) is located in the City of Huntington Beach, in Orange County, within the jurisdiction of California Department of Transportation (Caltrans) District 12. Protective improvements are proposed along State Route 1 (SR-1), also known as, Pacific Coast Highway (PCH), between Warner Avenue and Seapoint Avenue. Post miles (PM) for the project impact zone, including areas temporarily or permanently impacted, range from PM 28.7 to PM 29.7 (Station Nos. 225.7 through 254.6). As this project was elevated to emergency status in July 2009, construction of the project began on July 27, prior to the completion of this Natural Environment Study (NES). The Expenditure Authorization (EA) number for the project is OK0100.

In 2009, LSA conducted biological resource surveys that included focused plant surveys and a Jurisdictional Delineation (JD) to document existing conditions of biological resources within a 33.3-acre (ac) area surrounding and including the project area (hereafter referred to as the biological study area [BSA]). The BSA includes the 1.0-mile corridor and a 50-foot (ft) buffer extending into the Bolsa Chica Ecological Reserve and Bolsa Chica State Beach. Station numbers for the BSA extend from 199.5 on the northwest to 280.5 on the southeast. The BSA consists of nine vegetation community types, including native dune mat, estuarine wetland/open water, invaded dune mat, invaded ice plant dune mat, dune scrub, coastal scrub, bare ground, disturbed, and exotic annual grassland. Additionally, focused wildlife (burrowing owl and rail) surveys were conducted within a 500 ft buffer area of the project impact zone. This extended wildlife survey area includes the BSA, and is hereafter referred to as the wildlife survey area (WSA).

Sensitive biological resources have been identified within and adjacent to the BSA. The California brown pelican (federal- and State-listed endangered), black skimmer, California least tern (federal- and State-listed endangered), and Belding's savannah sparrow (State-listed endangered) were observed during the focused surveys within the WSA. In addition, a light-footed clapper rail (federal- and State-listed endangered) was observed subsequent to the focused survey effort (Stoddard, email communication, July 14, 2009). Two California Native Plant Society (CNPS) 1B special-status plant species were observed within the BSA during focused special-status plant surveys, including the estuary seablite (*Suaeda esteroa*) and coast woolly-heads (*Nemacaulis denudata* var. *denudata*). A formal JD survey determined that there is up to 0.14 ac of jurisdictional features within the project area, including

wetland areas, subject to the jurisdiction of the California Coastal Commission (CCC), United States Army Corps of Engineers (Corps) and the Regional Water Quality Control Board (RWQCB).

Permits from regulatory agencies have been obtained by Caltrans for the emergency project. The CCC issued Emergency Permit No. 5-09-131-G on July 15, 2009, pursuant to the California Coastal Act. The Corps issued Regional General Permit No. 63 (RGP 63) (File # SPL-2009-005310SCH) for the emergency project on July 20, 2009, pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. The RWQCB water quality certification was covered by the Corps permit, pursuant to Section 401 of the CWA. The United States Fish and Wildlife Service (USFWS) authorized the project through informal Section 7 consultation with the Corps on July 20, 2009 (File # FWS-OR-09B0048-09F1004). A “may affect but not likely to adversely affect” determination was made by the USFWS regarding four species of special-status birds, including western snowy plover, California brown pelican, light-footed clapper rail, and California least tern. Although four State-listed bird species have been identified foraging on the site, neither a 2081 permit nor a concurrence letter will be necessary from the California Department of Fish and Game (CDFG) to authorize the project with regard to State-listed wildlife species. CDFG representatives have made the determination that a 2081 permit would not be necessary (email correspondence, August 5, 2009). Furthermore, the emergency status of the project may qualify it as being exempt from CEQA (<http://ceres.ca.gov/cequ/guidelines/art18.html>).

A combination of avoidance, minimization measures, and compensatory mitigation would reduce the overall adverse effects to biological resources. To offset effects to these jurisdictional areas, a compensatory mitigation program will be developed. Compensatory mitigation may involve habitat restoration within Caltrans right-of-way (ROW), or at agency-approved off-site locations. The adjacent Bolsa Chica Ecological Reserve is the preferred off-site location for compensatory mitigation. The final compensatory mitigation program is expected to adequately offset project-related jurisdictional effects by providing “no net loss” of estuarine wetland/open water habitat.

Avoidance and minimization measures instituted during construction included:

1. Visible construction signs, fencing, stakes, and/or flags to limit access in adjacent sensitive habitats;

2. Preconstruction surveys for nesting birds;
3. Development and implementation of an employee education program regarding sensitive biological resources and avoidance/minimization measures;
4. Full-time biological monitoring during construction;
5. Use of best management practices (BMPs) (i.e., silt or turbidity curtains) to manage sediment during construction;
6. Use of minimal impact construction equipment (e.g., vibrating hammer or hydraulic press) during construction;
7. Use of minimal impact construction methods (e.g., efficient labor) during construction;
8. Prohibiting birds from perching on construction equipment;
9. Proper disposal of spoils and construction-related trash;
10. Prohibiting the feeding of wildlife, use of harmful chemicals, and on-site contractor pets; and
11. Avoidance of western snowy plover critical habitat.

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List of Abbreviated Terms

ac	acres
amsl	above mean sea level
BA	Biological Assessment
BMPs	best management practices
BSA	Biological Study Area
BUOW	burrowing owl
CAGN	California gnatcatcher
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CBOC	California Burrowing Owl Consortium
CCA	California Coastal Act
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNPSEI	CNPS On-Line Electronic Inventory of Rare and Endangered Vascular Plants of California
Corps	United States Army Corps of Engineers
CSS	California Sage Scrub
CWA	Clean Water Act
cy	cubic yards
CZMA	Coastal Zone Management Act
EA	Expenditure Authorization
EFH	Essential Fish Habitat
EO	Executive Order
ESA	environmentally sensitive area
ESHA	Environmentally Sensitive Habitat Area
FAC	Facultative

FACU	Facultative Upland
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FMP	Fisheries Management Plan
ft	feet
GIS	geographic information system
GPS	global positioning system
HMMP	Habitat Mitigation and Monitoring Plan
in	inch
JD	Jurisdictional Delineation
LSA	LSA Associates, Inc.
m	meters
MBTA	Migratory Bird Treaty Act
mi	miles
MLPA	Marine Life Protection Act
MOU	Memorandum of Understanding
MPAs	marine protected areas
MSA	Magnusson-Stevens Fishery Conservation and Management Act
MSE	mechanically stabilized earth
NAS	Naval Air Station
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
OHWM	ordinary high water mark
PCH	Pacific Coast Highway
PCN	Pre-Construction Notification
PM	post miles
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
RGP	Regional General Permit
RHA	Rivers and Harbors Act
ROW	right-of-way
RSP	rock slope protection

RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SAN	Streambed Alteration Notification
SMCA	State marine conservation area
SMEA	San Marino Environmental Associates
SMP	State marine park
SMR	State marine reserve
SR-1	State Route 1
SWPPP	Storm Water Pollution Prevention Plan
UPL	Obligate Upland
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WSA	Wildlife Survey Area

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Chapter 1. Introduction

The Bolsa Chica Roadway Embankment Reconstruction Project (project) is located in the City of Huntington Beach in Orange County (refer to Figure 1), within the jurisdiction of California Department of Transportation (Caltrans) District 12. Protective improvements are proposed along State Route 1 (SR-1), also known as, Pacific Coast Highway (PCH), between Warner Avenue and Seapoint Avenue (refer to Figure 2). This segment lies between the Bolsa Chica Ecological Reserve and Bolsa Chica State Beach. Post miles (PM) for the biological study area (BSA) range from PM 28.7 to PM 29.7. Post miles where direct impacts from construction are to occur range from PM 29.11 to PM 29.18. All work will be completed within the Caltrans right-of-way (ROW).

The contractor is required to conduct potholing for utility verification prior to construction. The cost estimate of \$1,500,000 is currently designated as State Only Funds. At this time, federal funding participation is not anticipated. The Expenditure Authorization (EA) number for the project is 0K0100.

1.1. Project History

SR-1 was added to the State Highway system by the State Highway Board Amendment of 1919. The segment of SR-1 affected by the proposed project is a four-lane conventional highway that runs northwest and southeast, two lanes in each direction.

The northbound segment of SR-1 is subjected to landslides, erosion, and flooding during storms with high tide condition. On March 5, 2009, Caltrans installed a permanent protective barrier closing off one-half of the shoulder because the roadway began sloughing off into the adjacent estuary. Additional erosion of SR-1 occurred between March and July 2009. Peak high tides in late June 2009 and subsequent tide/scour action have caused unforeseen and rapid loss of sections of roadway pavement, removing the lateral support and undermining approximately 475 linear feet of SR-1 that is heavily used by summer recreation and cycling traffic. The loss of pavement and the unstable embankment condition affect the safety of the motoring, cycling, and pedestrian public. On July 1, 2009, Caltrans declared the project to be an emergency project.

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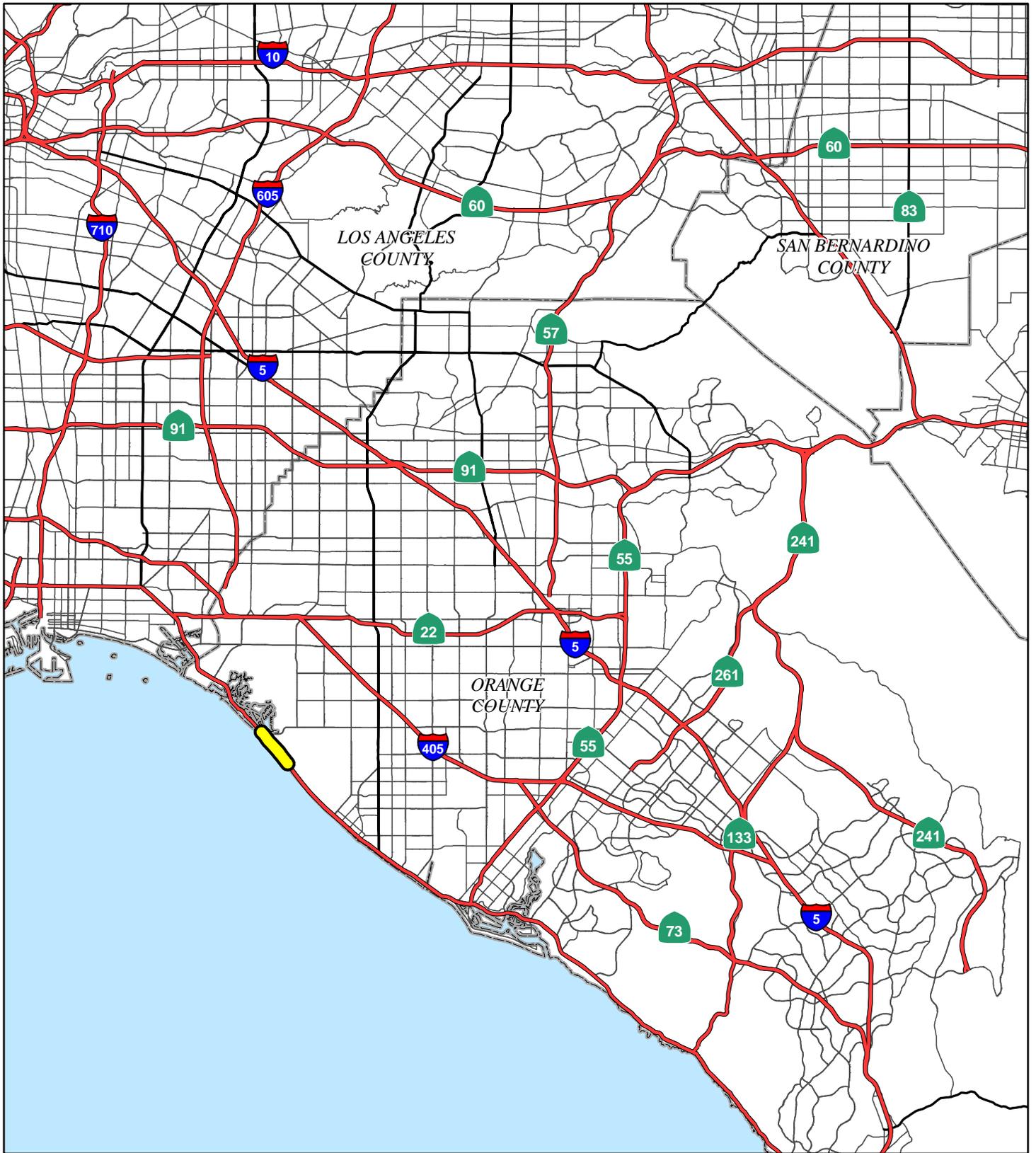


FIGURE 1

LEGEND
 Project Location



0 2.5 5
 Miles

SOURCE: Thomas Bros, (2007).

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*SR-1 Bolsa Chica Roadway Embankment
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Project Vicinity Map

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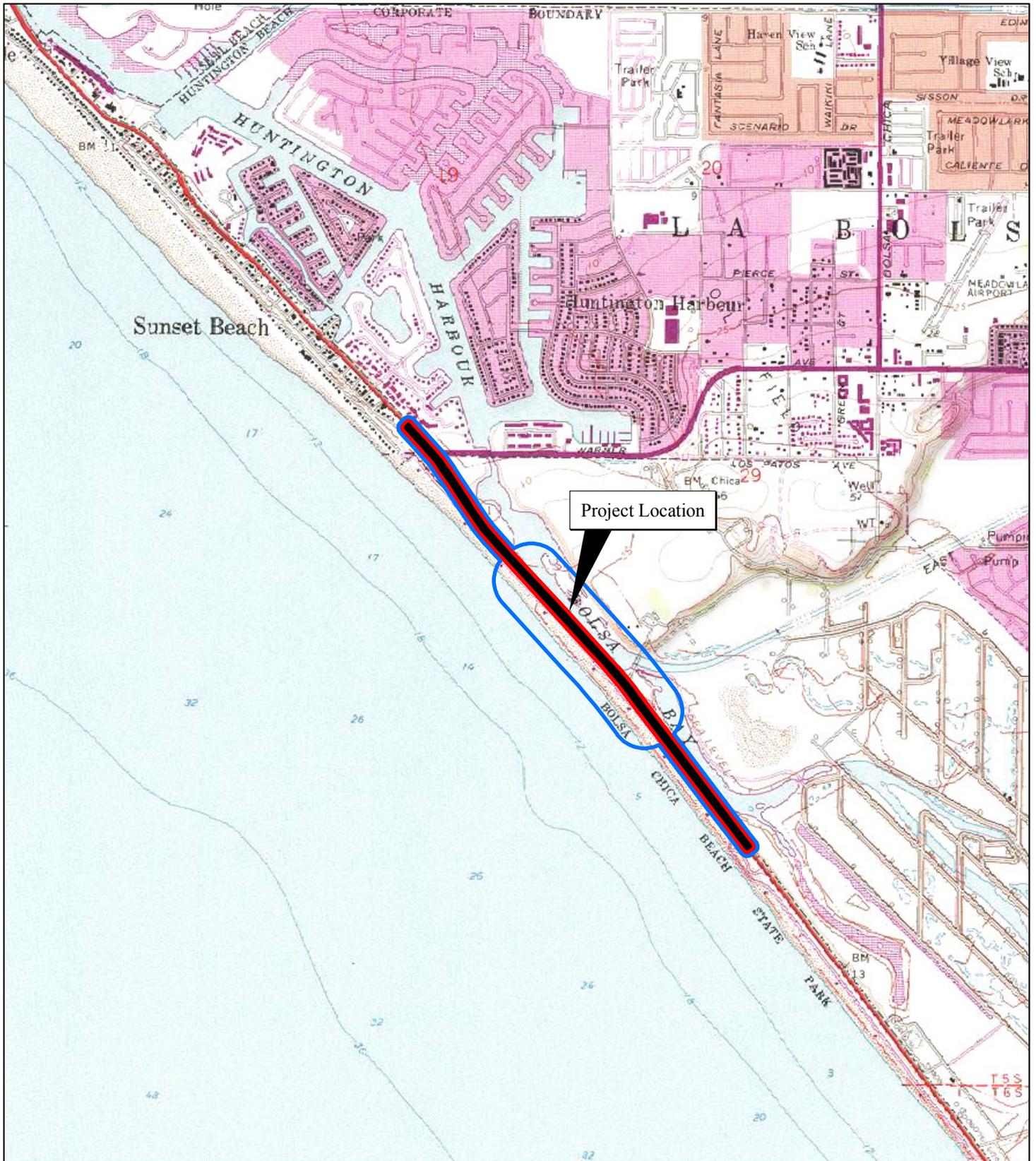
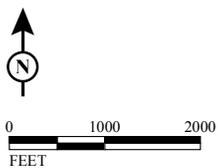


FIGURE 2

LEGEND

-  Project Location
-  Biological Study Area (BSA) (50' buffer)
-  Wildlife Survey Area (WSA) (500' buffer)



SOURCE: USGS 7.5' QUAD - SEAL BEACH (81); CALIF.
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
 Project Location Map
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The rate of pavement and material loss due to tidal action and longitudinal scour is currently undergoing daily acceleration and was predicted to accelerate more rapidly during the July and August peak high tides. As the exposed subbase of the roadway saturates and drains with each tidal cycle, the entire length of SR-1 in the project area has lost its supporting embankment. Additional loss of pavement and embankment will also endanger the 6-inch (in) oil pipeline buried longitudinally in the roadway, threatening rupture of the pipeline and discharge of oil into the adjacent Bolsa Chica Ecological Reserve.

Emergency construction commenced on July 27, 2009, and is proposed to last approximately 2 weeks, working 12-hour days, excluding weekends, to minimize delays on SR-1 during the peak summer season.

1.2. Project Description

This Project proposes to protect the roadway embankments on SR-1 by restoring the partially washed out highway embankment/shoulder pavement. Sheet piling 30 feet (ft) in length will be installed along approximately 475 ft of the roadway.

The purpose of this project is to protect the roadway embankments from further erosion and degradation by constructing steel sheet piles at the embankment. This emergency project will restore a stable driving surface as well as a shoulder that is used by bicyclists and pedestrians. The emergency project will preserve the publicly owned and operated facility in a safe, efficient, and continuously usable condition, thereby maintaining coastal access and mobility for the traveling public. It will also protect the adjacent estuarine environment from sloughing of the roadway embankment and the deposition of road base and asphalt rubble.

The anticipated equipment needed will be a backhoe, crane, vibratory hammer or hydraulic press, and sweeper truck, all operating from the roadway surface. Within the embankment area, the anticipated equipment will be limited to hand tools and a vibratory compactor.

Sections of unstable, undermined pavement will be saw cut to expose the fissures and repaired with structural backfill, roadway base, and hot-mix asphalt concrete. After the repair of the embankment, the damaged portion of the roadway will be repaved.

A minimum of soil disturbance is expected at the base of the sheet piles. The project will require 150 cubic yards (cy) of excavation and 350 cy of backfill. Structural

backfill operations will take place only during low tides. An existing 6 in oil pipeline on northbound SR-1 will be protected.

Project construction will require disturbance of topsoil that is contaminated with lead. Topsoil cannot be salvaged and stored on site due to lead contamination. The City of Huntington Beach has provided an off-site deposition location for this soil.

Due to the emergency and environmentally sensitive nature of the project location, only one viable alternative exists to protect the roadway embankment. Sheet piling is the preferred alternative rather than other alternatives such as rock slope protection (RSP), concrete retaining walls, or mechanically stabilized earth (MSE) walls, all of which have greater impacts to the sensitive environment. Construction logistics alternatives that were considered are described in detail below.

- **Alternative #1:** Caltrans would divert northbound traffic and close the two northbound lanes during 24-hour operations. Northbound traffic would detour from SR-1 north onto Golden West Street, then northeast on Warner Avenue to reconnect with SR-1. Local traffic would be allowed on Seapoint Avenue. Caltrans would direct the Contractor to work two (2) 12-hour shifts. This would take approximately 1 week to complete. Southbound traffic may be affected for short durations for equipment mobilizations.
- **Alternative #2:** Caltrans would close the two northbound lanes to traffic during the day for roughly 6 hours (9:00 a.m. to 3:00 p.m.) and at night for roughly 6 hours (11:00 p.m. to 5:00 a.m.) utilizing the same detour as Alternative #1. This alternative would lengthen the roadway repair schedule. When a contractor is not working, one northbound lane of traffic would be open. This alternative would complete the work in approximately 3 weeks. Southbound traffic may be affected for short durations for equipment mobilization.
- **Alternative #3:** Caltrans would close the two northbound lanes to traffic during the day for roughly 6 hours (9:00 a.m. to 3:00 p.m.) utilizing the same detour as Alternative #1. The contractor would operate only during daytime. This alternative would potentially lengthen the roadway repair schedule. When the contractor is not working, one northbound lane of traffic would be open. This alternative would complete the work in approximately 2 weeks. Southbound traffic may be affected for short durations for equipment mobilization.

Chapter 2. Study Methods

2.1. Regulatory Requirements

2.1.1. Review of Jurisdiction Subject to the California Coastal Act

When a project requires substantial fill or new construction fill within the Coastal Zone, Caltrans must obtain a permit from the California Coastal Commission (CCC) or the city or county with coastal permit jurisdiction. The CCC oversees implementation of the California Coastal Act (CCA) and the federal Coastal Zone Management Act (CZMA). The Coastal Zone is generally defined as the distance from the ocean shoreline to 1,000 yards inland or more in some locations.

The BSA and adjacent Bolsa Chica Ecological Reserve are within Orange County jurisdiction. Orange County does not have a certified Local Coastal Program that includes the Bolsa Chica Ecological Reserve, Bolsa Chica State Beach, or the Bolsa Bay. In addition, this project will be subject to original jurisdiction by the CCC due to the impact to public trust tidelands.

An emergency Coastal Development Permit was issued by the CCC for this project on July 15, 2009 (see Appendix A).

2.1.2. Review of Jurisdiction Subject to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act

The United States Army Corps of Engineers (USACE) regulates discharges of dredged or fill material into waters of the United States. These waters include wetland and nonwetland bodies of water that meet specific criteria. The Corps regulatory jurisdiction, pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 United States Code [USC] 403), regulates almost all work in, over, and under waters listed as “navigable waters of the U.S.”

Under Section 10 of the RHA, Corps jurisdiction over tidal waters of the United States extends from the ordinary low tide 3 nautical miles seaward. Corps jurisdiction shoreward extends to the line on the shore reached by the mean high water. This jurisdiction extends to this edge even though portions of the water body may be extremely shallow and are thus considered “navigable in law” although they may not be navigable in fact (33 Code of Federal Regulations [CFR] 329.12).

Pursuant to Section 404 of the CWA, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term “waters of the United States” is defined in 33 CFR Part 328 and currently includes: (1) all navigable waters (including all waters subject to the ebb and flow of the tide), (2) all interstate waters and wetlands, (3) all impoundments of waters mentioned above, (4) all tributaries to waters mentioned above, (5) the territorial seas, and (6) all wetlands adjacent to waters mentioned above.

The discharge of dredged or fill material (temporarily or permanently) into waters of the United States (including wetlands) requires authorization from the Corps pursuant to Section 404 of the CWA. Regional General Permit No. 63 (RGP 63) has been issued by the Corps for this emergency project (see Appendix B). Potential project effects to Section 10 waters are also authorized under RGP 63.

2.1.3. Review of Jurisdiction Subject to Section 1600 of the California Fish and Game Code

Pursuant to Division 2, Chapter 6, Sections 1600–1602 of the California Fish and Game Code, the California Department of Fish and Game (CDFG) regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife.

Unlike the Corps, CDFG regulates not only the discharge of dredged or fill material, but all activities that alter streams and lakes and their associated habitat. These additional areas include some artificial stock ponds and irrigation ditches constructed on uplands and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area’s federal wetland status. In addition, the lateral extent of streambed may, in some situations, extend to include broader cross-sectional widths of drainages and floodplains above and beyond the area contained within the ordinary high water mark (OHWM), depending on the hydrological regime of a stream or river. For this reason, the dimensions of a CDFG jurisdictional streambed may vary substantially from the measured OHWM within the same stream or river.

A CDFG Streambed Alteration Notification (SAN) is required for all activities resulting in effects to streambeds and their associated riparian habitats; however, the CDFG does not regulate tidal waters unless they occur within a river or stream. Therefore a Lake or Streambed Alteration Agreement (SAA) is not expected to be required for this project. Although an SAA may not be required, CDFG is a

stakeholder through its management of the Bolsa Chica Ecological Reserve and an advisor to the CCC. As such, they will be notified of all project activities.

2.1.4. Review of Jurisdiction Subject to Section 401 of the Clean Water Act

The Regional Water Quality Control Board (RWQCB) is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the Corps (i.e., waters of the United States, including any wetlands). RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

The emergency authorization from the Corps (RGP 63) is pre-certified by the State Water Resources Control Board (see Appendix B); therefore, a separate Section 401 Water Quality Certification from the RWQCB is not required. The project will comply with standard conditions of the SWRCB and special conditions from the RWQCB as included in RGP 63.

2.1.5. Federal Endangered Species Act

Under provisions of Section 7(a)(2) of the Federal Endangered Species Act (FESA), a federal agency that permits, licenses, funds, or otherwise authorizes a project activity must consult with the United States Fish and Wildlife Service (USFWS) to ensure that its actions would not jeopardize the continued existence of any listed species or destroy or adversely modify critical habitat that may be affected by the project. Chapter 4 of this Natural Environment Study (NES) provides details on the proposed project's effects on federally listed plant and wildlife species.

As a result of a Federal Section 7 informal consultation between the Corp and the USFWS, a may affect but not likely to adversely affect determination has been made due to potential impacts to western snowy plover, California brown pelican, light-footed clapper rail, and California least tern (see Appendix C).

2.1.6. California Endangered Species Act

The California Endangered Species Act (CESA) is administered by CDFG and prohibits the take of plant and animal species identified as either threatened or endangered in the State of California by the Fish and Game Commission (Fish and Game Code Section 2050–2089). “Take” means hunt, pursue, catch, capture, or kill

or attempt to hunt, pursue, catch, capture or kill. Sections 2081 and 2080.1 of the CESA allow CDFG to authorize exceptions to the prohibition of take of the State-listed threatened or endangered plant and animal species for purposes such as public and private development. The emergency status of the project qualifies the project as exempt under CEQA, per Section 15269 of the CEQA Guidelines (<http://ceres.ca.gov/ceqa/guidelines/art18.html>). Chapter 4 of this NES provides details on the proposed project's effects to State-listed plant and wildlife species.

A 2081 permit and/or a concurrence letter will not be necessary from the CDFG to authorize the project with regard to State-listed wildlife species, although the following State-listed species could be affected by the project: California black rail (ST, FP), Belding's savannah sparrow (SE), California brown pelican (FE, SE), light-footed clapper rail (FP, FE, SE), and California least tern (FP, FE, SE). CDFG representatives have made the determination that a 2081 permit will not be necessary (email correspondence, August 5, 2009).

2.1.7. Migratory Bird Treaty Act

Native bird species and their nests are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). The MBTA states that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected. The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale any migratory bird, its eggs, parts, and nests, except as authorized under a valid permit.

Executive Order (EO) 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies "taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with the USFWS that promotes the conservation of migratory bird populations."

The USFWS authorization letter dated July 20, 2009, doesn't authorize take under the MBTA; however, page 6 of the informal consultation letter addresses the MBTA. In summary, Caltrans will avoid take of active nests by having a biological monitor on site full-time during construction to ensure that activities do not disturb any active nests. No impacts to nesting birds protected by the MBTA will occur; therefore, an MOU will not be necessary.

2.1.8. Invasive Species

On February 3, 1999, President Clinton signed EO 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 (FHWA) 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 California Environmental Quality Act (CEQA) analysis for a proposed project.

A total of nine nonnative plant species occurring on the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory were identified in the BSA. In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur.

2.1.9. Marine Life Protection Act

The Marine Life Protection Act (MLPA) was passed in 1999 and requires California to reevaluate all existing marine protected areas (MPAs) and potentially design new MPAs that together function as a Statewide network. The MLPA has clear guidance associated with the development of this MPA network. MPAs are developed on a regional basis with MLPA- and MPA-specific goals in mind, and are evaluated over time to assess their effectiveness for meeting these goals.

MPAs are separate geographic marine or estuarine areas designed to protect or conserve marine life and habitat. There are three types of MPAs designated (or recognized) in California: State marine reserve (SMR), State marine park (SMP) and State marine conservation area (SMCA).

Pursuant to the MLPA, Bolsa Bay is considered an SMP by the CDFG.

2.1.10. Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) was authorized in 1996 and requires the National Marine Fisheries Service (NMFS) to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a federal Fisheries Management Plan (FMP). EFH is defined as the

waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Specifically, the MSA requires: (1) federal agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that could adversely affect EFH; (2) NMFS to provide conservation recommendations for any federal or State action that could adversely affect EFH; and (3) federal agencies to provide a detailed response in writing to NMFS within 30 days of receiving EFH conservation recommendations.

The proposed project is located within an area designated as EFH for both the Coastal Pelagic Species and Pacific Coast Groundfish FMPs.

2.2. Studies Required

2.2.1. Definition of Study Areas

The BSA and wildlife survey area (WSA) were determined by incorporating electronic data provided by the design engineer into a geographic information system (GIS) layout, which included areas of potential direct effect. The limits of the BSA were extended beyond the maximum extent of potential direct effect where necessary to identify jurisdictional waters and special-status plant species within and immediately adjacent to the project area (i.e., 50 ft). The limits of the WSA extended approximately 500 ft around the project impact zone, per recommendations from Caltrans. The establishment of these study areas provided survey areas that were larger than the area of potential direct effect (project impact zone). The BSA was then used as the study limit boundaries for the Jurisdictional Delineation (JD) and the focused plant surveys conducted during 2009 (see Figure 2). The WSA was used as the study limit boundaries for focused wildlife surveys that were conducted in 2009. With the exception of the open water, all areas were accessible by foot during project surveys.

2.2.2. General Surveys and Habitat Assessments

Prior to performing the field surveys, existing documentation relevant to the BSA was reviewed. Database records and websites reviewed were:

- California Natural Diversity Database (CNDDDB) information (Version 3.1.0), which is administered by the CDFG (this database covers sensitive plant and animal species as well as sensitive natural communities that occur within California)

- California Native Plant Society On-Line Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI)
- CalFlora website (<http://www.calflora.org>)
- CalPhotos website (<http://calphotos.berkeley.edu>)
- The California Consortium of Herbaria website (<http://ucjeps.berkeley.edu/consortium/>)
- The Bolsa Chica Land Trust website (www.bolsachicalandtrust.org)
- USFWS website (www.fws.gov)

Searches of the CNDDDB and CNPSEI databases were conducted for the quadrangles containing and surrounding the BSA (i.e., the *Long Beach, Seal Beach, San Pedro, Torrance, Inglewood, South Gate, Whittier, La Habra, Anaheim, Newport Beach, and Los Alamitos* United States Geological Survey [USGS] 7.5-minute quadrangles). Other sensitive species known to occur in the general area were also considered.

Surveys were conducted between March 2009 and June 2009 by LSA Associates, Inc. (LSA) biologists. To adequately identify habitat types (i.e., plant communities) within the project area, the consultant biologists investigated the roadside areas on foot with the aid of binoculars. Plant communities and subcommunities were determined in general accordance with categories set forth in *California Vegetation* (Holland and Keil, 1996) and *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). Vegetation communities were mapped on an orthographically corrected (1 in = 50 ft) aerial photograph. Habitat areas that were considered too small to map separately were included in nearby habitat types determined to be the most appropriate based on species composition.

2.2.3. Botanical Surveys

A literature search preceded the 2009 surveys and focused on the habitat requirements and the guidelines for conducting special-status plant surveys. Specifically, this literature search involved a review of the California Native Plant Society (CNPS) Botanical Survey Guidelines (CNPS 2001), the *California Department of Fish and Game Resource Agency's Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities* (CDFG 1997), the on-line version of the Inventory of Rare and Endangered Plants (CNPSEI 2009), photographs of special-status plants from the on-line Calflora website (www.calflora.org), and querying the CNDDDB (CDFG 2009).

Focused botanical surveys within the BSA were conducted on April 14 and 15 and June 16, 2009, by LSA biologists Robert Steers, Ph.D., and Kristen Yee. During the April surveys, the entire project site was traversed on foot. CDFG biologist Jeff Stoddard confirmed during a field meeting on April 14 that populations of estuary seablight and coast woolly-heads occurred within the BSA. A reference population of coast woolly-heads was visited on April 15, 2009, at Bolsa Chica State Beach to verify the identification of the species. During the second survey in June, the portion of the BSA northeast of SR-1 was traversed on foot by two LSA Biologists: Robert Steers and Kristen Yee.

Surveys were conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques. Surveys were floristic in nature and conducted during the flowering seasons of the target species pursuant to CNPS Survey Guidelines (CNPS 2001).

During each survey, the biologists walked approximately 10 to 25 ft wide transects, depending on ground visibility, in habitat determined to be potentially suitable for any of the target species over the majority of the study area. A portable global positioning system (GPS) Trimble XH unit was used to record all target species locations at a submeter accuracy level.

The timing of the surveys were selected to correspond with the optimal time for detecting special-interest plants in the BSA, based on information provided by the CNPS Online Inventory (<http://www.cnps.org>). The surveys were floristic in nature, and all vascular plant species encountered in the BSA were identified. Plants were keyed using *The Jepson Manual, Higher Plants of California* (Hickman, 1993) and *The Flora of Santa Ana River and Environs* (Clark et al., 2007). Secondary sources for plant identification, such as CalFlora (<http://www.calflora.org>), CalPhotos (<http://calphotos.berkeley.edu>), and the California Consortium of Herbaria (<http://ucjeps.berkeley.edu/consortium>) were also consulted. All vascular plant species observed during the surveys were noted and are included in Appendix D.

2.2.4. Wildlife Surveys

2.2.4.1. FOCUSED CLAPPER AND BLACK RAIL SURVEYS

Focused bird surveys for light-footed clapper rail (*Rallus longirostris levipes*) and California black rail (*Laterallus jamaicensis coturniculus*) were conducted in 2009. These surveys were authorized under John Konecny's (independent consultant) Section 10(a) permit (No. TE837308-5) and a CDFG Memorandum of Understanding

(MOU). Six focused surveys were conducted between April 18 and May 30, 2009, by LSA biologists Richard Erickson, Matt Teutimez, Mark Billings, and independent consultant John Konecny. Caltrans biologist Arianne Preite accompanied LSA biologists on several surveys. Surveys were conducted in accordance with methodology recommended to the USFWS by the Clapper Rail Study Team. No formal survey protocol has been established for either species.

All wildlife species observed during the general and focused surveys were noted and are included in Appendix E. Results of the focused survey for the light-footed clapper rail and the California black rail are included in Appendix F.

2.2.4.2. FOCUSED BURROWING OWL NESTING SURVEYS

On April 2, 2009, LSA biologists Angela Roundy and Kristen Yee conducted a burrowing owl habitat suitability assessment within the BSA. Suitable habitat was identified by the presence of low vegetation cover and the presence of potential burrows. Due to the presence of suitable habitat within the BSA, LSA biologists Angela Roundy, Ingri Quon, Kristen Yee, and/or Leo Simone conducted four protocol surveys for western burrowing owl on the mornings of June 5, 8, 9 and 11, 2009. The surveys were conducted in accordance with the western burrowing owl survey protocol and mitigation guidelines (CBOC 1993). Surveys were conducted within the direct project impact area and areas adjacent to the project area (500 ft buffer).

Focused surveys were conducted in order to determine presence or absence of fossorial mammal burrows and/or burrows with sign of burrowing owl (e.g., individuals, feathers, pellets, whitewash, and prey remnants) or other nonnatural structures with the potential for the owl(s) to inhabit (e.g., drainage pipes, concrete refuse piles, debris piles, and detention basins) within suitable habitat areas. The burrowing owl focused report is included in Appendix G.

2.2.5. Jurisdictional Delineation

The fieldwork for this evaluation was conducted primarily by LSA biologists Angela Roundy and Kristen Yee on March 31, April 2, and June 4, 5, 11 and 16, 2009. LSA biologist Jim Harrison assisted in the fieldwork on March 31. Additional field assistance was provided by LSA biologist Elizabeth Delk and Caltrans biologist Arianne Preite on June 5, and LSA biologist Robert Steers on June 16. Soils of the BSA are mapped in Figure 3.

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FIGURE 3

LEGEND

- | | |
|---|---|
|  Project Location |  Myford Sandy Loam |
| Soils |  Pits |
|  Beaches |  Tidal Flats |
|  Marina Loamy Sand |  Water |



SOURCE: U.S. Department of Agriculture, Natural Resources Conservation Service (2008)

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SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project

Soils

12-ORA-1 PM 28.7/29.7

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Areas of potential jurisdiction were evaluated according to Corps, CDFG, CCC, and RWQCB criteria. The boundaries of the potential jurisdictional areas were observed in the field and mapped on a series of aerial photographs (at a scale of 1 in = approximately 50 ft), which together show the entire study area. Measurements of federal and State jurisdictional areas mapped during the course of the field investigation were determined by a combination of direct measurements taken in the field and measurements taken from the aerial photographs.

Areas supporting species of plant life potentially indicative of wetlands were evaluated according to routine wetland delineation procedures described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (Regional Supplement) (Corps 2008) and the Corps of Engineers 1987 Wetland Delineation Manual (1987 Manual) (Environmental Laboratory 1987). Representative sample plots were selected and examined in the field in those areas where wetland jurisdiction was in question or needed to be confirmed. At each sample plot, the dominant and subdominant plant species were identified and their wetland indicator status noted (Reed 1988). When possible, a small sample pit (approximately 24 in deep) was dug at each plot in order to examine soil characteristics and composition. Soil matrix colors were classified according to the Munsell Soil Color Charts (Munsell Color 2000). Hydrological conditions, including any surface inundation, saturated soils, groundwater levels, and/or other wetland hydrology indicators, were noted. General site characteristics were also noted. The Wetlands Delineation and Assessment of Jurisdictional Waters report is included in Appendix H.

2.3. Personnel and Survey Dates

Table 1 lists the surveys completed and the personnel utilized for the surveys.

2.4. Agency Coordination and Professional Contacts

A letter requesting a list of proposed, threatened, or endangered species potentially occurring within the BSA was received by the USFWS on November 26, 2008. A response to the request was received on December 18, 2008 (Appendix I).

Table 1: Surveys Conducted and Personnel Utilized

Survey Type	Dates	Biologist(s)
Biological Reconnaissance Survey	May 5, 2009	Kristen Yee, Angela Roundy, Crystahl Taylor, Wendy Fisher
Burrowing Owl Habitat Suitability Assessment	April 2, 2009	Kristen Yee, Angela Roundy
Focused Botanical Surveys, Vegetation Mapping	April 14, April 15, June 16, 2009	Robert Steers and Kristen Yee, Arianne Preite (Caltrans)
Focused Light-footed Clapper Rail and California Black Rail Surveys	April 18, April 29, May 9, May 16, May 23, May 30, 2009	John Konecny, Richard Erickson, Matt Teutimez, Mark Billings, Arianne Preite (Caltrans)
Burrowing Owl Focused Burrow Surveys	June 5, June 8, June 9, June 11, 2009	Kristen Yee, Angela Roundy, Ingri Quon, Leo Simone
Jurisdictional Delineation	March 31, April 2, June 4, June 5, June 11, June 16, 2009	Kristen Yee, Angela Roundy, Jim Harrison, Robert Steers, Elizabeth Delk, Arianne Preite (Caltrans)

An email discussion began on May 26, 2009, between Arianne Preite (Caltrans), Sally Brown (USFWS) and Stephanie Hall (Corps). The discussion included the submittal requirements for the NES regarding Section 7 consultation. Sally Brown also confirmed that a Biological Assessment (BA) would not be needed if the NES contained all of the information required in a BA.

Correspondence through email between Kristen Yee (LSA) and Jeff Stoddard (CDFG) occurred from April to June 2009. The content of the email discussions informed Jeff Stoddard when LSA biologists would be on site to perform field surveys (Botanical, Clapper Rail/Savannah Sparrow, Burrowing Owl, and Jurisdictional Delineation).

An email discussion began on July 2, 2009, with an email from Sally Brown (USFWS) to Arianne Preite (Caltrans) and Sophia Huynh (Corps) with a cc to Sylvia Vega (Caltrans) and applicable agencies of the Agency Team (Agency Team includes Sally Brown and Jonathan Snyder [USFWS], Stephanie Hall and Sophia Huynh [Corps], Jeff Stoddard and Erinn Wilson [CDFG], Karl Schwing [CCC], Adam Fischer [RWQCB]). The discussion included the start of the Emergency Consultation and also addressed avoidance/minimization measures.

An email from Arianne Preite (Caltrans) to the Agency Team on July 13, 2009, discussed a Formal Request for RGP 63 to the Corps and Attachment C to RWQCB for the proposed emergency work.

An email from Arianne Preite (Caltrans) to applicable agencies of the Agency Team occurred on July 13, 2009. The purpose of the email was to send cultural documentation per the request of Sophia Huynh (Corps) to process RGP 63.

An email from Arianne Preite (Caltrans) to applicable agencies of the Agency Team was sent on July 13, 2009. The purpose of the email was to send maps and photos to assist in processing the emergency permits and State Exemption.

An email from Arianne Preite (Caltrans) to applicable agencies of the Agency Team occurred on July 13, 2009. This email contained updated roadway plans and draft measures from USFWS.

An email from Arianne Preite (Caltrans) was sent to applicable agencies of the Agency Team on July 14, 2009. This email contained updated structure plans.

An email discussion began on July 14, 2009, with an email from Jeff Stoddard (CDFG) to Arianne Preite (Caltrans). The content of the email discussed that Kelly O'Reilly (CDFG) observed a light-footed clapper rail at the Walk Bridge near the project site.

On July 15, 2009, the CCC issued Emergency Permit No. 5-09-131-G for the project (Appendix A).

An email from Arianne Preite (Caltrans) to Sally Brown (USFWS), with a cc to applicable agencies of the Agency Team, occurred on July 15, 2009. The purpose of the email was to update and concur with all of the agencies on the proposed mitigation measures for the Emergency Consultation.

An email from Arianne Preite (Caltrans) to Sophia Huynh (Corps) with a cc to applicable agencies of the Agency Team, occurred on July 15, 2009. The content of the email included minor comments from Caltrans on the draft RGP 63 that was submitted to the Corps. Ms. Huynh later responded on July 15, 2009, discussing that the revised RGP 63 notification including the comments from Caltrans supercedes the version sent on July 14, 2009.

An email from Bryant Chesney (National Oceanographic and Atmospheric Administration [NOAA]) to Sophia Huynh (Corps) with a cc to applicable agencies of the Agency Team occurred on July 15, 2009. The purpose of the email was to inform the agencies that the NOAA NMFS reviewed the Pre-Construction Notification (PCN) (SPL-2009-00531-SCH) and concluded that the permanent impact to wetland resources would adversely affect essential fish habitat for various federally managed fish species under Pacific Coast Groundfish and Coastal Pelagic Species FMPs. The email also discussed that the proposed work should be conditioned to require a pre- and postconstruction wetland impact assessment and to complete a conceptual mitigation plan by July 31, 2009. Arianne Preite (Caltrans) responded that a conceptual mitigation plan could feasibly be assembled by the end of July, but a postconstruction wetland assessment was requested to be conducted by LSA per recommendation by Mr. Chesney (NOAA).

Karl Schwing (CCC) sent an email to applicable agencies of the Agency Team on July 16, 2009. The content of the email included the Final Emergency Coastal Permit.

An email from Sally Brown (USFWS) to Arianne Preite (Caltrans) and Sophia Huynh (Corps) was sent on July 20, 2009. The content of the email contained the Final Section 7 consultation. The email was directed to the Corps because the Corps became the lead for the consultation due to the change in the lack of federal funding.

An email from Sophia Huynh (Corps) to Arianne Preite (Caltrans) and Stephanie Hall (Corps) occurred on July 20, 2009. The content of the email included the Final Permit from the Corps, which was “pre-certified” by the RWQCB.

The Corps issued a precertification letter for the project under RGP 63 on July 20, 2009 (Appendix B). RGP 63 serves as the permit from the RWQCB as well.

On July 20, 2009, informal Section 7 consultation between the Corps and the USFWS pertaining to the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern resulted in a may affect but not likely to adversely affect determination (Appendix C).

An email from Arianne Preite (Caltrans) to Jeff Stoddard (CDFG) was sent on July 28, 2009. Arianne Preite (Caltrans) stated her understanding that no specific CESA requirements were associated with the project, but that direction was needed from CDFG regarding the After-the-Fact reporting requirements. In response, Jeff Stoddard (CDFG) requested an analysis of total impacts before any final decisions

were made. Arianne Preite (Caltrans) responded that the NES will be provided to CDFG and requested that CDFG notify her of requirements for any after-the-fact notices as soon as possible.

A contractor education program was developed and implemented prior to construction by LSA biologists Angela Roundy and Corey Knips on July 28, 2009.

Bryant Chesney (NOAA) returned a phone call to Crystahl Taylor of LSA on August 3, 2009. Discussion topics included EFH within the BSA and the fish species that NMFS is potentially concerned about (Northern anchovy and leopard shark).

Email correspondence from Erinn Wilson (CDFG) to Arianne Preite (Caltrans) made the determination that a 2081 permit would not be required for the project (August 5, 2009).

2.5. Limitations That May Influence Results

The collection of biological field data is normally subject to environmental factors that cannot be controlled or reliably predicted. Consequently, the interpretation of field data must be conservative and consider the uncertainties and limitations necessarily imposed by the environment. However, due to the experience and qualifications of the consultant biologists involved in the surveys, this limitation is not expected to severely influence the results or substantially alter the findings.

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Chapter 3. Environmental Setting

3.1. Description of the Existing Biological and Physical Conditions

As described in *The Jepson Manual* (Hickman, 1993), the proposed project area is located within the South Coast subregion of the Southwestern California region of the California Floristic Province. The South Coast subregion is characterized by valleys and small hills that extend from the coast inland to the foothills of the Transverse and Peninsular Mountain Ranges. Much of the area is intensively developed for urban, suburban, and agricultural uses. The natural vegetation of the subregion consists primarily of chaparral, dune scrub, dune mat, California sage scrub (CSS), annual grasslands, and some riparian scrub and woodland. Much of the natural vegetation occurs in the Bolsa Chica Ecological Reserve. Outside of the reserve, scattered, often fragmented patches of natural vegetation on hills or in other areas are not easily developed.

3.1.1. Study Area

The Bolsa Chica Roadway Embankment Reconstruction Project is located in the City of Huntington Beach in Orange County, within the jurisdiction of Caltrans District 12. The BSA is an approximately 1.0-mile (mi) long linear stretch of SR-1 between Warner Avenue and Seapoint Avenue. This segment of SR-1 is a four-lane conventional highway that runs northwest to southeast with two lanes in each direction. Post miles for the project impact area range from PM 28.7 to PM 29.7 (Station Nos. 225.7 to 254.6). The northbound segment of SR-1 is subjected to landslides, erosion, and flooding during storms with high tide conditions.

3.1.2. Physical Conditions

The proposed project is located in Township 5 South, Range 11 West, Section 29 of the *Seal Beach, California* USGS topographic quadrangle map. The elevation is approximately 5 to 8 ft above mean sea level (amsl). The BSA is located on the *Long Beach, California* USGS 7.5-minute series topographical quadrangle. Soils of the BSA are mapped in Figure 3.

The topography is relatively flat adjacent to SR-1. The BSA lies between Bolsa Chica State Beach to the south-southwest and Bolsa Bay to the north-northeast. The

northerly half of the BSA borders Outer Bolsa Bay and the southerly half borders Inner Bolsa Bay. The Bolsa Chica Ecological Reserve lies north-northeast of the Caltrans ROW and totals a little over 1,600 ac, of which about 1,350 ac are publicly owned. The remaining 250 ac are owned by private companies or individuals. A variety of other land uses exist adjacent to the BSA, including transportation, residential, commercial, recreational, undeveloped, and water-related land uses.

Inner Bolsa Bay and Outer Bolsa Bay are tidally influenced basins with earthen bottoms. Water is exchanged between Inner Bolsa Bay and Outer Bolsa Bay through culverts in the levee that is located between them. There are two high and two low tides daily. Inner Bolsa Bay fluctuates approximately 2 to 3 ft as a result of tidal influence, while Outer Bolsa Bay fluctuates up to approximately 8 ft daily.

Historically, Bolsa Chica was part of a large, estuarine marsh complex. Activities beginning in the late 1800s significantly altered the area and cut much of Bolsa Chica off from tidal influence. Much of the wetland had been an oil field since 1940. While it had remnants of a coastal wetland (i.e., a few stands of pickleweed and other plants typical of such a habitat), it could not function fully as it stood.

In 2004, the Bolsa Chica Lowlands Restoration Project was initiated to restore large portions of the wetland ecosystem of the Bolsa Chica lowlands (approximately 600 ac). Raised maintenance roads and well pads that would prevent good circulation of tidal flow had to be leveled. Pockets of toxic contamination were removed to protect future wildlife. Most importantly, a new opening to the ocean had to be constructed to allow tidal action to flood a large portion of the wetland with seawater, as it did historically. The direct connection to the Pacific Ocean was reestablished in August of 2006 through the creation of a new tidal inlet that cuts through Bolsa Chica State Beach and crosses SR-1 near the Huntington Mesa, just southeast of the BSA. Connection to Inner Bolsa Bay and Outer Bolsa Bay occurs northwest of the BSA. This connection passes under Warner Avenue and flows into Huntington Harbor and Anaheim Bay out to the Pacific Ocean (www.bolsachicalandtrust.org).

3.1.3. Biological Conditions in the Biological Study Area

The plant communities within the BSA consist of a mosaic of several habitat types. A total of nine vegetation communities/land uses were identified within the BSA, including native dune mat, estuarine wetland/open water, invaded dune mat, invaded ice plant dune mat, dune scrub, coastal scrub, bare ground, disturbed, and exotic annual grassland. Transportation/road land use comprises the majority of the BSA.

All plant communities within the BSA are illustrated on the vegetation communities figure (refer to Appendix J) and discussed below. Table 2 lists the acreage of each of the vegetation communities present within the BSA boundary. Selected photographs of the biological conditions of the BSA can found in Appendix K.

**Table 2: Acreages of Vegetation Communities/
Land Uses Occurring within the BSA**

Vegetation Community	Total Acres
Disturbed	20.47 ¹
Native Dune Mat	5.28
Estuarine Wetland/Open Water	3.29
Invaded Ice Plant Dune Mat	1.56
Invaded Dune Mat	0.75
Dune Scrub	0.61
Coastal Scrub	0.54
Bare Ground	0.44
Exotic Annual Grassland	0.35
Total	33.28

¹ Includes 20.03 acre of Transportation/Road
BSA = Biological Study Area

3.1.3.1. DISTURBED

This “habitat” consists of developed areas such as existing paved roads, ornamental vegetation, and commercial and residential properties. Disturbed areas are characterized by nonnative vegetation associated with past human disturbances and can be found on old roads, roadsides, and in past clearings within the BSA. Where vegetated, these areas are typically dominated by ripgut brome (*Bromus diandrus*).

3.1.3.2. NATIVE DUNE MAT

Native dune mat vegetation is the dominant plant community in the BSA. Dune mat consists of low-lying vegetation that is typically sparsely distributed on dune sand. Native dune mat was dominated by beach evening primrose (*Camissonia cheiranthifolia*), beach-bur (*Ambrosia chamissonis*), and sea rocket (*Cakile maritima*). Also occurring in this habitat is saltgrass (*Distichlis spicata*), sand verbena (*Abronia umbellatum* ssp. *umbellatum*), and beach morning glory (*Calystegia soldanella*).

3.1.3.3. ESTUARINE WETLAND/OPEN WATER

Estuarine wetland vegetation occurs in the low to high marsh along the northeastern border of the BSA. This habitat is found on the tidal marsh margins of Bolsa Chica estuary. At low tide, rooted vegetation is exposed in higher parts of the marsh. The halophytic (salt-loving) vegetation found in the estuarine wetland provides valuable

function to the overall wetland system by anchoring soils and controlling erosion. Parts of the tidal marsh are inundated year round and may be considered open water/aquatic habitat. It is typically unvegetated within the BSA, and includes the deep estuarine waters of Bolsa Bay.

Dominant species observed in the shallower portions of this habitat within the BSA included Watson's saltbush (*Atriplex watsonii*), American saltwort (*Batis maritima*), saltgrass, alkali heath (*Frankenia salina*), crystalline ice plant (*Mesembryanthemum crystallinum*), fleshy jaumea (*Jaumea carnosa*), southwestern spiny rush (*Juncus acturus* ssp. *leopoldii*), woody pickleweed (*Salicornia virginica*), and woolly seablight (*Suaeda taxifolia*). Individuals of estuary seablight (*Suaeda esteroa*) (CNPS 1B) were uncommonly scattered in the estuarine wetland habitat within the BSA, as shown in Appendix J.

3.1.3.4. INVADED DUNE MAT

Invaded dune mat vegetation was typically dominated or co-dominated by two invasive herbaceous annual plant species, riggut brome and sea rocket, which have displaced the native perennial species that were characteristic of native dune mat vegetation. Hence, beach-bur and beach evening primrose were usually uncommon to occasional in this vegetation type. In one stand, beach-bur was co-dominant with riggut brome. Annual yellow sweetclover (*Melilotus indicus*) was locally common in some stands. Other invasive annuals such as rescue grass (*Bromus catharticus*), red brome (*Bromus madritensis* ssp. *rubens*), musky stork's bill (*Erodium moschatum*), crete weed (*Hedypnois cretica*), and rat-tail fescue (*Vulpia myuros*) were occasional to common.

3.1.3.5. INVADED ICE PLANT DUNE MAT

As the name implies, invaded ice plant dune mat is dominated by hottentot fig (*Carpobrotus edulis*), which forms a nearly complete monoculture. Areas mapped as invaded iceplant dune mat typically included invasive herbaceous annuals like nonnative sea rocket, treasure flower (*Gazania linearis*), African daisy (*Ostersperumum fruticosum*), cape honeysuckle (*Tecomaria capensis*), yellow sweet clover, and various exotic annual grasses (mostly common riggut grass). Small inclusions of native dune mat with an occasional native dune plant (such as beach-bur or beach evening primrose) were common.

3.1.3.6. DUNE SCRUB

Dune scrub vegetation was usually inland from dune mat vegetation or upland from estuarine wetland vegetation along most of the survey area. Stands of this vegetation

type were dominated by spreading goldenbush (*Isocoma menziesii*) with big saltbush (*Atriplex lentiformis*) present in some stands. Other perennials included coyote bush (*Baccharis pilularis*) and western ragweed (*Ambrosia psilostachya*). Several species found in dune scrub in the northwestern portion of the BSA, at the corner of SR-1 and Warner Avenue near the Bolsa Chica Conservancy Interpretive Center, were planted for restoration. These included fourwing saltbush (*Atriplex canescens*), California sagebrush (*Artemisia californica*), bladderpod (*Isomeris arborea*), California buckwheat (*Eriogonum fasciculatum*), and bluff buckwheat (*E. parvifolium*).

Because dune scrub vegetation is an upland plant community found adjacent to estuarine wetland vegetation within the BSA, plant species associated with salt marsh habitat (i.e., estuarine wetland) are sometimes intermixed with the dune scrub habitat. Although this habitat type is dominated by a potential hydrophyte (coast goldenbush), it is LSA's professional opinion that this plant is persisting due to an affinity to saline soils rather than on the presence of wetland hydrology. Therefore, coast goldenbush is functioning as a halophyte rather than a hydrophyte within the areas of dune scrub vegetation.

3.1.3.7. COASTAL SCRUB

Coastal scrub vegetation was planted by California State Parks along the edges of their buildings on the southwest side of SR-1 and also in a large open space at the south side of the project area near the entrance to beach parking at Bolsa Chica State Beach. Planting areas were dominated by California encelia (*Encelia californica*). Other shrubs included black sage (*Salvia mellifera*), coast buckwheat, California buckwheat, St. Catherine's lace (*Eriogonum giganteum*), and lemonade berry (*Rhus integrifolia*), among others. Nonnative ornamentals were occasionally planted and included Cape honeysuckle (*Tecomaria capensis*) and pink melaleuca (*Melaleuca nesophila*).

3.1.3.8. BARE GROUND

Bare ground was associated with the pedestrian/bicycle path that is located northeast of SR-1 along the southern portion of the alignment. The surface of the soil was barren, compacted, and is heavily used by recreationists. Major roads (e.g., SR-1, beach parking lot roads) were not included.

3.1.3.9. EXOTIC ANNUAL GRASSLAND

This habitat occurs sporadically throughout the entire project area. It is dominated by nonnative grasses and forbs. Exotic annual grassland is dominated by various

nonnative annuals, primarily ripgut brome. Bur-clover (*Medicago polymorpha*) was also very common. Scattered individuals of goldenbush were also found.

3.2. Regional Species and Habitats of Concern

Bolsa Chica consists of approximately 1,600 ac, 1,350 ac of which are publicly owned and referred to as the Bolsa Chica Ecological Reserve. The BSA is within a Caltrans ROW that overlaps with the Reserve. There are two entrances located at the southeastern and northwestern ends of the BSA that provide visitors with access to a trail system within the Reserve. The Reserve includes portions of Inner Bolsa Bay and Outer Bolsa Bay. Coastal wetland and upland habitat within the Reserve portion of the BSA is moderate to high quality, and is periodically maintained by volunteers of the Bolsa Chica Conservancy. Regional habitats of concern exist in this area and include estuarine wetland/open water, native dune mat, dune scrub, and coastal scrub.

Information based on the literature review for the sensitive species within the BSA is presented below. Species that require additional surveys and analysis are addressed in Chapter 4.

3.2.1. Plants

The BSA supports suitable habitat for a variety of special-status plant species. The project area contains important biological resources within or adjacent to an urban environment. After a thorough literature review, it was determined that a total of 33 special-status plant species had the potential to occur on or within the vicinity of the BSA. Two special-status plant species listed as CNPS 1B were identified within the BSA during focused surveys. Further information on these species, including status, habitat requirements, and potential for occurrence, is summarized in Table 3. Species that were observed or for which suitable habitat is present within the BSA are discussed further in Chapter 4.

3.2.2. Wildlife

The BSA supports suitable habitat for a variety of special-status wildlife species. After a thorough literature review, it was determined that 60 special-status wildlife species have the potential to occur within the BSA. A total of 15 of these species are listed as federal- and/or State-listed endangered or threatened, or proposed endangered or threatened, or are considered Fully Protected species by the State of California. Further information on these species, including status, habitat

requirements, and potential for occurrence, is summarized in Table 4. Species that were observed or have habitat present within the BSA are discussed further in Chapter 4.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Chaparral sand- verbena	<i>Abronia villosa</i> var. <i>aurita</i>	--/--/1B.1, 2-3-2	Chaparral, coastal scrub, desert dunes/sandy 80 to 1,600 meters Blooms January through September	A	Not found in sandy habitats of the coastal strip. Historically, this species was primarily associated with sandy habitats of the Santa Ana River. It has not been recorded recently and is believed to be extirpated from Orange County.
Aphanisma	<i>Aphanisma blitoides</i>	--/--/1B.2, 2-2-2	Coastal bluff scrub, coastal dunes, coastal scrub/sandy 1 to 305 meters Blooms March through June.	A	In Orange County and neighboring Los Angeles County, the main habitat for this species is coastal bluffs and coastal bluff scrub, which are not present in the study area.
Ventura marsh milkvetch	<i>Astragalus</i> <i>pycnostachyus</i> var. <i>lanosissimus</i>	FE/SE/1B.1, 3-3-3	Coastal dunes, coastal scrub, marshes and swamps (edges, coastal salt or brackish) 1 to 35 meters Blooms June through October	P	General habitat characteristics are present but study site is outside of known range. No vouchered herbarium specimens exist for Orange County. No species of <i>Astragalus</i> were encountered during focused botanical surveys in the spring of 2009.
Coastal dunes milkvetch	<i>Astragalus tener</i> var. <i>titi</i>	FE/SE/1B.1, 3-3-3	Coastal bluff scrub (sandy), coastal dunes, coastal prairie mesic)/often vernal mesic areas 1 to 50 meters Blooms March through May	P	General habitat characteristics are present but study site is outside of known range. No vouchered herbarium specimens exist for Orange County. No species of <i>Astragalus</i> were encountered during focused botanical surveys in the spring of 2009.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Coulter's saltbush	<i>Atriplex coulteri</i>	--/--1B.2, 2-2-2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland/alkaline or clay 3 to 460 meters Blooms March-May	P	In Orange County this species is most often found in clay soils, which are not present on site. Although other habitat requirements are present, this species has no records of occurrence from Bolsa Chica. Focused botanical surveys completed in spring 2009 did not identify this species of <i>Atriplex</i> , though five more common species of <i>Atriplex</i> were found.
South coast saltscale	<i>Atriplex pacifica</i>	--/--1B.2, 3-2-2	Coastal bluff scrub, coastal dunes, coastal scrub, playas 0 to 140 meters Blooms March-October	P	In Orange County this species is most often found in clay soils, which are not present on site. Although other habitat requirements are present, this species has no records of occurrence from Bolsa Chica. Focused botanical surveys completed in spring 2009 did not identify this species of <i>Atriplex</i> , though five more common species of <i>Atriplex</i> were found.
Parish's brittlescale	<i>Atriplex parishii</i>	--/--1B.1, 3-3-2	Chenopod scrub, playas, vernal pools/alkaline 25 to 1900 meters Blooms June-October	A	Species prefers freshwater alkaline flats, which are not present on site. Believed extirpated from Orange County.
Davidson's saltscale	<i>Atriplex serenana</i> var. <i> davidsonii</i>	--/--1B.2, 3-2-2	Coastal bluff scrub, coastal scrub/alkaline 10 to 200 meters Blooms April-October	A	Preferred habitats are not present. No historical records exist from the Bolsa Chica wetlands.
Intermediate mariposa lily	<i>Calochortus weedii</i> var. <i> intermedius</i>	--/--1B.2, 2-2-3	Chaparral, coastal scrub, valley and foothill grassland /rocky, calcareous 105 to 855 meters Blooms May through July	A	Preferred habitats are not present. No historical records exist from the Bolsa Chica wetlands.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Santa Barbara morning-glory	<i>Calystegia sepium</i> ssp. <i>binghamiae</i>	--/--/1A, * (presumed extinct in CA)	Marshes and swamps (coastal) 0 to 20 meters Blooms April through May	P	No historical records exist from the Bolsa Chica Wetlands. Presumed extinct in California. One species of morning glory, <i>Calystegia soldanella</i> , was identified in the BSA during focused botanical surveys in the spring of 2009.
Lewis' evening primrose	<i>Camissonia lewisii</i>	--/--/3, ?-?-2	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland/sandy or clay 0 to 300 meters Blooms March through May	P	No vouchered herbarium specimens exist from the Bolsa Chica wetlands but anecdotal evidence suggests it may occur in this vicinity. No individuals of this species were found during focused botanical surveys in the spring of 2009.
Southern tarplant	<i>Centromadia parryi</i> ssp. <i>australis</i>	--/--/1B.1, 2-3-2	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools 0 to 427 meters Blooms May through November	P	Found in Bolsa Chica wetlands but in soils less sandy, more compacted, and higher in clay than the soils found in most of the project area. Habitat near corner of SR-1 and Warner Avenue was suitable but no individuals were found.
Salt marsh bird's-beak	<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>	FE/SE/1B.2, 2-2-2	Coastal dunes, marshes and swamps (coastal salt) 0 to 30 meters Blooms May through October	P	Suitable habitat is present. However, no specimens have been recorded from Bolsa Chica since 1932. Furthermore, no members of the genus <i>Cordylanthus</i> were observed during focused botanical surveys in spring 2009.
Catalina crossosoma	<i>Crossosoma californicum</i>	--/--/1B.2, 2-2-2	Chaparral, coastal scrub/rocky 0 to 500 meters Blooms February through May	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands or from Orange County. Only mainland occurrence is from the Palos Verdes Peninsula, Los Angeles County.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Many-stemmed dudleya	<i>Dudleya multicaulis</i>	--/--/1B.2, 1-2-3	Chaparral, coastal scrub, valley and foothill grassland/often clay 15 to 790 meters Blooms April through July	A	Suitable habitat is present in the form of coastal scrub habitat. No historical records exist from the Bolsa Chica wetlands.
Laguna Beach dudleya	<i>Dudleya stolonifera</i>	FT/ST/1B.1, 3-3-3	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland /rocky 10 to 260 meters Blooms May through July	A	Suitable habitat is present in the form of coastal scrub habitat. No historical records exist from the Bolsa Chica wetlands.
Island green dudleya	<i>Dudleya virens</i> ssp. <i>insularis</i>	--/--/1B.2, 2-2-3	Coastal bluff scrub, coastal scrub/rocky 5 to 300 meters Blooms April through June	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands.
Los Angeles sunflower	<i>Helianthus nuttallii</i> ssp. <i>parishii</i>	--/--/1A, * (presumed extinct in CA)	Marshes and swamps (coastal salt and freshwater) 10 to 1675 meters Blooms August through October	P	Not collected from the vicinity of Bolsa Chica since the 1920s. Believed to be extinct in California. No members of the genus <i>Helianthus</i> were observed during focused botanical surveys in spring 2009.
Coulter's goldfields	<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	--/--/1B.1, 2-3-2	Marshes and swamps (coastal salt), playas, vernal pools 1 to 1,220 meters Blooms February through June	P	Habitat near corner of SR-1 and Warner Avenue was suitable, but no members of the genus <i>Lasthenia</i> were found during focused botanical surveys completed in spring 2009.
Santa Catalina Island desert-thorn	<i>Lycium brevipes</i> var. <i>hassei</i>	--/--/1B.1, 3-3-3	Coastal bluff scrub, coastal scrub 10 to 300 meters Blooms June	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands.
Mud nama	<i>Nama stenocarpum</i>	--/--/2.2, 3-2-1	Marshes and swamps (lake margins, riverbanks) 5 to 500 meters Blooms January through July	A	Suitable habitat (i.e., fresh water) is not present. No historical records exist from the Bolsa Chica wetlands.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Gambel's water cress	<i>Nasturtium gambelii</i>	FE/ST/1B.1, no R-E-D code available	Marshes and swamps (freshwater or brackish) 5 to 330 meters Blooms April through October	P	No historical records exist from the Bolsa Chica wetlands. Believed to be extirpated from Orange County. No members of the genus <i>Nasturtium</i> were found during focused botanical surveys completed in spring 2009.
Moran's navarretia	<i>Navarretia fossalis</i>	FT/--/1B.1, 2-3-2	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools 30 to 1,300 meters Blooms April through June	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands or from Orange County.
Prostrate vernal pool navarretia	<i>Navarretia prostrata</i>	--/--/1B.1, 2-3-3	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools/mesic 15 to 700 meters Blooms April through June	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands.
Coast woolly-heads	<i>Nemacaulis denudata</i> var. <i>denudata</i>	--/--/1B.2, 2-2-2	Coastal dunes 0 to 100 meters Blooms April through September	P/O	During special-status plant surveys conducted in spring 2009, LSA identified approximately 84,730 individual plants within the BSA in dune mat vegetation.
California orcutt grass	<i>Orcuttia californica</i>	FE/SE1B.1, 3-3-2	Vernal pools 15 to 600 meters Blooms April through August	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands or from Orange County.
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	FE/SE/1B.1, 3-3-3	Chaparral (openings), coastal scrub, valley and foothill grassland/rocky, clay 30 to 630 meters Blooms March through August	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands or from Orange County.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Brand's star phacelia	<i>Phacelia stellaris</i>	FC/--/1B.1, 3-3-2	Coastal dunes, coastal scrub 1 to 400 meters Blooms March through June	P	No historical records exist from the Bolsa Chica wetlands or from Orange County. No members of the genus <i>Phacelia</i> were observed during special-status plant surveys in spring of 2009.
Parish's gooseberry	<i>Ribes divaricatum</i> var. <i>parishii</i>	--/--/1A, 3-3-3	Riparian woodland 65 to 300 meters Blooms February through April	A	Suitable habitat is not present. No historical records from Orange County. Believed to be extinct.
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	--/--/1B.2, 2-2-3	Marshes and swamps (assorted shallow freshwater) 0 to 650 meters Blooms May through October	A	Suitable habitat is not present. No historical records exist from the Bolsa Chica wetlands or from Orange County.
Salt spring checkerbloom	<i>Sidalcea neomexicana</i>	--/--/2.2, 2-2-1	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas/alkaline, mesic 15 to 1,530 meters Blooms March through June	A	Despite the presence of alkaline soils in the BSA, this species does not inhabit estuarine wetlands, but is found in interior alkaline habitats. No historical records exist from the Bolsa Chica wetlands. No members of the genus <i>Sidalcea</i> were observed during special-status plant surveys in spring of 2009.
Estuary seablite	<i>Suaeda esteroa</i>	--/--/1B.2, 2-2-2	Marshes and swamps (coastal salt) 0 to 5 meters Blooms May through October (January)	P/O	During special-status plant surveys conducted in spring 2009, LSA identified approximately 952 individual plants within the BSA in estuarine wetland habitat.

Table 3: Special-status Plant Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State/CNPS status & R-E-D Code	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
San Bernardino aster	<i>Symphotrichum defoliatum</i>	--/--/1B.2, 2-2-3	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic)/near ditches, streams, springs 2 to 2,040 meters Blooms July through November	A	Not found in brackish water, no historical records exist from the Bolsa Chica wetlands.

Status Codes:

Federal:

FC = Federal Candidate
 FT = Federal Threatened
 FE = Federal Endangered

State:

SE = State Endangered
 ST = State Threatened

Habitat: Presence/Absence

Absent [A] means no further work needed. Present [P] means general habitat is present and species may be present.

BSA = biological study area
 LSA = LSA Associates, Inc.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Invertebrates					
Mimic tryonia (California brackish water snail)	<i>Tryonia imitator</i>	--/--/CSA	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	P	Suitable habitat is present within the BSA and WSA. The snail had been reported for the South Bolsa Slough in 1968, but has not been seen since. A focused survey for the snail in the channel in 1991 failed to locate the snail (San Marino Environmental Assoc 2004). The species was not observed during 2009 surveys.
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE/--/--	Endemic to vernal pools of San Diego and Orange County mesas.	A	Suitable habitat is absent from the BSA and WSA.
Western tidal-flat tiger beetle	<i>Cicindela gabbii</i>	--/--/CSA	Dark-colored mud of estuaries and mudflats along the coast of southern California and northern Baja California.	P	Suitable habitat is present within the WSA and this species is known to occur at the Seal Beach Naval Weapons Station (Figure 5). The species was not observed during 2009 surveys.
Sandy beach tiger beetle	<i>Cicindela hirticollis gravida</i>	--/--/CSA	Inhabits clean, dry sand along the sea coast from the San Francisco Bay area to Baja California.	P	Suitable habitat is present within the WSA but the species is apparently extirpated from Orange County. The species was not observed during 2009 surveys.
Western beach tiger beetle	<i>Cicindela latesignata latesignata</i>	--/--/CSA	Beaches and mudflats from Los Angeles County to northern Baja California. There is a historic occurrence of this species from Bolsa Chica Estuary (date unknown), but this population has since been extirpated (Figure 5).	P	Suitable habitat is present within the WSA but the species is apparently extirpated from Orange County. The species was not observed during 2009 surveys.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Senile tiger beetle	<i>Cicindela senilis frosti</i>	--/--/CSA	Marine shoreline of central and southern California	P	Suitable habitat is present within the WSA but the species is apparently extirpated from Orange County. The species was not observed during 2009 surveys.
Globose dune beetle	<i>Coelus globosus</i>	--/--/CSA	Sand dunes along the Pacific Coast from Mendocino County to northern Baja California.	P	Suitable habitat is present within the WSA. The species was not observed during 2009 surveys.
Monarch butterfly (overwintering)	<i>Danaus plexippus</i>	--/--/CSA	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Suitable roosting habitat lies approximately 2,500 feet east of the BSA (Figure 5).	A	Suitable habitat is present within the WSA. No suitable roosting habitat is present within the WSA in the form of Eucalyptus, pine, or cypress. No monarch butterflies were observed during 2009 surveys.
Wandering skipper	<i>Panoquina errans</i>	--/--/CSA	Southern California coastal salt marshes. Requires moist salt grass for larval development. There are occurrences of this species east - southeast of the BSA from 1989 (Figure 5).	P	Suitable habitat is present within the WSA, but not within the area to be directly impacted by the project. Although no insect surveys were completed by LSA in 2009, this species was not observed during 2009 surveys.
Palos Verdes blue butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	FE/--/--	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Dependent upon host plant <i>Astragalus trichopodus</i> var. <i>lonchus</i> .	A	The WSA is outside range of the subspecies. No species of <i>Astragalus</i> are present.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Fish					
Tidewater goby	<i>Eucyclogobius newberryi</i>	FE, CSC	Found in shallow lagoons up to 15 feet in depth and lower stream reaches; they need fairly still but not stagnant water and high oxygen levels. Brackish water habitats along the California coast from Agua Hedionda Lagoon in San Diego County to the mouth of the Smith River, in shallow lagoons and lower stream reaches.	P	Suitable habitat is present. However, there are no recent records of the tidewater goby from the Bolsa Chica estuary. The only fish species identified in Bolsa Chica during a fisheries study in 2004 included topsmelt, California killifish, striped mullet, longjaw mudsucker, western mosquitofish, and Mozambique tilapia (San Marino Environmental Assoc. 2004).
Mohave Tui chub	<i>Gila bicolor mohavensis</i>	FE/SE/--	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning. Now extirpated from the botanic garden in Palos Verdes where it was transplanted in 1970.	A	Suitable habitat is absent from the WSA.
Amphibians					
Western spadefoot	<i>Spea hammondi</i>	--/--/CSC	Occurs primarily in grassland habitats, but can be found in valley-foot-hill hardwood woodlands. Vernal pools are essential for breeding and egg laying. No occurrences are present within the 11-quadrangle search conducted in CNDDDB.	A	The WSA is outside range of the species.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Reptiles					
Southwestern pond turtle	<i>Actinemys marmorata pallida</i>	--/--/CSC	Inhabits permanent or nearly permanent bodies of water in many habitat types; below 6,000 ft elevation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, need suitable nesting sites. They tolerate brackish water, but are more commonly found in freshwater. No documented occurrences are present on the Long Beach quadrangle.	A	Suitable freshwater habitat is not present within the WSA.
Silvery legless lizard	<i>Anniella pulchra pulchra</i>	--/--/CSC	Central California to northern Baja California. Frequents loose soil and humus of relatively open habitats. Susceptible to drying, and lives only where damp soil is available. Not documented in CNDDDB from the near vicinity of the project.	A	Habitat is absent within the WSA. Soils are generally not loose with humus on the surface. The species was not observed during 2009 surveys.
Orange-throated whiptail	<i>Aspidoscelis hyperythra</i>	--/--/CSC	Inhabits low elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks, perennial plants necessary for its major food: termites. The only documented occurrence in the vicinity is from 1950 in Corona del Mar, and this population is now extirpated.	A	The WSA is outside the range of the species.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Coast (San Diego) horned lizard	<i>Phrynosoma coronatum (blainvillii population)</i>	--/--/CSC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils. All documented occurrences from the Long Beach quadrangle are from the 1950s. Since then, it has likely been extirpated from the region.	P	Suitable habitat is present, but extremely marginal, in the WSA. The species was not observed during 2009 surveys.
Birds					
Cooper's hawk (nesting)	<i>Accipiter cooperi</i>	--/--/CSA	Primarily forests and woodlands throughout North America	A	Suitable nesting habitat is absent from the WSA.
Sharp-shinned hawk (nesting)	<i>Accipiter striatus</i>	--/--/CSA	Nests in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffery pine forest. North-facing slopes with plucking perches are critical requirements. Utilizes all habitats except alpine, open prairie, and bare desert in the winter. An uncommon visitor to Bolsa Chica Ecological Reserve (Bolsachica.org).	A	Outside species' nesting range.
Tricolored blackbird (nesting colony)	<i>Agelaius tricolor</i>	--/--/CSC	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony. Typically nests in cattails or tules. In the vicinity of the BSA, documented only from a pond located at El Dorado Regional Park. Not known from Bolsa Chica (Bolsachica.org).	A	Suitable nesting habitat is absent within the WSA.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Great blue heron (rookery site)	<i>Ardea herodias</i>	--/--/CSA	Usually nests in trees, but also on large bushes, poles, reed beds, and even on the ground. Frequents a wide range of wetland habitats at other times of year. Widespread in North America; winters to northern South America.	P	Suitable nesting substrates are absent in the WSA, but nesting occurs on the adjacent "old gun club" site east of the northern extent of the WSA. The species was not observed during 2009 surveys.
Burrowing owl (nesting & some winter sites)	<i>Athene cucularia</i>	--/--/CSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, mostly notably, the California ground squirrel.	P	Suitable habitat is present within the WSA. Nesting season survey completed in June 2009. No burrowing owls or burrowing owl sign was observed during surveys. The nearest documented occurrence is from approximately 6,250 feet southeast of the BSA (Figure 5). The nearest documented occurrences from Bolsa Chica are from the Mesa Trail, along the south side of the Reserve in the levees, and in the riprap near the inlet and near Harriet Weeder Park. There are also sightings from around the Graham office (Jeff Stoddard, personal communication).
Brant	<i>Branta bernicla</i>	--/--/CSC	Nests in the Arctic and winters primarily in coastal marshes, lagoons, and estuaries in North America and western Eurasia.	P	Suitable foraging habitat is present and the species is known to visit the area on occasion. The species was not observed during 2009 surveys.
Coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	--/--/CSC	Inhabits cactus scrub from southern Orange County to northwest Baja California.	A	Suitable nesting habitat is absent within the WSA. Also, outside the subspecies' range.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Vaux's swift	<i>Chaetura vauxi</i>	FSC/--/CSC	Nests in redwood, Douglas fir, and other coniferous forests. Nests in large hollows of tree snags; often in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes. Fairly common in spring and fall migration throughout the State. A rare visitor to Bolsa Chica in the spring and fall (Bolsachica.org).	A	Suitable nesting habitat is absent within the WSA. Also, outside the subspecies' range.
Western snowy plover (nesting)	<i>Charadrius alexandrinus nivosus</i>	FT/--/CSC	Sandy beaches, salt pond levees and shores of large alkali lakes in western North America. Needs sandy, gravelly or friable soils for nesting. According to CNDDDB, this species has been observed along the Pacific Coast shoreline approximately 500 feet west-northwest of the northern extent of the BSA (Figure 5). Critical habitat for this species is within 150 feet southeast of the BSA (Figure 6). Sixty-eight (68) nests were identified at Bolsa Chica estuary in 2009 (K. O'Reilly, personal communication, July 20, 2009) (Figure 7).	P, CH	This species could forage within the WSA, suitable nesting habitat is absent. The species was not observed during 2009 surveys.
Northern harrier (nesting)	<i>Circus cyaneus</i>	--/--/CSC	Nests on the ground among tall vegetation in grasslands, grain fields, sagebrush flats, and emergent wetlands along rivers or lakes. An uncommon visitor to Bolsa Chica Ecological Reserve (Bolsachica.org).	P	Suitable nesting habitat is lacking within the WSA. Foraging habitat is present. The species was not observed during 2009 surveys.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Western yellow-billed cuckoo (nesting)	<i>Coccyzus americanus occidentalis</i>	FC/SE/--	Nests in riparian systems along the broad lower flood-bottoms of larger river systems; requires dense riparian vegetation.	A	Suitable nesting and foraging habitat is absent from the WSA.
White-tailed kite (nesting)	<i>Elanus leucurus</i>	--/--/CFP	Open country in South America and southern North America.	P	Foraging birds occasionally visit the WSA, but suitable nesting habitat is lacking. The species was not observed by LSA during 2009 field surveys.
Southwestern willow flycatcher (nesting)	<i>Empidonax traillii extimus</i>	FE/SE/--	Riparian woodlands in Southern California. An uncommon visitor to Huntington Central Park during spring and fall; not known from Bolsa Chica (Bolsachica.org).	A	Suitable nesting and foraging habitat is absent from the WSA.
California horned lark	<i>Eremophila alpestris actia</i>	--/--/CSA	Open grasslands and fields, agricultural areas from northern coastal California to northwestern Baja California.	P	Foraging habitat is marginally suitable and nesting habitat is absent. The species was not observed by LSA during 2009 surveys.
Merlin	<i>Falco columbarius</i>	--/--/CSA	Open country; breeds in the Holarctic and winters south to the Tropics.	P	Suitable habitat is present within the WSA. The species was not observed during 2009 surveys.
American peregrine falcon (nesting)	<i>Falco peregrinus anatum</i>	FD/SE/--	Nests on ledges and other shelves of cliff faces near wetlands, lakes, rivers, or other water. Typically forages for ducks and other waterfowl adjacent to these water bodies.	A	A frequent visitor to the WSA. Suitable nesting habitat is absent.
Salt marsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	--/--/CSC	Nests primarily in brackish marshes in the San Francisco Bay area and disperses along the entire coast of California.	P	Suitable wintering habitat is present within the WSA. The species was not observed during 2009 surveys.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Caspian tern (nesting colony)	<i>Hydroprogne caspia</i>	--/--/CSA	Seacoast, bays, estuaries, lakes, marshes, and rivers around much of the world. Thirty (30) nests have been identified at Bolsa Chica Ecological Reserve (O'Reilly, personal communication, July 20, 2009) (Figure 7).	P, O	Suitable nesting habitat is lacking within the WSA. Caspian terns were observed regularly foraging in the WSA during 2009 field surveys.
Yellow-breasted chat (nesting)	<i>Icteria virens</i>	--/--/CSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground. A rare visitor to Huntington Central Park; not observed at Bolsa Chica (Bolsachica.org).	A	Suitable foraging and nesting habitat is absent from the WSA.
Loggerhead shrike (nesting)	<i>Lanius ludovicianus</i>	--/--/CSC	Open country in much of North America but now very rare in Orange County. Not documented in CNDDDB from the near vicinity of the project.	P	Suitable foraging habitat is present; nesting habitat is absent.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	--/ST/-- FP	Shallow margins of fresh and saltwater marshes from central California to northern Baja California; very local in occurrence.	P	Suitable foraging habitat is present within the WSA. This species has not been recorded in Orange County since 1993. Focused surveys for rails and preconstruction surveys for nesting birds in 2009 did not reveal presence of this species (see Appendix F).
Belding's savannah sparrow	<i>Passerculus sandwichensis beldingi</i>	--/SE/--	Inhabits coastal salt marshes, from Santa Barbara County to northern Baja California. Nests in <i>Salicornia</i> on and about margins of tidal flats. Abundant in Bolsa Chica Ecological Reserve (Bolsachica.org).	P, O	Suitable nesting and foraging habitat is present within the WSA. Belding's savannah sparrow was identified within the WSA (see Appendix F). Nesting habitat is absent within the impact area of the BSA.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Large-billed savannah sparrow	<i>Passerculus sandwichensis rostratus</i>	--/--/CSC	Nests in brackish marshes in the northern Gulf of California and disperses widely to littoral habitats from southern California to western Mexico.	P	Suitable habitat is present within the WSA and the species is known to visit Bolsa Chica. The species was not observed during 2009 surveys.
California brown pelican (nesting colony & communal roosts)	<i>Pelecanus occidentalis californicus</i>	FE/SD/-- FP	Nests on islands off southern California and western Mexico and ranges at sea to Canada and southern Mexico.	P, O	Suitable nesting and roosting habitat is absent from the WSA. California brown pelicans were observed foraging over open water of the WSA during project surveys.
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT/--/CSC	Obligate, permanent resident of coastal sage scrub below 2,500 feet in southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied. Documented occurrence from approximately 5,000 feet east of the BSA (see Figure 5).	A	Suitable habitat is present just outside of the WSA, adjacent to the spillway at the end of the Wintersburg Channel. Suitable foraging habitat is extremely marginal, and nesting habitat is absent within the WSA.
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	FE/SE/-- FP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on mollusks and crustaceans. This species is rarely observed at Bolsa Chica (Bolsachica.org).	P, O	Suitable habitat is present within the WSA. Nesting season survey completed in April and May 2009. No light-footed clapper rails were observed during nesting season surveys; however, one individual was observed foraging within the southern portion of the BSA on July 14, 2009 by CDFG biologist Kelley O'Reilly.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Black skimmer (nesting colony)	<i>Rynchops niger</i>	--/--/CSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs. Abundant at Bolsa Chica Ecological Reserve in summer and fall, uncommon in winter and spring (Bolsachica.org).	P, O	Fifty (50) nests have been identified on the North Island and the Nest Site 1, within near proximity of the BSA (Figure 7) (O'Reilly, personal communication, July 20, 2009). Suitable nesting habitat is absent within the BSA. During 2009 field surveys, foraging black skimmers were observed in the WSA.
Forster's tern (nesting colony)	<i>Sterna forsteri</i>	--/--/CSA	Freshwater and salt marshes in much of North America.	P, O	Nests elsewhere at Bolsa Chica but suitable nesting habitat is lacking within the BSA. During 2009 field surveys, foraging Forster's terns were observed in the WSA.
California least tern (nesting colony)	<i>Sternula antillarum browni</i>	FE/SE/-- FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas. Abundant at Bolsa Chica Ecological Reserve during spring and summer (Bolsachica.org).	P, O	Three hundred and nineteen (319) nests have been observed on the South Island and at Nest Site 1 in 2009 (Figure 7) (O'Reilly, personal communication, July 20, 2009). Suitable nesting habitat is absent within the WSA. Foraging California least terns were observed by LSA during field surveys in 2009.
Elegant tern (nesting colony)	<i>Thalasseus elegans</i>	--/--/CSA	Strictly coastal; nests in southern California and western Mexico and winters south to Chile.	P, O	Four to five thousand (4,000 to 5,000) nests were observed at North Island and at Nest Site 1 in 2009 (Figure 7) (O'Reilly, personal communication, July 20, 2009). Suitable nesting habitat is absent within the WSA. Foraging elegant terns were observed by LSA during field surveys in 2009.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Mammals					
Western mastiff bat	<i>Eumops perotis californicus</i>	--/--/CSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. roosts in crevices in cliff faces, high buildings, trees, and tunnels. Documented occurrences are from Huntington Central Park approximately 1/5 mile east of the BSA (Figure 5).	P	Suitable roosting habitat is absent from the WSA. Suitable foraging is present. The species was not observed during 2009 surveys.
Western red bat	<i>Lasiurus blossevillii</i>	--/--/CSA	Forages over a wide range of habitats, but generally roosts in woodlands and forests. Ranges from southwestern Canada through the western United States and Middle America to South America.	P	Marginally suitable foraging habitat may be present within the WSA. The species was not observed during 2009 surveys.
Hoary bat	<i>Lasiurus cinereus</i>	--/--/CSA	Wooded areas over much of North America.	P	Marginally suitable foraging habitat may be present within the WSA. The species was not observed during 2009 surveys.
Southwestern yellow bat	<i>Lasiurus xanthinus</i>	--/--/CSC	Varied habitats, but usually near water; often associated with palm trees. Southwestern United States to southern Mexico.	P	Marginally suitable foraging habitat may be present within the WSA. The species was not observed during 2009 surveys.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	--/--/CSC	Open country of coastal Southern California and northern Baja California.	P	Marginally suitable habitat is present and the species is known from Bolsa Chica, at least formerly. The species was not observed during 2009 surveys.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
South coast marsh vole	<i>Microtus californicus stephensi</i>	--/--/CSC	Tidal marshes in Los Angeles, Orange and southern Ventura Counties. Only occurrence from CNDDDB in the vicinity of the BSA is from 1916 from Sunset Beach (Figure 5).	P	Suitable habitat is present within the WSA. Presence is highly unlikely due to the species expected rarity. The species was not observed during 2009 surveys.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	--/--/CSA	Varied habitats in western North America.	P	Marginally suitable foraging habitat may be present within the WSA. The species was not observed during 2009 surveys.
Yuma myotis	<i>Myotis yumanensis</i>	--/--/CSA	Varied habitats in western North America.	P	Marginally suitable foraging habitat may be present within the WSA. The species was not observed during 2009 surveys.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	--/--/CSC	Frequents poorly vegetated arid lands and is especially associated with cactus patches. Occurs along the Pacific slope from about San Luis Obispo to northwestern Baja California.	A	Suitable habitat is absent from the WSA.
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	--/--/CSC	Variety of arid areas in southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian. Rocky areas with high cliffs.	A	Suitable roosting habitat is absent from the WSA. Foraging habitat is marginal.
Big free-tailed bat	<i>Nyctinomops macrotis</i>	--/--/CSC	Low-lying arid areas in southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths. Identified in Long Beach in 1983 and population is presumed extant.	A	Suitable roosting habitat is absent from the WSA. Foraging habitat is marginal.

Table 4: Special-status Wildlife Species Potentially Occurring in the BSA

Common Name	Scientific Name	Status Federal/State /CDFG	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	FE/--/CSC	Historically occupied open habitats on sandy soils along the coast from Los Angeles to the Mexican border. Now known from only four sites in Orange and San Diego Counties.	P	Suitable habitat is present within the WSA but the species is believed to be extirpated north of Dana Point. The species was not observed during 2009 surveys.
Southern California salt marsh shrew	<i>Sorex ornatus salicornicus</i>	--/--/CSC	Coastal marshes in Los Angeles, Orange, and Ventura Counties. Requires dense vegetation and woody debris for cover.	P	Suitable habitat is present within the WSA. The species was not observed during 2009 surveys.
American badger	<i>Taxidea taxus</i>	--/--/CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Dig burrows.	A	Suitable habitat is absent from the WSA.

Status Codes:

Federal:

FE = Federal Endangered
 FT = Federal Threatened
 FC = Federal Candidate

California Department of Fish and Game (CDFG):

CSC = California Special Concern Species
 CSA = California Special Animal

State:

SD = State Delisted
 SE = State Endangered
 ST = State Threatened
 FP = Fully Protected

Habitat: Presence/Absence

Absent [A] means no further work needed. Present [P] means general habitat is present and species may be present. Critical Habitat [CH] means that the project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

BSA = biological study area
 CNDDDB = California Natural Diversity Database
 WSA = wildlife survey area

Chapter 4. Biological Resources, Discussion of Effects and Mitigation

4.1. Natural Communities of Special Concern

Habitats are considered to be of special concern based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status plants or animals occurring on site. LSA biologists identified four primary plant community groups that are considered important by State and/or local agencies. These communities occur with varied abundance on site. Each sensitive habitat identified within the project boundaries is described in more detail below and is shown in the Vegetation Communities figures in Appendix J. Wetlands and waters of the United States are also considered sensitive by both federal and State agencies, but are discussed in more detail in Section 5.3.

Four general natural community groups of special concern were identified within the BSA: native dune mat, estuarine wetland/open water, dune scrub, and coastal scrub. Invaded dune mat and invaded ice plant dune mat were not considered natural community groups of special concern due to the dominance of nonnative species. The figures in Appendix L illustrate where Natural Communities of Special Concern will be affected by the maximum extent of the design features of the proposed project. Table 5 shows the approximate acreage of impact to each vegetation community in the BSA. Project effects are based on LSA’s interpretation of the construction plans prior to construction. As construction is occurring concurrently with completion of this NES, actual impacts may vary from those shown in Table 5.

Table 5: Project Effects to Vegetation Communities

Vegetation Community	Acreage of the BSA	Acreage of Impact from the Project	
		Temporary	Permanent
Native Dune Mat	5.28	0.00	0.000
Estuarine Wetland/Open Water	3.29 (1.95 / 1.34)	0.00	0.094
Invaded Ice Plant Dune Mat	1.56	0.00	0.000
Invaded Dune Mat	0.75	0.00	0.000
Dune Scrub	0.61	0.00	0.000
Coastal Scrub	0.54	0.00	0.000
Bare Ground	0.44	0.00	0.001
Disturbed	20.47 ¹	3.51	0.517
Exotic Annual Grassland	0.35	0.00	0.000
Total	33.28	3.51	0.612

¹ Includes 20.03 acre of Transportation/Road
BSA = biological study area

4.1.1. Discussion of Natural Community/Native Dune Mat

Native dune mat communities such as those within the BSA were formerly abundant along Southern California's coastline but are now much reduced due to an invasion of nonnative species and urban expansion. Dune mat has been broken down into three subtypes: native dune mat, invaded dune mat, and invaded iceplant dune mat. Only native dune mat is considered a natural community of special concern, since the other two dune mat habitats are dominated by nonnative species. This habitat is not specifically "protected" by any regulation, but this habitat is considered high-quality wildlife habitat because it provides protective cover, water, and food for a variety of species.

4.1.1.1. SURVEY RESULTS

Approximately 5.3 ac of native dune mat have been identified in the BSA. This habitat borders the SR-1 on both sides along the majority of the alignment (see Appendix J). The nearest native dune mat habitat to the impact area is approximately 300 ft to the southeast (Appendix L).

4.1.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance efforts are warranted to not disturb native dune map scrub habitat near road embankment stabilization activities.

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around the project footprint to designate environmentally sensitive areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment should be operated in such a manner as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent runoff from any spills from entering waters of the United States.
- A weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur.
- An employee education program for all construction personnel was developed and implemented by the biological monitor prior to construction on July 28, 2009.

- At a minimum, the program included the following topics: (1) biology, conservation, and legal status of the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; (7) project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas; and (8) necessity to avoid staging in the CDFG parking lot south of the BSA.
- A biologist will monitor construction during all construction activities within the vicinity of the native dune mat habitat to ensure that avoidance and minimization measures are properly implemented according to specifications.

4.1.1.3. PROJECT EFFECTS

The proposed project would not result in direct permanent effects or temporary effects to native dune mat habitat through disturbance and/or removal of existing vegetation. No indirect effects are expected to occur to this habitat type since measures to avoid this habitat will be implemented during construction. Furthermore, no impacts will occur to invaded ice plant dune mat or invaded dune mat habitats.

4.1.1.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because this habitat will not be substantially affected by the project.

4.1.1.5. CUMULATIVE EFFECTS

This habitat will not be directly affected by the proposed project. Indirect impacts will not occur due to avoidance measures described above under Section 4.1.1.2. Therefore, it is unlikely that this project will contribute to cumulative effects to this habitat.

Nonetheless, the BSA is located within Caltrans ROW overlapping Bolsa Chica Ecological Reserve along its southeastern border. The Ecological Reserve preserves 1,600 ac of native habitats around Bolsa Bay. The preservation of these lands provides for habitat in perpetuity within and near the vicinity of the project. Most of the surrounding lands outside of the Reserve have already been developed. Therefore, cumulative effects to native dune mat habitat are not expected to be more than incremental.

4.1.2. Discussion of Natural Community/Estuarine Wetland/Open Water

Approximately 95 percent of California's coastal wetlands have been lost to development (www.ocean.com). Estuarine wetland habitats such as those associated with Bolsa Chica were formerly more abundant in semi-enclosed coastal waters of California's south coast and included estuaries of Wilmington Lagoon, Alamitos Bay, Anaheim Bay, Santa Ana River Marsh, and Newport Bay. These tidal wetlands of coastal Southern California are now much reduced due to urban diversion, channelization, and other human developments that significantly altered or eliminated a once viable system. These habitats are considered high-quality wildlife habitats because they provide protective cover, reproduction, nesting, water, and food for a variety of species. Many animal species are estuarine wetland habitat obligates. Estuaries like Bolsa Chica serve as nurseries for marine fishes and provide sediment traps, erosion control, and natural flood control. The fact that estuaries are considered Environmentally Sensitive Habitat Areas (ESHAs) by the CCC protects them under the CCA. They are also protected by the Corps under Section 10 of the RHA and Section 404 of the CWA.

4.1.2.1. SURVEY RESULTS

Estuarine wetland vegetation occurs in the low to high marsh along the northeastern border of the BSA (1.95 ac). This habitat is found on the tidal marsh margins of the Bolsa Chica estuary. Open water comprises the deeper portion of the estuary below the low tide line (1.34 ac). Refer to Appendix J for the location of this sensitive community.

4.1.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize effects to estuarine wetland/open water habitat:

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around sensitive habitats adjacent to the project footprint to designate ESAs to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment should be operated in a manner so as to prevent accidental damage to nearby preserved areas. All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be

located in such a manner as to prevent the runoff from any spills from entering waters of the United States.

- Orange construction fencing or some other obvious protective measures will delineate the boundaries of the preserved portion of the population of estuary seablight identified within the estuarine wetland prior to construction. Advance warning and cautionary signs will be placed at road shoulders of Golden West and Warner Avenue. Locations of the signs will be chosen to avoid damage to CNPS-listed plants.
- An employee education program for all construction personnel was developed and implemented by the biological monitor prior to construction on July 28, 2009. At a minimum, the program included the following topics: (1) biology, conservation, and legal status of the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; (7) project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas; and (8) necessity to avoid staging in the CDFG parking lot south of the BSA.
- A biologist will monitor construction within the vicinity of estuarine wetland/open water for the duration of the project to flush any wildlife species present prior to construction and to ensure that vegetation removal, best management practices (BMPs), ESAs, and all avoidance and minimization measures are properly constructed and followed.
- The project construction shall be carried out under standard BMPs (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, fuel spill cleanup, etc.). During and after project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, and other toxic substances shall be enforced.
- All spoils and material disposal, including contaminated topsoil, shall be removed out of the BSA and disposed of properly.
- The use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species shall be prohibited.
- Deliberate feeding of wildlife shall be prohibited.

- BMPs will be utilized to limit the spread of resuspended sediment. These may include cofferdams, silt curtains, or turbidity curtains that would contain resuspended sediment on site until it settles.
- Caltrans' standard Storm Water Pollution Prevention Plan (SWPPP) will be followed to minimize erosion and identify specific pollution prevention measures that will eliminate or control potential point and nonpoint pollution sources on site during and following the project's construction phase. Specific BMPs will be implemented during project construction so as not to cause or contribute to an exceedance of any water quality standard. In addition, changes to the BMPs such as alternative mechanisms, if necessary, during project design and/or construction will be implemented in order to achieve the stated goals and performance standards.
- Project construction includes the placement of sheet pile, which will require pile driving. To minimize impacts of pile driving, a vibrating driver, crane, vibratory hammer, or hydraulic press shall be used.

4.1.2.3. PROJECT EFFECTS

The proposed project would result in direct permanent effects to approximately 0.083 ac of estuarine/open water habitat through disturbance and/or removal of existing vegetation. The figures in Appendix L illustrate where estuarine/open water habitats will be affected by the project.

In addition to direct permanent effects, the proposed project may result in indirect effects through the potential degradation of estuarine habitats. Temporary indirect effects include construction-related effects such as dust, potential fuel spills from construction equipment, and unauthorized activities of equipment or personnel outside designated construction areas, as well as operation effects such as effects on adjacent habitats caused by storm water runoff, traffic, and litter. In addition, construction may indirectly affect estuarine habitats permanently through enhancing the germination and proliferation of nonnative invasive plant species. Invasive plant species are those that out-compete native plants, and are of particular concern. Indirect effects are difficult to quantify since they are a result of normal activities and can vary from day to day.

4.1.2.4. COMPENSATORY MITIGATION

The majority of existing estuarine/open water communities within Orange County fall under the regulatory jurisdiction of the Corps pursuant to Section 10 of the RHA and Section 404 of the CWA. Most of the impacts to Corps jurisdictional waters will

occur to estuarine wetlands above the high high tide. Therefore, the impacts are anticipated to be primarily to waters under the jurisdiction of Section 404.

Compensatory mitigation for estuarine communities will be required to comply with Section 404 of the CWA. Typically, estuarine habitat subject to Corps jurisdiction is mitigated at a minimum mitigation-to-effect ratio of 2:1 for permanent effects and 1:1 for temporary effects, which is consistent with Corps policy for no net loss of estuarine habitat (e.g., wetlands) standards. Mitigation ratios to compensate for wetlands regulated by the CCC are typically 3:1 or 4:1. Mitigation may be in the form of habitat restoration and/or enhancement in on- or off-site areas where similar estuarine habitat exists.

A Habitat Mitigation and Monitoring Plan (HMMP) will be developed in coordination with the Corps, RWQCB, and CCC and will ensure no net loss of estuarine habitat value or acreage. Final details for compensatory mitigation will be evaluated through coordination between Caltrans and the resource agencies, including the CCC. The HMMP will comply with all terms and conditions set forth in the permits and opinions issued by the resource agencies and will typically include the following provisions:

- Permanent effects to native habitat will be replaced on or off site at a minimum 2:1 ratio. Temporary effects to native vegetation will be replaced at a minimum 1:1 ratio with in-kind habitat restored in place within the project area. If off-site restoration is conducted, it will be done within the same watershed as the proposed project.
- Further criteria specified in the HMMP will include an establishment period for the replacement habitat, if applicable, regular trash removal, and regular maintenance and monitoring activities to ensure the success of the mitigation plan. After construction, annual summary reports of biological monitoring will be provided to the Corps, RWQCB, and CCC that document the monitoring effort. The duration of the monitoring and reporting has been established by resource agency permit conditions (see Appendices A, B, and C).

4.1.2.5. CUMULATIVE EFFECTS

The BSA is located within the Caltrans ROW that overlaps with the Bolsa Chica Ecological Reserve, which preserves 1,600 ac of native habitat around Bolsa Bay. Preservation of these lands provides for habitat in perpetuity within and near the vicinity of the project. Most of the surrounding lands outside of the Reserve have

already been developed. Therefore, cumulative effects to estuarine wetland/open water habitat are not expected to be more than incremental.

4.1.3. Discussion of Natural Community / Dune Scrub

Native dune scrub communities such as those within the BSA were formerly abundant along Southern California's coastline but are now much reduced due to an invasion of nonnative species and urban expansion. This habitat is not specifically "protected" by regulation. This habitat is considered high-quality wildlife habitat because it provides protective cover, water, and food for a variety of species.

4.1.3.1. SURVEY RESULTS

Approximately 0.61 ac of native dune scrub has been identified in the BSA. This habitat borders SR-1 on the east side of the highway at the northern end of the alignment (see Appendix J).

4.1.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

Due to its distance from project activities, avoidance measures to ensure that this habitat type is avoided during road embankment reconstruction activities are not required.

4.1.3.3. PROJECT EFFECTS

The proposed project would not result in direct permanent effects or temporary effects to dune scrub habitat through disturbance and/or removal of existing vegetation. Furthermore, no indirect effects are expected to occur to this habitat type since this habitat should be far enough away from the disturbance area to not suffer from construction-related indirect effects such as dust, potential fuel spills from construction equipment, etc.

4.1.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is required for impacts to dune scrub habitat, since no direct permanent or temporary disturbance will occur from the proposed project.

4.1.3.5. CUMULATIVE EFFECTS

Because this habitat will not be affected by the project, it is unlikely that this project will contribute to cumulative effects to this species.

4.1.4. Discussion of Natural Community/Coastal Scrub Habitat

Coastal scrub is generally a patchy vegetation community found in diverse habitat mosaics and is dominated by a suite of shrub species found in Southern California. Shrub cover is dense and generally continuous, with low moisture content. Steep, xeric slopes and quickly draining soils characterize the community. Annual herbs, including weedy grasses and forbs and native wildflowers, are common in openings and disturbed areas.

Coastal scrub has become displaced by spreading urbanization. Many rare and endangered species occur in coastal scrub and associated plant communities. Consequently, degradation and displacement of coastal scrub also have resulted in substantial habitat loss for a variety of animal species. Therefore, the CDFG, USFWS, and CCC have special concern for this habitat type.

4.1.4.1. SURVEY RESULTS

Coastal scrub was identified within the BSA southwest of SR-1 in 10 different locations. It was planted by California State Parks along the edges of their buildings on the northwest side of SR-1 and also in a large open space at the southwest side of the BSA, near the entrance to beach parking at Bolsa Chica State Beach.

Coastal scrub is a broad category that refers to several different kinds of scrub communities that are dominated by drought-deciduous shrubs. Many of these communities share similar plant species with slight variations due to climatic influences such as the direction the slope is facing. The species composition of the coastal scrub in the BSA matches that of the sagebrush scrub community described by Gray and Bramlet (1992), which corresponds to a transition between the Venturan and Diegan coastal scrub communities described by Holland (1986). Species within this plant community include California sagebrush, California encelia, and California buckwheat. Given the fact that coastal scrub habitat is fragmented, includes nonnative ornamentals, and is not natural, the coastal scrub habitat within the BSA is of fair quality.

4.1.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

Due to its distance from project activities, avoidance measures to ensure that this habitat type is avoided during road embankment reconstruction activities are not required.

4.1.4.3. PROJECT EFFECTS

The proposed project would not result in direct permanent effects or temporary effects to coastal scrub habitat through disturbance and/or removal of existing vegetation. The proposed project would not be expected to result in indirect effects to coastal scrub habitat because all occurrences of this habitat type are southwest of SR-1, and all work is proposed northeast of SR-1.

4.1.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because this habitat will not be affected by the project.

4.1.4.5. CUMULATIVE EFFECTS

Because this habitat will not be affected by the project, it is unlikely that this project will contribute to cumulative effects to this species.

4.2. Special-status Plant Species

Thirty-three (33) species of special-status plants occur within the vicinity of the BSA (Table 3). Six special-status plant species have been identified within near proximity to the BSA (CNDDDB 2009) and have been mapped in Figure 4. Occurrences of the two special-status plant species located within the BSA (estuary seablight and coast woolly-heads) are shown in Figure 4 and in Appendix J.

Suitable habitat is present within the BSA for 5 federal- and/or State-listed special-status plant species. None of these five species (Ventura marsh milkvetch, coastal dunes milkvetch, salt marsh bird's beak, Gambel's water cress, and Brand's star phacelia) were found during focused surveys. In addition, 9 other special-status plant species, including those listed by the CNPS as List 1B, 2, 3, and 4 with suitable habitat occurring within the BSA, are discussed in this chapter. The 2 species that have been identified within the BSA (estuary seablight and coast woolly-heads) are discussed first. The seven CNPS-listed species for which suitable habitat was present, but the species were not found during focused surveys, include Coulter's saltbush, south coast saltscale, Santa Barbara morning glory, Lewis' evening primrose, southern tarplant, Los Angeles sunflower, and Coulter's goldfields. The results of surveys, critical habitat discussion, minimization/mitigation measures, project effects, and cumulative effects for these 16 species are discussed in this chapter.

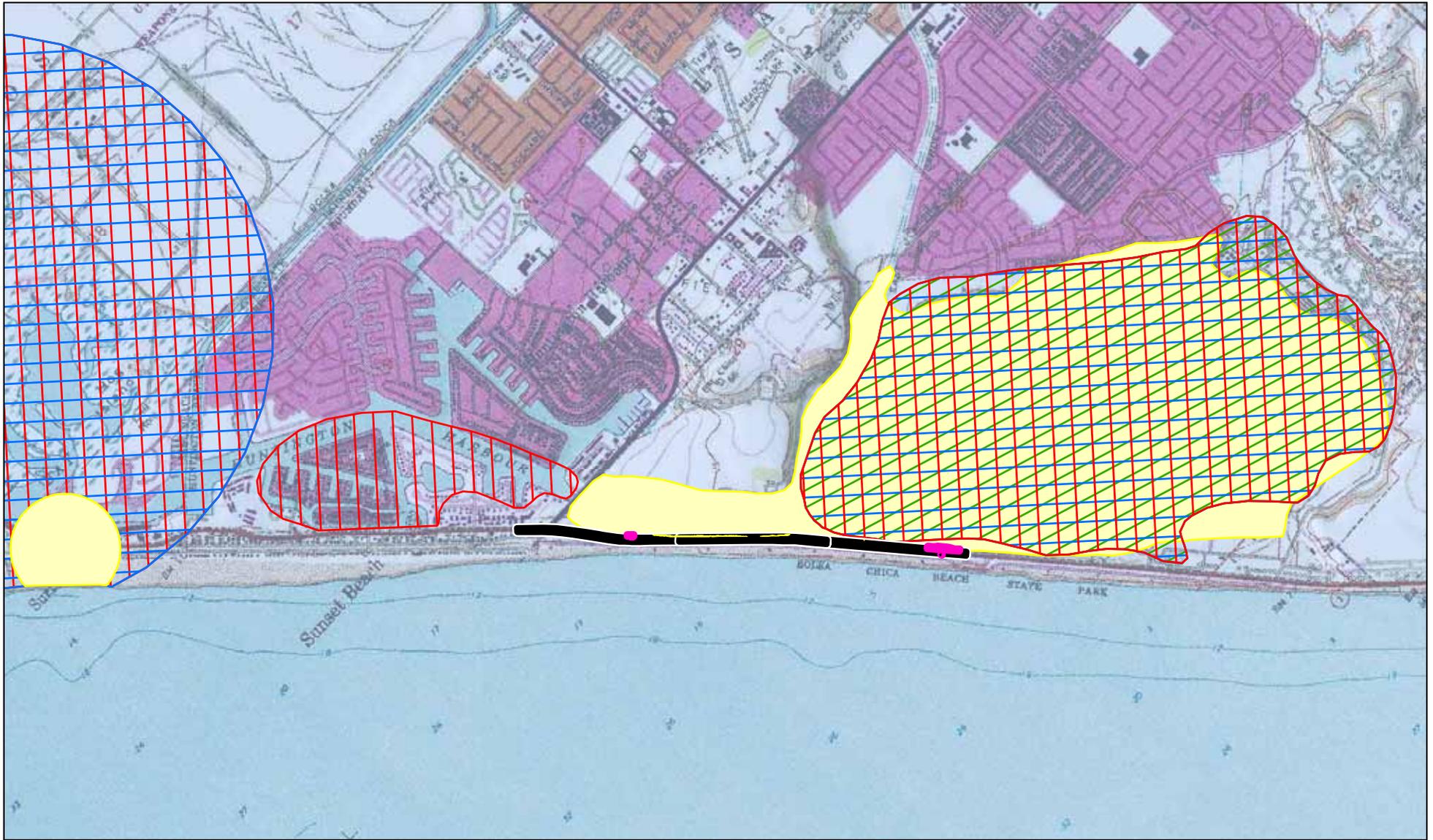


FIGURE 4

LEGEND

— Project Location

Sensitive Species

- | | |
|---|---|
|  *Coast wooly heads (<i>Nemacaulis denudata</i> var. <i>denudata</i>) CNPS 1B |  Coulter's Saltbush (<i>Atriplex coulteri</i>) CNPS 1B |
|  Coulter's Goldfields (<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>) CNPS 1B |  *Estuary Seablite (<i>Suaeda esteroa</i>) CNPS 1B |
|  Salt Marsh Bird's-beak (<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>) FE/SE/CNPS 1B | * Present within the BSA |
|  Ventura Marsh Milk-vetch (<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>) FE/SE/CNPS 1B | |

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project

CNDDDB Special-Status
Plant Species Occurrences

12-ORA-1 PM 28.7/29.7
EA 0K0100



0 1250 2500
FEET

SOURCE: USFWS NWI (2009)

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As noted in Chapter 3, suitable habitat was absent within the BSA for the 19 remaining special-status plant species occurring in the vicinity, including 4 State- and/or federally listed or candidate species (California orcutt grass, Lyon's pentachaeta, Laguna Beach dudleya, and Moran's navarretia) and 15 CNPS-listed species (chaparral sand-verbena, aphanisma, Parish's brittlescale, Davidson's saltscale, intermediate Mariposa lily, Catalina crossosoma, many-stemmed dudleya, island green dudleya, Santa Catalina Island desert-thorn, mud nama, prostrate vernal pool navarretia, Parish's gooseberry, Sanford's arrowhead, salt spring checkerbloom, and San Bernardino aster). These species are not discussed further in this report.

4.2.1. Discussion of Estuary Seablight (CNPS 1B)

Estuary seablight is a perennial or subshrub that typically lives 3 years and is a member of the Goosefoot family (*Chenopodiaceae*). It is uncommon in coastal salt marshes less than 5 meters (m) in elevation in Santa Barbara County, Ventura County, Los Angeles County, Orange County, San Diego County, and south into Baja California. This species is globally ranked as G4 (apparently secure but with some concern). There are 50 documented observations of this species, 11 of which are located in Orange County (CalFlora.org). Twenty-three (23) occurrences of this species are shown in the CNDDDB. The population of estuary seablight at Bolsa Chica is occurrence number 16, and was first collected at this location in 1970.

4.2.1.1. SURVEY RESULTS

Botanical surveys conducted in 2009 during the appropriate blooming period for estuary seablight (April through September) were positive. Approximately 952 individuals of this species were identified within estuarine wetland vegetation of the BSA that encompasses approximately 0.67 ac. The population was located northeast of SR-1 in the center portion of the alignment, bounded by Station No. 235 on the northwest and Station No. 241 on the southeast. The main population (950 individuals) was found on the east side of SR-1, between 1,480 ft south of the intersection of SR-1 and Warner Avenue and the first levee that crosses the estuary. Two (2) individuals were identified south of the levee crossing, across SR-1 from the State park restroom structure. The GPS-determined locations of the subpopulations of estuary seablight are shown on Appendix J.

4.2.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Avoidance efforts are warranted to not disturb a larger portion of the population than is necessary to conduct the required road embankment stabilization activities.

- Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around designated population boundaries adjacent to the project footprint to designate ESAs to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment should be operated in such a manner as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones.
- All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent runoff from any spills from entering waters of the United States.
- A weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur.
- An employee education program for all construction personnel was developed and implemented by the biological monitor prior to construction on July 28, 2009. At a minimum, the program included the following topics: (1) biology, conservation, and legal status of the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; (7) project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas; and (8) necessity to avoid staging in the CDFG parking lot south of the BSA.
- A biologist will monitor construction within the vicinity of the special-status plant population to ensure that avoidance and minimization measures are properly constructed. A monitor will be present on site during all construction activities to ensure that avoidance and minimization measures are in place according to specifications.

4.2.1.3. PROJECT EFFECTS

The entire population of estuary seablight cannot be avoided by the road improvement project. Approximately 7.5 percent of the population (approximately 60 to 70 individuals) occurs between the SR-1 roadside and Bolsa Bay along a narrow strip of estuarine wetland where tidal action has caused erosion to the roadway embankment. Approximately 0.013 ac of area dominated by estuary seablight cannot be avoided. Although some impact to this population is unavoidable, the listing status of the estuary seablight (CNPS 1B) does not offer it legal protection under CESA. The overall quality of the habitat is fair (not excellent), given the fact that SR-1 borders the population boundaries along the southwestern flank of the entire population. Approximately 92.5 percent of the population will be preserved once the project is completed, providing ample seed source for continued existence of the overall population.

4.2.1.4. COMPENSATORY MITIGATION

Although this species cannot be avoided from the proposed project, no compensatory mitigation is required. Recommended measures to be incorporated into the HMMP discussed in Section 4.1.2.4 include collection of seed during the appropriate time of year (August through September) and placement in an area of the Bolsa Chica Ecological Reserve that provides suitable habitat and is in need of restoration. Caltrans has contacted California State Parks regarding the collection/availability of CNPS-listed plant species within the project limits.

4.2.1.5. CUMULATIVE EFFECTS

Although the loss of up to 60 to 70 plants (0.013 ac) will not threaten the continued existence of the population, much less threaten the existence of the species, the project will contribute incrementally to cumulative effects of this species. Compensatory mitigation described under Section 4.2.1.4 would fully mitigate for cumulative effects on this species resulting from the emergency project.

4.2.2. Discussion of Coast Woolly-heads (CNPS 1B)

Coast woolly-heads is a prostrate annual and a member of the buckwheat family Polygonaceae. It occurs in sandy soils of coastal strand habitat at elevations of less than 100 m on Santa Catalina Island, in Los Angeles County, Orange County, San Diego County, and into Baja California.

4.2.2.1. SURVEY RESULTS

Botanical surveys conducted in 2009 during the appropriate blooming period for coast woolly-heads (April through September) were positive. Approximately 84,730 individuals of this species over an area of 0.59 ac were identified within the BSA (refer to Appendix J for locations). The majority of plants (approximately 83,000 individuals) were identified east of SR-1 in the southern portion of the BSA between Station Nos. 273 and 279. Additionally, a subpopulation (1,725 individuals) was identified in the northwesterly portion of the alignment east of SR-1 between Station Nos. 219 and 221, and a very small subpopulation (5 individuals) was observed in the southeasterly portion of the alignment west of SR-1 at Station No. 275.5.

4.2.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

All individuals of coast woolly-heads lie outside of the proposed work area for the roadway embankment project. Since this species does occur within the BSA, avoidance efforts are warranted (described in Section 4.1.1.2) and will include placement of orange construction fencing delineating the boundaries of the population prior to construction. Advance warning and cautionary signs will be placed at road shoulders of Golden West and Warner Avenue. Locations of the signs will be chosen to avoid damage to CNPS-listed plants.

4.2.2.3. PROJECT EFFECTS

Because this species is considered absent from the direct work area of the BSA, the project is not expected to directly affect this species. Coast woolly-heads do occur within the BSA; therefore, without suitable protection measures, indirect impacts could occur. Avoidance and minimization measures described in Section 4.1.1.2 will protect the two subpopulations of coast woolly-heads from indirect impacts.

4.2.2.4. COMPENSATORY MITIGATION

Because this species will be avoided during the proposed project, no compensatory mitigation is required.

4.2.2.5. CUMULATIVE EFFECTS

Because this species will be avoided, this project will not contribute to cumulative effects to this species.

4.2.3. Discussion of Other Special-Status Coastal Scrub and Dune Scrub Plant Species

Federal- and/or State-listed plant species that occur in the vicinity of the project, and for which suitable habitat exists in coastal scrub and/or dune scrub habitats within the

BSA, include Ventura marsh milkvetch (FE, SE), coastal dunes milkvetch (FE, SE), salt marsh bird's beak (FE, SE), and Brand's star phacelia (FC). Other special-status species (CNPS 1B) with the potential to occur in coastal scrub and/or dune scrub habitats within the BSA include Coulter's saltbush, south coast saltscale, and salt spring checkerbloom.

4.2.3.1. SURVEY RESULTS

Some suitable habitat exists on site that could support these species; however, none of these species were found during botanical surveys conducted during the appropriate blooming period in 2009. Therefore, all of these species are considered absent from the BSA.

4.2.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are warranted because these species are considered absent from the BSA.

4.2.3.3. PROJECT EFFECTS

The proposed project would not be expected to affect any of these species because they are considered absent from the BSA.

4.2.3.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because these species are considered absent from the BSA.

4.2.3.5. CUMULATIVE EFFECTS

Because these species are considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to them.

4.2.4. Special-Status Estuarine Wetland Plant Species

Federal- and/or State-listed species with the potential to occur in estuarine wetland habitat within the BSA include Gambel's watercress (FE, ST) and salt marsh bird's beak (which also occurs in dune scrub habitat, as mentioned above under Section 4.2.3). Other special-status species with the potential to occur in estuarine wetland habitat due to the presence of suitable habitat within the BSA include southern tarplant (CNPS 1B), Coulter's goldfields (CNPS 1B), Santa Barbara morning glory (CNPS 1A), and Los Angeles sunflower (CNPS 1A).

4.2.4.1. SURVEY RESULTS

Botanical surveys conducted in 2009 during the appropriate blooming period for these species were negative. Therefore, these species are absent from the BSA.

4.2.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

No avoidance and minimization measures are warranted because these species are absent from the BSA.

4.2.4.3. PROJECT EFFECTS

The proposed project would not be expected to affect any of these species because they are considered absent from the BSA.

4.2.4.4. COMPENSATORY MITIGATION

No compensatory mitigation is warranted because these species are considered absent from the BSA.

4.2.4.5. CUMULATIVE EFFECTS

Because these species are considered absent from the BSA, it is unlikely that this project will contribute to cumulative effects to them.

4.3. Special-status Animal Species Occurrences

A total of 15 of the 60 special-status animal species with the potential of occurring within the BSA are federal- and/or State-listed endangered or threatened, or proposed endangered or threatened, or are considered to be a Fully Protected species by the State of California: San Diego fairy shrimp, Palos Verdes blue butterfly, Mohave Tui chub, Vaux's swift, western snowy plover, western yellow-billed cuckoo, southwestern willow flycatcher, American peregrine falcon, California black rail, Belding's savannah sparrow, California brown pelican, coastal California gnatcatcher (CAGN), light-footed clapper rail, California least tern, and Pacific pocket mouse. The results of surveys, critical habitat discussion, minimization/mitigation measures, project effects, and cumulative effects for the remaining listed wildlife species are discussed in this section. In addition, other special-status wildlife species with potential of occurring within the BSA are discussed in this section. Figure 5 shows the documented occurrences of special-status animal species within the near vicinity of the BSA.

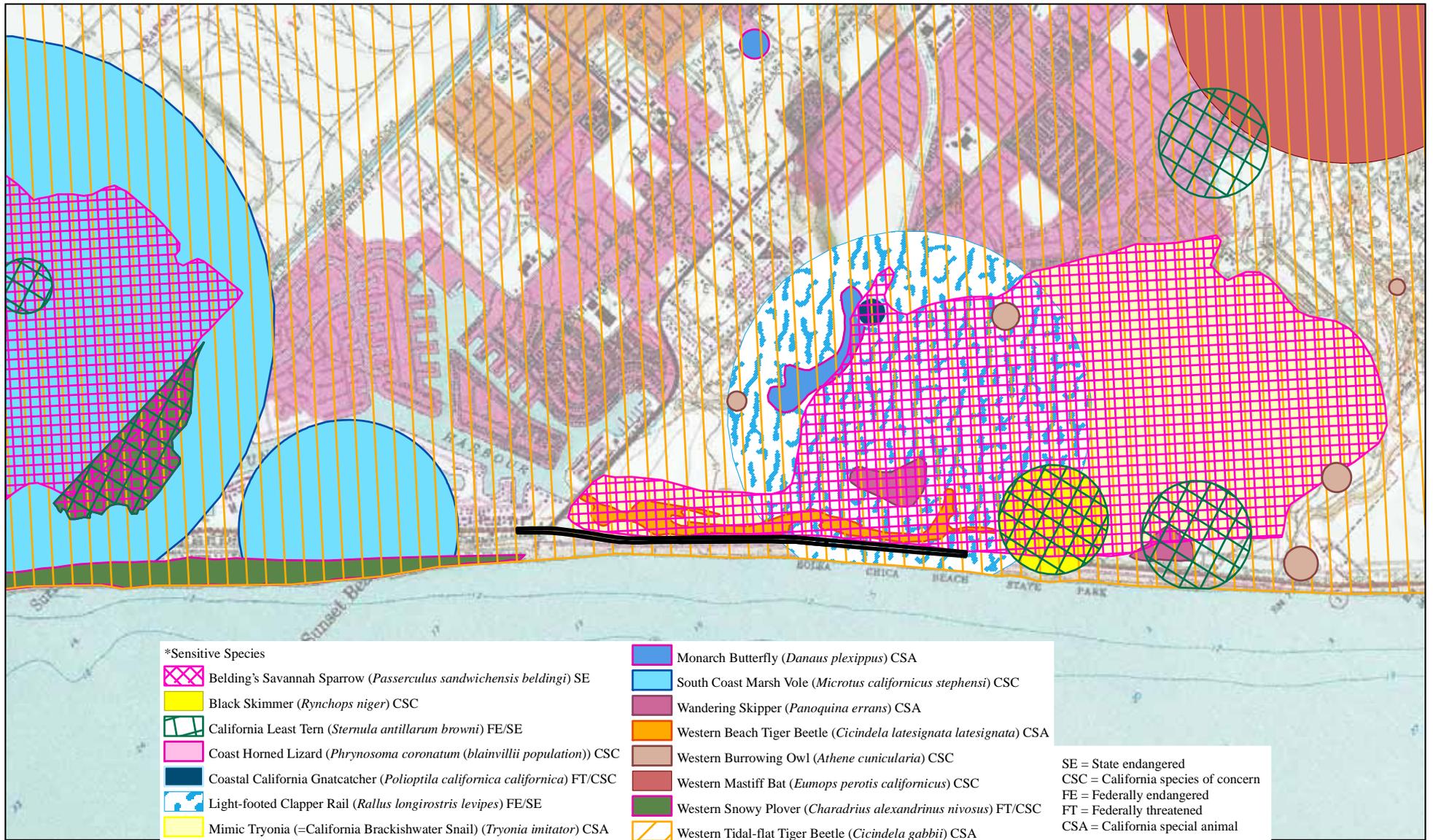


FIGURE 5

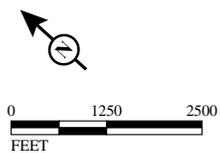
LEGEND

Project Location

* For Sensitive Species please see above

SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project

CNDDDB Sensitive Animal Species



SOURCE: USFWS NWI (2009)

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 EA 0K0100

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As noted in Chapter 3, suitable habitat for nine of these species is not present within the BSA: San Diego fairy shrimp, Palos Verdes blue butterfly, Mohave Tui chub, Vaux's swift, western yellow-billed cuckoo, southwestern willow flycatcher, American peregrine falcon, coastal California gnatcatcher, and Pacific pocket mouse. These species are therefore not discussed further.

4.3.1. Discussion of Burrowing Owl

The burrowing owl (BUOW) is not a federally or State-listed species, but is a California species of concern. This species is protected by an international treaty under the MBTA of 1918 (16 USC 703-711) and under Sections 3503 and 3800 of the California Fish and Game Code. Sections 2503, 3503.5, and 2800 of the California Fish and Game Code prohibit the take, possession, or destruction of birds, their nests, or eggs.

BUOW are found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals. They also inhabit grass, forb, and shrub stages of pinyon and ponderosa pine habitats. The owl can be found at elevations ranging from 200 ft (60 m) below sea level to 9,000 ft (2,740 m) amsl. In California, the highest elevation where this species has been found is 5,300 ft (1,615 m), in Lassen County. The owl commonly perches on fence posts or on top of mounds outside its burrow. These owls can be found at the margins of airports and golf courses and in vacant urban lots. As their name suggests, BUOW nest in burrows in the ground, often in old ground squirrel burrows or badger dens. They can dig their own burrows but prefer deserted excavations of other animals. They are also known to use rock outcrops or artificial burrows, such as pipes and concrete debris piles.

4.3.1.1. SURVEY RESULTS

A habitat suitability assessment and four nesting season surveys were conducted in April and June 2009. Refer to Appendix G for the BUOW Survey Results. The four June 2009 nesting season surveys did not detect burrowing owls or sign of burrowing owl. Several burrows suitable for use by burrowing owls were detected within the survey area; however, all burrows were either abandoned (i.e., filled with vegetation and/or cobwebs) or currently being used by rodents, most frequently California ground squirrels and occasionally Botta's pocket gopher. These rodent burrows, both inside and outside of the project area, can be modified for use by burrowing owls.

Burrowing owls are known from other parts of Bolsa Chica Ecological Reserve and the vicinity, but have been nearly 0.5 to 1.25 mi to the east and, for the majority of

sightings, over 2 mi to the southeast (Stoddard, personal communication, June 12, 2009). No sign was detected within the survey area. Burrowing owl habitat is considered to be occupied by either observing a burrowing owl at a suitably sized burrow entrance or finding molted feathers, cast pellets, prey remains, or excrement at or near the burrow entrance (CBOC, 1993).

Although no BUOW were observed during surveys, it is possible for them to move onto the site prior to construction.

4.3.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

The following measures will be incorporated to avoid and minimize effects to the burrowing owl.

- Since the project is being completed during the bird breeding season (February 28 through August 31), a preconstruction survey (one survey visit) within 500 ft of the project impact area should be conducted no more than 30 days prior to ground disturbance to ensure that no owls are occupying the project area (CBOC, 1993). These preconstruction surveys are also recommended in order to comply with the federal MBTA and California Fish and Game Code.
- If nests or breeding behavior is detected during these surveys, no vegetation clearing, grading, or construction activities will be allowed within 100 ft of the nest. If the biological monitor determines that project activities, such as noise and activity, continue to affect nesting birds in a manner that could be detrimental to their survival or reproductive success, additional actions, such as an increase in buffer width, will be undertaken. Vegetation clearing, grading, and construction activities may resume when nesting activity and fledglings are no longer in the area. The specifics of the required measures shall be coordinated between the District Biologist and the resource agencies.
- A qualified biologist shall be on site to serve as biological monitor during vegetation clearing, grading, and construction activities for the project to ensure that no take occurs. As feasible, the biological monitor will coordinate with CDFG land managers to determine the most effective method to monitor the effects of noise and activity on any nearby nesting listed birds. In addition, the biological monitor will measure noise levels within and adjacent to the BSA in order to comply with measures to avoid impacts to nesting and breeding birds, as identified in the informal Section 7 consultation (USFWS, Appendix C).
- Under the supervision of the biological monitor, bright orange plastic construction fencing, stakes, flags, or markers that are clearly visible to personnel on foot and

in heavy equipment shall be used to delimit areas of grading, staging, and avoidance for the proposed project. These markers shall be in place prior to project initiation (including clearing, grubbing, grading, or staging of equipment or vehicles) and will remain in place until all construction activities are finished. No construction will be allowed within these protected areas.

- An employee education program for all construction personnel was developed and implemented by the biological monitor prior to construction on July 28, 2009. At a minimum, the program included the following topics: (1) biology, conservation, and legal status of the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; (7) project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas; and (8) necessity to avoid staging in the CDFG parking lot south of the BSA.
- Construction activities shall be completed as rapidly as feasible to limit the duration of disturbance due to noise and activity in the project area.
- Tall equipment that is not in active use will be stored at a far enough distance from areas occupied by listed bird species that predators/raptors shall not be able to use it as a perch to prey on listed bird species. The biological monitor shall ensure that predators/raptors do not perch on tall signage, lighting, or other roadside features.
- The project construction shall be carried out under standard BMPs (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, fuel spill clean-up, etc.). During and after project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, and other toxic substances shall be enforced. Silt fencing shall be installed when appropriate to prevent sediment from entering wetland areas during construction.
- No construction access, parking, storage of construction materials, or dumping of trash and debris will occur within adjacent areas of native habitat. All movement of employees, construction contractors and equipment, including ingress and egress of equipment and personnel shall be limited to existing roads and designated construction zones, access ramps, and staging areas. All adjacent habitat areas to be avoided shall be clearly noted on the plans and marked in the

field by the biological monitor. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other toxic substances will occur only in designated areas within the proposed limits of the project site. These designated areas shall be clearly marked and located in such a manner as to prevent any runoff from entering waters of the United States, including wetlands.

- Spoils, rubble, and trash will not be deposited on the adjacent native habitats. The accumulation of garbage on site and on the adjacent habitat, including all food-related trash items such as wrappers, cans, bottles, and food scraps generated during construction activities, shall be removed daily to avoid attracting predators to the area.
- The use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species shall be prohibited.
- Contractor pets shall be prohibited in and adjacent to the project area.
- Deliberate feeding of wildlife shall be prohibited.

4.3.1.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any western BUOW due to the low probability of them occurring within the WSA; however, there would be indirect and temporary effects through loss of potential habitat.

4.3.1.4. COMPENSATORY MITIGATION

Because there is a low probability of BUOW occurring within the WSA, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted.

4.3.1.5. CUMULATIVE EFFECTS

Direct impacts to BUOW will not result from the project; however, this project could contribute to cumulative effects to this species since a loss of potential habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.2. Discussion of Brant

The brant is a California Special Concern shorebird species. The brant occurs in California primarily as a spring and fall migrant and winter visitor, passing mainly far offshore in fall and close inshore in spring when staging birds are numerous in isolated coastal estuaries. The brant is present mainly from late October through late May, with small numbers lingering through summer. Fall migration extends from late

October to early December and peaks in early to mid-November. Spring migration extends from mid-December to late May and generally peaks in March and April, varying somewhat by latitude (Shuford and Gardali, 2008).

During the nonbreeding season, brant require well-protected, shallow marine waters with intertidal eelgrass beds, primarily within bays and estuaries. The brant is a food specialist during the nonbreeding season, relying principally on a single native plant, eelgrass. Because brant do not dive, they can usually access eelgrass only at low tides. Still, they tend to feed in the deepest possible areas permitted by tides and close to large tidal channels and other areas where eelgrass biomass and protein content are higher (Shuford and Gardali, 2008).

Even where high quality habitats are available, brant may be displaced or excluded by human disturbance, including boats, jet skis, sailboats, kayaks, canoe, aircraft, dogs, recreational and commercial shellfish harvests, hunting, fishing, birding, and commercial and residential development (Shuford and Gardali, 2008).

4.3.2.1. SURVEY RESULTS

Brant was not detected in the WSA during the 2009 surveys. However, suitable foraging habitat is present and the species is known to visit the area on occasion.

4.3.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

Because no brant were observed, no suitable nesting habitat is located within the WSA, and there is low probability of them occurring within the WSA, no avoidance and minimization efforts are warranted.

4.3.2.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any brant since they were not observed during preconstruction surveys, focused nesting bird surveys, and the absence of suitable nesting habitat. However, indirect effects could result through loss of foraging habitat.

4.3.2.4. COMPENSATORY MITIGATION

Brant was not observed during preconstruction or focused bird surveys, and suitable nesting habitat is absent within the project impact zone. Therefore, the proposed project is not expected to directly affect this species. However, indirect impacts could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid indirect effects to brant. Specific compensatory mitigation is not warranted.

4.3.2.5. CUMULATIVE EFFECTS

Direct impacts to brant will not result from the project. However, this project could contribute to cumulative effects to this species since a loss of potential habitat will result. Avoidance and minimization measures described under Section 4.3.2.4 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.3. Discussion of Western Snowy Plover

The western snowy plover is a federally threatened and a California Special Concern species. The western snowy plover is a small, pale-colored shorebird with dark patches on either side of the upper breast. The Pacific Coast population is genetically isolated from western snowy plovers breeding in the interior, and is defined as those individuals that nest adjacent to or near tidal waters. The Pacific Coast population of western snowy plover frequents sandy beaches and estuarine shores, and requires sandy, gravelly, or friable soil substrates for nesting. Nesting season extends from early March through late September. Fledging of late-season broods may extend into the third week of September throughout the breeding range. Nests typically occur in flat, open areas, with sandy or saline substrates, with vegetation and driftwood usually sparse or absent. Snowy plovers are primarily visual foragers, feeding on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone in dry, sandy areas above the high tide line.

The USFWS completed a final rule designating 32 units of critical habitat along the coast of California, Oregon, and Washington for the Pacific Coast population of the western snowy plover, a federally threatened species, in September 2005. The critical habitat units total 12,145 ac. Of the designated units, 24 are in California (7,472 ac), 5 are in Oregon (2,147 ac), and 3 are in Washington (2,526 ac). Of the total acreage, 2,479 ac (20 percent) are on federal lands, 6,474 ac (53 percent) are owned by States or local agencies, and 3,191 ac (26 percent) are privately owned.

4.3.3.1. SURVEY RESULTS

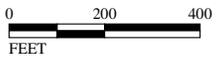
The western snowy plover was not observed within the WSA during the 2009 surveys, but there is a fair amount of suitable foraging habitat present for this species within the WSA. Critical habitat for the snowy plover (Unit CA 22A) is located outside of the BSA, within approximately 125 ft southeast of the BSA (Figure 6).



FIGURE 6

LEGEND

-  Project Location
-  Western Snowy Plover (*Charadrius alexandrinus nivosus*) Critical Habitat Unit CA 22A (FT/CSC)



SOURCE: U.S. Fish and Wildlife Service (10/2008), Aerial and CAD - Caltrans (04/09/2009)

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SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Western Snowy Plover Critical Habitat

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PM 28.7-29.7
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Sixty-eight (68) snowy plover nests have been identified within Bolsa Chica Ecological Reserve in 2009 (O'Reilly, personal communication, July 20, 2009) (Figure 7). Western snowy plover is expected to forage on the WSA on occasion, but is not expected to nest there.

4.3.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

No western snowy plovers were observed within the WSA; however suitable nesting habitat is located within close proximity of the WSA, and suitable foraging habitat is present within the WSA. In addition to those measures described above under Section 4.3.1.2, the following measures will be incorporated to avoid and minimize effects to the western snowy plover.

- Critical habitat for this species will be avoided. No equipment storage or staging shall be conducted for the project at the CDFG parking lot just southeast of the project limits to avoid impacts to western snowy plover critical habitat. This lot is closed to the public (and construction crews) during all construction (i.e., weekdays), and re-opened during the weekends for public access only.
- BMPs shall be utilized during construction to limit the spread of resuspended sediment. These may include silt curtains and/or turbidity curtains that would contain resuspended sediment on site until it settles.

4.3.3.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any western snowy plover due to lack of suitable nesting habitat within the project impact zone. The USFWS has made a may affect but not likely to adversely affect determination for this species. Emergency permits for the project dictate that the CDFG parking lot southeast of the BSA will not be used as a staging area for this project, since it lies within critical habitat for the western snowy plover. With implementation of the avoidance and minimization efforts described under Section 4.3.3.2, both direct and indirect impacts to critical habitat for this species will be avoided.

4.3.3.4. COMPENSATORY MITIGATION

Because there is no suitable nesting habitat and there is a low probability of nesting within the WSA, the proposed project is not expected to directly affect this species; therefore, specific compensatory mitigation is not warranted.

4.3.3.5. CUMULATIVE EFFECTS

Because this species will be avoided, this project will not contribute to cumulative effects to this species.

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FIGURE 7

LEGEND

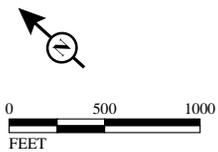
- Project Location
- Nest Areas

Species	Location	Nests
Belding's Savannah Sparrow (<i>Passerculus sandwichensis beldingi</i>)	Surrounding pickleweed habitat (Not within nest areas)	Present and nesting (count unavailable)
Black Skimmer (<i>Rhynchops niger</i>)	NI, NS1	50 nests
Caspian Tern (<i>Hydroprogne caspia</i>)	NI, NS1	30 nests
Elegant Tern (<i>Sterna elegans</i>)	NI, NS1	4,000-5,000
Least Tern (<i>Sterna antillarum</i>)	SI, NS1	319 nests
Royal Tern (<i>Sterna maximus</i>)	NI, NS1	Present and nesting (count unavailable)
Snowy Plover (<i>Chardrius alexandrinus nivosus</i>)	NI, NS1, NS2, NS3	68 nests

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project

Nesting Site Occurrences

12-ORA-1 PM 28.7/29.7
EA 0K0100



SOURCE: Digital Globe (2008)

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4.3.4. Discussion of California Black Rail

The California black rail is listed as a State threatened species and a Fully Protected species by the CDFG. The California black rail is a small, sparrow-sized secretive rail, blackish above with white speckling, a chestnut nape, grayish-black underparts, narrow white barring on the flanks, and a short black bill. The California black rail occurs in the lower Colorado River area from the Imperial Dam, south to the Mexican border, with smaller, isolated populations scattered from Marin and San Luis Obispo Counties in coastal California, southward to San Diego County, northwestern Baja California, and the lower Imperial Valley. California black rails tend to favor mixed pickleweed, cordgrass, and bulrush marshes in coastal habitats, and bulrush, cattail, arrowweed (*Pluchea sericea*), and common threesquare (*Schoenoplectus pungens*) freshwater marshes in inland areas. Black rails typically forage on aquatic and terrestrial invertebrates and seeds. Like the light-footed clapper rail, the California black rail has undergone decline due to habitat degradation and destruction. The population of California black rails along the Colorado River from Needles, California, to Yuma, Arizona, probably numbers between 75 to 100 individuals (Konecny, 2009).

4.3.4.1. SURVEY RESULTS

Focused surveys for light-footed clapper rails and California black rails were conducted in 2009 (Appendix F). No California black rails were detected in the WSA during 2009 surveys. These surveys were conducted following methodology recommended by the Clapper Rail Study Team. This activity is authorized by USFWS Section 10(a) Permit No. TE837308-5 and a CDFG MOU.

4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

No California black rails were observed during focused or preconstruction nesting bird surveys, and no suitable nesting habitat is located within the WSA. Because there is an extremely low probability of them occurring within the WSA, no avoidance or minimization efforts are warranted.

4.3.4.3. PROJECT EFFECTS

The proposed project is not expected to directly affect California black rail since it was not observed during preconstruction surveys, focused nesting bird surveys, and because suitable nesting habitat is absent within the project impact zone. However, indirect effects could result through loss of foraging habitat. The proposed project is not expected to directly affect any California black rails. However, there could be indirect and temporary effects due to loss of foraging habitat.

Email correspondence between Caltrans biologist Arianne Preite and CDFG biologist Jeff Stoddard are inconclusive regarding effects on State-listed species (email correspondence, July 28, 2009).

4.3.4.4. COMPENSATORY MITIGATION

California black rail was not observed during preconstruction or focused bird surveys and suitable nesting habitat is absent within the project impact zone. Therefore, the proposed project is not expected to directly affect this species. However, indirect impacts could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid indirect effects to California black rail. Specific compensatory mitigation is not warranted.

4.3.4.5. CUMULATIVE EFFECTS

Direct impacts to California black rail will not result from the project. However, this project could contribute to cumulative effects to this species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.5. Discussion of Belding's Savannah Sparrow

The Belding's savannah sparrow is a State endangered species. The Belding's savannah sparrow is one of four subspecies of savannah sparrows that are otherwise widely distributed and occur in a variety of habitat types, including grassland, high-elevation meadow, and marshes. The Belding's savannah sparrow is unique in that it represents one of only two wetland-dependent avian species endemic to coastal salt marshes in Southern California. This species is a year-round resident of these salt marshes and is therefore reliant upon these habitats to meet all of its life history requirements. This subspecies ranges along the Southern California coast from Santa Barbara County (Goleta Slough) in the north into Baja California, Mexico (near El Rosario) in the south (<http://www.fws.gov/bolsachica/BSSacctBC.htm>).

Because of the secretive nature of this sparrow, it can be difficult to obtain accurate population estimates. Given the right habitat conditions, territory size may be small and breeding pairs may occur in relatively high concentrations. Census techniques consist of searching for territorial males in suitable habitat during the breeding season (late March through early July). Territorial behavior is ascertained through detection

or observation of singing, scolding, aerial chases, nest-building, feeding young, or extended perching of individuals or presumed mates perching together in an area.

The Belding's savannah sparrow population in California has increased with 1,084 pairs in 1973, 1,610 pairs in 1977, 2,274 pairs in 1986, 1,844 pairs in 1991, 2,350 pairs in 1996, and 2,875 pairs in 2001. However, Statewide censuses of Belding's savannah sparrows reveal wide fluctuations in local population sizes, with local extinctions occurring in some years. The population at Bolsa Chica has been more regularly censused and the population has been fluctuating between 100 and 250 breeding pairs (<http://www.fws.gov/bolsachica/BSSacctBC.htm>).

4.3.5.1. SURVEY RESULTS

Six Belding's savannah sparrow territories were detected within the WSA in 2009 during rail surveys conducted in 2009 (Appendix F). Five of these territories were present in Outer Bolsa Bay, and one in Inner Bolsa Bay. Additional territories were present on the east side of both Inner Bolsa Bay and Outer Bolsa Bay, outside of the WSA.

4.3.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to Belding's savannah sparrow.

4.3.5.3. PROJECT EFFECTS

Belding's savannah sparrow was observed foraging within the WSA in 2009. Suitable nesting habitat is present within the WSA but absent from the project impact zone. With implementation of the avoidance and minimization measures described under Section 4.3.1.2, the proposed project is not expected to directly affect this species; however, there would be indirect and temporary effects through loss of habitat.

Email correspondence between Caltrans biologist Arianne Preite and CDFG biologist Jeff Stoddard are inconclusive regarding effects on State-listed species (email correspondence, July 28, 2009).

4.3.5.4. COMPENSATORY MITIGATION

Direct or indirect impacts could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid direct and indirect effects to Belding's savannah sparrow. Specific compensatory mitigation is not warranted.

4.3.5.5. CUMULATIVE EFFECTS

Direct or indirect impacts to Belding's savannah sparrow could result from the project. This project could contribute to cumulative effects to this species since a loss of potential nesting and foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 and habitat compensation described in Section 4.1.2.4 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.6. Discussion of California Brown Pelican

The California brown pelican is federally listed as endangered, but is proposed for delisting at the federal level (USFWS, 2008). The brown pelican has been delisted from a State threatened status, but is still considered a Fully Protected species by the State. The brown pelican is a large, grayish-brown bird with a long, pouched bill. The adult has a dark body, but immature birds are dark with a white belly. The brown pelican is found in estuarine, marine subtidal, and marine pelagic waters along the California coast. Brown pelicans nest in colonies on small coastal islands that are free of mammalian predators and human disturbance and are associated with an adequate and consistent food supply. Nesting colonies of the brown pelican on the Pacific Coast range from the Channel Islands to the islands off Nayarit, Mexico. Prior to 1959, intermittent nesting was observed as far north as Point Lobos in Monterey County, California. Dispersal between breeding seasons ranges from British Columbia, Canada, to southern Mexico and possibly to Central America. During the nonbreeding season, which varies between colonies but typically extends from July to January, brown pelicans roost communally, generally in areas that are near adequate food supplies, have some type of physical barrier to predation and disturbance, and provide some protection from environmental stresses such as wind and high surf. Breakwaters and jetties are often used for roosting. Brown pelican numbers in a given area may vary greatly with the season.

Brown pelicans experienced widespread reproductive failures in the 1960s and early 1970s. Much of the failure was attributed to eggshell thinning caused by high concentrations of pesticides. Other factors implicated in the decline of this subspecies include human disturbance at nesting colonies and food shortages. Brown pelicans have not nested north of the Channel Islands since the subspecies' decline in the late 1950s and early 1960s.

4.3.6.1. SURVEY RESULTS

Numerous California brown pelicans were observed within the WSA during project surveys. In addition, suitable nesting habitat for California brown pelican may occur within the WSA.

4.3.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to the California brown pelican.

4.3.6.3. PROJECT EFFECTS

California brown pelicans have been observed foraging within the WSA on multiple occasions during 2009 surveys. Upon implementation of avoidance and minimization measures, the proposed project is not expected to directly affect this species; however, there would be indirect and temporary effects through loss of habitat. A may affect but not likely to adversely affect determination has been made for this species (Appendix C).

Email correspondence between Caltrans biologist Arianne Preite and CDFG biologist Jeff Stoddard are inconclusive regarding effects on State-listed species (Email correspondence, July 28, 2009).

4.3.6.4. COMPENSATORY MITIGATION

Indirect impacts could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid direct and indirect effects to California brown pelican. Specific compensatory mitigation is not warranted.

4.3.6.5. CUMULATIVE EFFECTS

Indirect impacts to California brown pelican could result from the project. This project could contribute to cumulative effects to this species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.7. Discussion of Light-footed Clapper Rail

The light-footed clapper rail is a federal- and State-listed endangered species. It is fully protected by the State. The light-footed clapper rail is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. Light-

footed clapper rail occurred historically along the coast of Southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín in Baja California, Mexico.

The light-footed clapper rail is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.). Light-footed clapper rails have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush (*Scirpus* sp.) at Buena Vista, Agua Hedionda, Batiquitos, San Elijo, and San Dieguito Lagoons in San Diego County, and in spiny rush (*Juncus acutus*) at Naval Air Station (NAS) Point Mugu.

Populations of light-footed clapper rails have undergone decline in the United States due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The Statewide breeding rail population in 2007 was reported to be 443 pairs in 19 marshes, which is the largest number of rails in recent history, an 8.3 percent increase over the former high-count total from 2006, and the largest number since the Statewide census began in 1980. However, nearly 70 percent of these pairs were found in only two coastal salt marsh complexes at Upper Newport Bay in Orange County and the Tijuana Marsh National Wildlife Refuge in southern San Diego County.

4.3.7.1. SURVEY RESULTS

Focused surveys for light-footed clapper rails and California black rails were conducted in 2009 (Appendix F). No light-footed clapper rails were detected in the WSA during 2009 surveys by LSA and its subconsultant. These surveys were conducted following methodology recommended by the Clapper Rail Study Team. This activity is authorized by USFWS Section 10(a) Permit No. TE837308-5 and a CDFG MOU.

Subsequent to the focused surveys, one individual light-footed clapper rail was observed within the southern portion of the BSA by CDFG Biologist Kelley O'Reilly on July 14, 2009.

4.3.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to the light-footed clapper rail.

4.3.7.3. PROJECT EFFECTS

The light-footed clapper rail has been observed foraging within the BSA in 2009. Upon implementation of avoidance and minimization measures, the proposed project is not expected to directly affect this species; however, there would be indirect and temporary effects through loss of habitat. A may affect but not likely to adversely affect determination has been made for this species (see Appendix F). Email correspondence between Caltrans biologist Arianne Preite and CDFG biologist Jeff Stoddard are inconclusive regarding effects on State-listed species (email correspondence, July 28, 2009).

4.3.7.4. COMPENSATORY MITIGATION

Indirect impacts to light-footed clapper rail could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 and habitat compensation described under Section 4.1.2.4 will be incorporated to avoid direct and indirect effects to light-footed clapper rail. Specific compensatory mitigation is not warranted.

4.3.7.5. CUMULATIVE EFFECTS

Indirect impacts to light-footed clapper rail could result from the project. This project could contribute to cumulative effects to this species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.8. Discussion of Black Skimmer

The black skimmer is a California Special Concern species. The black skimmer is known to breed primarily in coastal Southern California and the Salton Sea, but a few pairs now nest in central and northern California. They generally nest in colonies containing a few to several thousand nests. Average colony sizes range from 200 to 500 pairs in interior and coastal Southern California. Black skimmers are a year-round resident in coastal Los Angeles, Orange, and San Diego Counties, and more recently in Santa Clara County. They winter locally in substantial numbers on the coast of Southern California from Santa Barbara to San Diego Counties (Shuford and Gardali, 2008).

Because of its ground nesting habit, this highly social colonial waterbird requires large areas of bare earth sufficiently isolated from terrestrial predators and other disturbances. Colonies most often form on small constructed islands or on isolated

sections of eroded impoundment levels. Skimmers usually nest with terns but may form colonies by themselves. In winter, flocks commonly roost on urban beaches well above the tide line or on mud flats in estuaries (Shuford and Gardali, 2008).

Skimmers forage for small fish and possibly crustaceans by cutting or “skimming” the water’s surface with the lower mandible in the calm shallows of harbors, lagoons, bays, estuaries, ponds, and river channels. The foraging activity of skimmers nesting at Bolsa Chica was significantly greater at night than during the day, with distinct peaks at dusk and dawn. At Bolsa Chica, skimmers foraged in fresh as well as estuarine and marine waters (Shuford and Gardali, 2008).

4.3.8.1. SURVEY RESULTS

No black skimmers were detected in the WSA during 2009 surveys; however, they have been observed regularly foraging in the adjacent waters. Therefore, the likelihood of black skimmers foraging within the WSA is possible.

4.3.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to black skimmer.

4.3.8.3. PROJECT EFFECTS

The black skimmer has been observed foraging within the BSA in 2009. Upon implementation of avoidance and minimization measures, the proposed project is not expected to directly affect this species; however, there would be indirect and temporary effects through loss of habitat.

4.3.8.4. COMPENSATORY MITIGATION

Indirect impacts to black skimmer could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid direct and indirect effects to black skimmer. Specific compensatory mitigation is not warranted.

4.3.8.5. CUMULATIVE EFFECTS

The effects on existing black skimmer nesting and foraging habitats from proposed restoration projects at Bolsa Chica, south San Diego Bay, and the Salton Sea are unclear at this time, but should be considered as potential threats to the nesting populations at these sites. The proximity of urban development and the associated increase in disturbance by humans, pets, and feral animals can disrupt the nesting attempts of entire colonies (Shuford and Gardali, 2008).

Indirect impacts to black skimmer could result from the project. This project could contribute to cumulative effects to this species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.9. Discussion of California Least Tern

The California least tern is a federal and State endangered species. It is considered a Fully Protected species by CDFG. The California least tern traditionally nests on sandy beaches close to estuaries and coastal embayments. A few least tern nesting areas are on beaches, while the majority of nesting areas are on manufactured substrates or fills. The nesting range in California has apparently always been widely discontinuous, with the majority of birds nesting in Southern California from Santa Barbara County south through San Diego County (<http://www.fws.gov/bolsachica/CLTaccountBC.htm>, 2009).

The California least tern is an exclusive fish-eater. Feeding is carried out both in the calm waters of narrow estuaries or large bays and for a short distance. They are known for their hovering and plunging habits. The California least tern is migratory, usually arriving in its breeding area by the last week of April and departing again in August. Least terns are colonial nesters but do not nest in as dense a concentration as other tern species. The nest of the California least tern is a simple scrape or depression in the sand and one to four eggs are laid, usually two (<http://www.fws.gov/bolsachica/CLTaccountBC.htm>, 2009).

Caspian terns, elegant terns, and California least terns are known to nest in selected areas around Bolsa Bay (Figure 7). When the Bolsa Chica nesting islands were created in 1978, the least tern began nesting on the North Island. When elegant terns, then black skimmers, began nesting on the North Island, the least tern was crowded off of it and began nesting on the South Island. In recent years, least tern nesting success at Bolsa Chica has been very poor, largely due to predators and the relatively small suitable area for nesting (<http://www.fws.gov/bolsachica/CLTaccountBC.htm>, 2009).

4.3.9.1. SURVEY RESULTS

California least terns were observed foraging over open water within the WSA during 2009 surveys. No nests of California least terns were observed. Least terns nest in

open areas, and the area next to the failing roadway provides unsuitable nesting habitat for this species.

4.3.9.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to the California least tern.

4.3.9.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any California least terns due to the lack of suitable nesting habitat within the WSA. Foraging habitat is located within and adjacent to the WSA. Implementation of the project will result in a temporary loss of foraging habitat. Even though California least terns were observed within the WSA, they may move out of the area during construction. Because of this possibility and the avoidance and minimization measures, the proposed project is not expected to directly affect this species; however, there would be indirect and temporary effects through loss of foraging habitat. A may affect, but not likely to adversely affect determination has been made for this species (Appendix C).

4.3.9.4. COMPENSATORY MITIGATION

Impacts to California least tern could result if avoidance measures are not implemented. Avoidance and minimization measures described above under Section 4.3.1.2 will be incorporated to avoid direct and indirect effects to California least tern. Specific compensatory mitigation is not warranted.

4.3.9.5. CUMULATIVE EFFECTS

Indirect impacts to California least tern could result from the project. This project could contribute to cumulative effects to this species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on this species resulting from the emergency project.

4.3.10. Discussion of Other Special-Status Birds Protected Under the MBTA

In addition to the species discussed above, many other special-status bird species occur within the WSA and are protected under the MBTA, including but not limited to great blue heron, northern harrier, white-tailed kite, California horned lark, merlin, salt marsh common yellow throat, Caspian tern, loggerhead shrike, large-billed savannah sparrow, Forster's tern, and elegant tern.

4.3.10.1. SURVEY RESULTS

With the exception of Forster's tern, Caspian tern, and elegant tern, none of these species were observed within the WSA during the surveys conducted in 2009. Although these species were not observed during surveys, surveys were not focused on these species. In addition, it is possible for them to move onto the site prior to construction. Suitable habitat exists within the WSA for each of these species

4.3.10.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to bird species protected under the MBTA.

4.3.10.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any of these species as a result of the avoidance and minimization measures described above; however, the proposed project is expected to have indirect and temporary effects to them through the loss of potential habitat.

4.3.10.4. COMPENSATORY MITIGATION

Due to the avoidance and minimization measures described in Section 4.3.1.2, the proposed project is not expected to affect these species; therefore, specific compensatory mitigation is not warranted.

4.3.10.5. CUMULATIVE EFFECTS

Indirect impacts to other special-status birds protected under the MBTA could result from the project. This project could contribute to cumulative effects to these species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on these species resulting from the emergency project.

4.3.11. Discussion of Other Special-Status Animal Species Dependent upon Estuarine/Open Water Habitat

In addition to the species discussed above, many special-status animal species occur within and directly adjacent to estuarine habitats including mimic tryonia, western tidal-flat tiger beetle, sandy beach tiger beetle, senile tiger beetle, globose dune beetle, south coast marsh vole, and southern California salt marsh shrew.

4.3.11.1. SURVEY RESULTS

None of these species were observed within the WSA during the surveys conducted in 2009. Although these species were not observed during surveys, surveys were not

focused on these species. In addition, it is possible for them to move onto the site prior to construction. Suitable habitat exists within the WSA for each of these species.

4.3.11.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to other special-status animal species dependent upon estuarine/open water habitats.

4.3.11.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any of these species as a result of the avoidance and minimization measures described above; however, the proposed project is expected to have indirect and temporary effects to them through the loss of potential habitat.

4.3.11.4. COMPENSATORY MITIGATION

Due to the avoidance and minimization measures described in Section 4.3.1.2, the proposed project is not expected to affect these species; therefore, specific compensatory mitigation is not warranted.

4.3.11.5. CUMULATIVE EFFECTS

Impacts to special-status animals dependent upon estuarine/open water habitat could result from the project. This project could contribute to cumulative effects to these species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 and habitat compensation described under Section 4.1.2.4 will fully mitigate for cumulative effects on these species resulting from the emergency project.

4.3.12. Discussion of Special-Status Animal Species Dependent upon Coastal Scrub/Dune Scrub/Grassland

In addition to the species discussed above, many special-status animal species occur within coastal/dune scrub and grassland, including the silvery legless lizard, coast (San Diego) horned lizard, western mastiff bat, western red bat, hoary bat, southwestern yellow bat, San Diego black-tailed jack rabbit, western small-footed myotis, and yuma myotis.

4.3.12.1. SURVEY RESULTS

None of these species were observed within the WSA during the surveys conducted in 2009. Although these species were not observed during surveys, surveys were not

focused on these species. In addition, it is possible for them to move onto the site prior to construction. Suitable habitat exists within the WSA for each of these species.

4.3.12.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to special-status coastal/dune scrub, grassland, and open habitat animal species:

4.3.12.3. PROJECT EFFECTS

The proposed project is not expected to directly affect any of these species as a result of the avoidance and minimization measures described above; however, the proposed project is expected to have indirect and temporary effects to them through the loss of potential habitat. Because of this, in conjunction with the avoidance and minimization measure described above, the proposed project is not expected to directly affect these species.

4.3.12.4. COMPENSATORY MITIGATION

Due to the avoidance and minimization measures described in Section 4.3.12.2, the proposed project is not expected to directly affect these species; therefore, specific compensatory mitigation is not warranted.

However, on February 3, 1999, President Clinton signed EO 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. This weed abatement program will benefit these species by improving the quality of native habitats. Therefore, in compliance with EO 13112, a weed abatement program will be developed, and temporarily affected areas would be revegetated with plant species that help prevent the introduction or spread of invasive species. Details about the weed abatement program are outlined in Section 5.4, Invasive Species.

4.3.12.5. CUMULATIVE EFFECTS

Impacts to special-status animals dependent upon coastal scrub, dune scrub, or grassland habitats could result from the project. This project could contribute to cumulative effects to these species since a loss of potential foraging habitat will result. Avoidance and minimization measures described under Section 4.3.1.2 will fully mitigate for cumulative effects on these species resulting from the emergency project.

4.3.13. Discussion of Essential Fish Habitat

EFH are those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of essential fish habitat: “waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle. EFH is described by Fishery Management Councils in amendments to Fishery Management Plans, and is approved by the Secretary of Commerce acting through the NMFS (50 CFR 600.10) (NMFS, 1999). The importance of EFH is not necessarily the presence of federally-listed species, but what the habitat contributes to the surrounding environment (i.e. wetlands, near shore ecosystem, immediate adjacent to Bolsa Bay) (Bryant Chesney, phone communication, August 3, 2009).

4.3.13.1. SURVEY RESULTS

The proposed project is located within an area designated as EFH by NMFS for both the Coastal Pelagic Species and Pacific Coast Groundfish FMPs. Ninety-three (93) fish and 1 invertebrate species are listed in these management plans. No focused fish surveys were conducted for this study; however, previous studies were examined. In September 2004, San Marino Environmental Associates (SMEA) prepared a Fisheries Evaluation of the East Garden Grove–Wintersburg Channel Downstream of Graham Street, Adjacent to the Parkside Estates Project Area. The mouth of the Wintersburg Channel outlets into Bolsa Bay within the BSA. This survey report concluded that six native fish likely occur in the channel area, including the topsmelt (*Atherinops affinis*), California killifish (*Fundulus parvapinnis*), Pacific staghorn sculpin (*Leptocottus armatus*), striped mullet (*Mugil cephalus*), arrow goby (*Clevelandia ios*), and longjaw mudsucker (*Gillichthys mirabilis*). Four of these species were confirmed during the survey. Previously, Robert Feldmuth, Ph.D., conducted a survey of Inner Bolsa Bay and Outer Bolsa Bay in 1980. Survey results included the same six species identified by SMEA, plus five others: shiner perch (*Cymatogaster aggregata*), diamond turbot (*Hypsopsetta guttulata*), cheekspot goby (*Ilypnus gilberti*), striped bass (*Roccus saxatilis*), and queenfish (*Seriphus politus*). None of these species are included in the Coastal Pelagic Species and Pacific Coast Groundfish FMPs.

The northern anchovy (*Engaulis mordax*)(pelagic species) and leopard shark (*Triakis semifasciata*) (groundfish species) have potential to occur within the Bolsa Bay; however, the tidal gate within the bay may eliminate the potential (Bryant Chesney, phone conversation, August 3, 2009). Both of these species are included in the Coastal Pelagic Species and Pacific Coast Groundfish FMPs.

4.3.13.2. AVOIDANCE AND MINIMIZATION EFFORTS

The measures described above under Section 4.3.1.2 will be incorporated to avoid and minimize effects to EFH.

4.3.13.3. PROJECT EFFECTS

The proposed project is not expected to substantially directly affect EFH, Pacific coast groundfish, or coastal pelagic species as a result of the avoidance and minimization measures described above; however, the proposed project is expected to have indirect and temporary effects to them through the loss of potential habitat.

4.3.13.4. COMPENSATORY MITIGATION

Due to the avoidance and minimization measures described in Section 4.3.1.2, the proposed project is not expected to substantially directly affect EFH, Pacific coast groundfish, or coastal pelagic species; therefore, specific compensatory mitigation is not warranted.

4.3.13.5. CUMULATIVE EFFECTS

Because these species will be avoided, this project will not contribute to cumulative effects to these species.

4.4. Wildlife Movement

Wildlife species require large areas of habitat to forage for food, find burrowing/denning or nesting sites, and for breeding. Corridors linking areas of suitable habitat are important because they provide useful habitat and allow movement of wildlife from one area to another. Corridors are often used by juveniles dispersing to new territories. This avoids intraspecific competition in existing habitats and allows the recolonization of areas from which animals have become extirpated. Wildlife movement and habitat fragmentation are greatly affected by roads.

4.4.1. Project Effects

The detrimental effects of SR-1 have long been in place. The bank stabilization project will not result in any permanent effect on wildlife movement or result in further fragmentation of habitat.

4.4.2. Avoidance and Mitigation

Minimization measures that can be instituted to minimize indirect effects on wildlife movement shall include shielded lighting during construction that is directed away from the estuary and toward SR-1. The biological monitor will ensure that predators/raptors do not perch on tall signage, lighting, or other roadside features during project construction. Limiting construction work to daylight hours will help to minimize disturbance to wildlife movement.

4.5. Summary of Avoidance and Minimization Measures

The following is a summary of the avoidance and minimization measures discussed in the above sections. These measures will be incorporated to avoid and minimize effects to sensitive biological resources:

1. No equipment storage or staging shall be conducted for the project at the CDFG parking lot just southeast of the project limits to avoid impacts to western snowy plover critical habitat.
2. BMPs shall be utilized during construction to limit the spread of resuspended sediment. These will include preservation of existing vegetation, may include temporary fiber rolls, spill prevention and control, stockpile management, contaminated soils management, silt curtains, and or turbidity curtains that would contain resuspended sediment on site until it settles.
3. An employee education program for all construction personnel was developed and implemented by the biological monitor prior to construction on July 28, 2009. At a minimum, the program included the following topics: (1) biology, conservation, and legal status of the western snowy plover, California brown pelican, light-footed clapper rail, and California least tern; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; (7) project features designed to

- reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas; and (8) necessity to avoid staging in the CDFG parking lot south of the BSA.
4. A qualified biologist shall be on site to serve as biological monitor during vegetation clearing, grading, and construction activities for the project to ensure that no take occurs. As feasible, the biological monitor will coordinate with CDFG land managers to determine the most effective method to monitor the effects of noise and activity on any nearby nesting listed birds.
 5. Under the supervision of the biological monitor, bright orange plastic construction fencing, stakes, flags, or markers that are clearly visible to personnel on foot and in heavy equipment shall be used to delimit areas of grading, staging, and avoidance for the proposed project. These markers shall be in place prior to project initiation (including clearing, grubbing, grading, or staging of equipment or vehicles) and will remain in place until all construction activities are finished. Orange construction fencing or some other obvious protective measures will delineate the boundaries of the preserved portion of the population of estuary seablight identified within the estuarine wetland prior to construction. No construction will be allowed in these areas. Advance warning and cautionary signs will be placed at road shoulders of Golden West and Warner Avenue. Locations of the signs will be chosen to avoid damage to CNPS-listed plants.
 6. It is necessary to conduct vegetation clearing, grading, and construction activities during the February 28 through August 31 bird breeding season. Therefore, surveys shall be conducted for listed nesting and breeding birds prior to commencing these activities within 500 ft of the project impact area and at any distance where construction noise will exceed hourly sound levels of 60 dBA L_{eq} (equivalent consistent sound level measured in A-weighted decibels). If feasible, the biological monitor shall obtain noise levels in order to comply with this measure. If nest(s) or breeding behavior (courtship, nest building, territorial defense, etc.) are detected during these surveys, no vegetation clearing, grading, or construction activities will be allowed within 100 ft of the nest(s). If the biological monitor determines that project activities, such as noise and construction activity, continue to affect nesting birds in a manner that could be detrimental to their survival or reproductive success, additional actions, such as an increase in buffer width, will be undertaken. Vegetation clearing, grading, and construction activities may resume when nesting activity and fledglings are no longer in the area.

7. Project construction includes the placement of sheet pile, which will require pile driving. To minimize impacts of pile driving, a vibrating driver, crane, vibratory hammer, or hydraulic press shall be used.
8. Construction activities shall be completed as rapidly as feasible to limit the duration of disturbance due to noise and activity in the project area.
9. Tall equipment that is not in active use will be stored at a far enough distance from areas occupied by listed bird species that predators/raptors shall not be able to use it as a perch to prey on listed bird species. The biological monitor shall ensure that predators/raptors do not perch on tall signage, lighting, or other roadside features.
10. All spoils and material disposal, including contaminated topsoil, shall be removed out of the BSA and disposed of properly.
11. Constuction is expected to occur entirely during daylight hours. If night work is required, any necessary construction lighting shall be shielded and directed away from adjacent native habitats.
12. The project construction shall be carried out under standard BMPs (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, fuel spill cleanup, etc.). During and after project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, and other toxic substances shall be enforced.
13. No construction access, parking, storage of construction materials, or dumping of trash and debris will occur within adjacent areas of native habitat. All movement of employees, construction contractors and equipment, including ingress and egress of equipment and personnel shall be limited to existing roads and designated construction zones, access ramps, and staging areas. All adjacent habitat areas to be avoided shall be clearly noted on the plans and staked by the biological monitor. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other toxic substances will occur only in designated areas within the proposed limits of the project site. These designated areas shall be clearly marked and located in such a manner as to prevent any runoff from entering waters of the United States, including wetlands.
14. Spoils, rubble, and trash will not be deposited on the adjacent native habitats. The accumulation of garbage on site and on the adjacent habitat, including all food-related trash items, such as wrappers, cans, bottles, and food scraps generated during construction activities, shall be removed daily to avoid attracting predators to the area.

15. The use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species shall be prohibited.
16. Contractor pets shall be prohibited in and adjacent to the project area.
17. Deliberate feeding of wildlife shall be prohibited.
18. Equipment/materials for the proposed project shall not be stored outside of paved areas.
19. Work shall be staged and conducted from the roadway (as opposed to from Bolsa Bay) to the maximum extent possible. No machinery or construction materials that are not essential for project implementation shall be allowed at any time in the Bolsa Bay waters.

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Chapter 5. Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act Consultation Summary

Under provisions of Section 7(a)(2) of the FESA, a federal agency (i.e., FHWA) that permits, licenses, funds, or otherwise authorizes a project activity must consult with the USFWS to ensure that its actions would not jeopardize the continued existence of any listed species or destroy or adversely modify critical habitat. This NES provides details on the proposed project's effects to federally listed plant and wildlife species.

A may affect but not likely to adversely affect determination has been made regarding potential impacts to western snowy plover, California brown pelican, light-footed clapper rail, and California least tern. Federal Section 7 consultation between the Corps and the USFWS resulted in informal consultation regarding these species (Appendix C). The conditions of the permit have been included in this NES under avoidance and minimization measures for these federally listed species. A separate BA will not be required for this project (email correspondence from Sally Brown, May 27, 2009).

5.2. California Endangered Species Act Consultation Summary

CESA protects plant and animal species listed as rare, threatened, or endangered. The CDFG authorizes take of endangered, threatened, or candidate species through the provisions of Sections 2081 and 2080.1 of the California Fish and Game Code.

Authorization from CDFG (under Sections 2081 or 2080.1 of the California Fish and Game Code) for take of endangered, threatened, or candidate species is often warranted for project. State-listed species that are also federally listed for which a may affect but not likely to adversely affect determination has been made by the USFWS include California least tern and light-footed clapper rail. Additionally, two State-listed species that are not also federally listed could occur within the BSA: Belding's savannah sparrow and California black rail. Effects on these species often require a 2081 permit from CDFG to authorize take of these species. However, email

correspondence between Caltrans biologist Arianne Preite and CDFG biologist Erinn Wilson state that no 2081 would be required (email correspondence, August 5, 2009). Furthermore, this project may fall under the category of emergency projects that are exempt from CEQA (<http://ceres.ca.gov/ceqa/guidelines.art18.html>).

5.3. Wetlands and Other Waters Coordination Summary

The findings and conclusions of the location and extent of wetlands and other waters subject to regulatory jurisdiction (or lack thereof) represent the professional opinion of LSA. These findings and conclusions are typically considered preliminary until verified by the Corps and RWQCB. However, the elevated status of the project to emergency level has overridden the need for verification. The Corps has authorized the emergency project under RGP 63; authorization by the RWQCB is included under this RGP.

5.3.1. Corps Jurisdiction

As described in the Jurisdictional Delineation Report (refer to Appendix H), Bolsa Bay connects directly to the Pacific Ocean, a navigable water. Furthermore, the estuary is considered relatively permanent waters. All relatively permanent waters are considered jurisdictional, and no significant nexus determination is required.

A total of 0.02 ac of potential Corps wetland waters and Corps deepwater aquatic habitat is proposed to be permanently affected by project activities (Table 6). No temporary impacts to Corps jurisdiction are expected. Refer to Appendix A for the extent of potential Corps wetland jurisdiction.

Table 6: Project Effects to Jurisdictional Areas

CCC Wetland Waters	CCC/Corps Wetland Waters ¹	CCC/Corps Deepwater Aquatic Habitat ²
0.08 acre	0.01 acre	0.01 acre

¹ A total of 0.001 acre of proposed effects to Corps wetland waters is also designated as a proposed effect to Corps Section 10 waters.

² The entire area (i.e., 0.01 acre) of proposed effects to Corps deepwater aquatic habitat is also designated as a proposed effect to Corps Section 10 waters.

CCC = California Coastal Commission

Corps = United States Army Corps of Engineers

5.3.2. CDFG Jurisdiction

None of the areas identified within the project site are rivers, lakes, streams, or their associated estuarine habitat. All potential wetlands on site are associated with a coastal salt marsh system. Salt marshes are typically not regulated under the Fish and Game Code. Thus, there are no potential CDFG jurisdictional areas within the BSA.

5.3.3. RWQCB Jurisdiction

RWQCB jurisdiction correlates with areas under the jurisdiction of the Corps. The Corps permit found in Appendix B serves as the permit for the RWQCB.

5.3.4. CCC Jurisdiction

Potential for CCC jurisdiction exists due to the BSA's location within the Coastal Zone. Therefore, all of the areas satisfying the Corps jurisdictional criteria for waters and wetlands of the United States, as described above, are also subject to CCC jurisdiction as wetlands pursuant to the CCA. Because CCC employs a one-parameter approach to delineating jurisdictional wetlands, CCC wetlands usually tend to be more inclusive and extensive. LSA biologists delineated potential CCC jurisdictional wetlands using this one-parameter approach. As a result, CCC wetland jurisdiction was mapped where wetland vegetation extended beyond the limit of the highest high water mark. There were no hydric soils that extended beyond the limit of the highest high water. A total of 0.10 ac of potential CCC wetland jurisdiction is proposed to be permanently affected by project activities (Table 6). No temporary impacts to potential CCC wetland jurisdiction are expected. Refer to Appendix A for the extent of potential CCC wetland jurisdiction.

5.4. Invasive Species

Exotic plant species exist within the nonnative plant communities throughout the BSA, within patches of native plant communities, and in areas that have been disturbed by human uses. Exotic species are typically more numerous adjacent to roads and developed areas and frequently border the ornamental landscape. In the past, these areas likely supported native dune mat, dune scrub, grasslands, and estuarine habitats. Consequently, scattered plant species associated with these plant communities are often found in these areas.

A total of 9 nonnative plant species occurring on the Cal-IPC California Invasive Plant Inventory were identified in the BSA. Of these species, there are 5 with an

overall high rating, 2 with a moderate rating, and 2 with a limited rating. Invasive species that have severe ecological effects are given a high rating. Species with a high rating identified within the BSA are: hottentot fig (*Carpobrotus edulis*), sweet fennel (*Foeniculum vulgare*), Australian saltbush (*Atriplex semibaccata*), Myoporum (*Myoporum laetum*), and African fountain grass (*Pennisetum setaceum*). These observations should not be considered all inclusive.

In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur. At a minimum, this program will include:

- During construction, the construction contractor shall inspect and clean construction equipment at the beginning and end of each day and prior to transporting equipment from one project location to another.
- During construction, soil and vegetation disturbance will be minimized to the greatest extent feasible.
- During construction, soil/gravel/rock will be obtained from weed-free sources.
- Only certified weed-free straw, mulch, and/or fiber rolls will be used for erosion control.
- After construction, if applicable, affected areas adjacent to native vegetation would be revegetated with plant species approved by the District Biologist that are native to the vicinity.
- After construction, if applicable, all revegetated areas will avoid the use of species listed in Cal-IPC's California Invasive Plant Inventory that have a high or moderate rating.
- After construction, if applicable, erosion control and revegetation sites will be monitored for 2 to 3 years to detect nonnative species prior to the establishment of the native vegetation.
- Eradication procedures (e.g., spraying and/or hand weeding) will be outlined should an infestation occur. The use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized and monitored by the District Biologist.

5.5. Migratory Bird Treaty Act

Native bird species and their nests are protected under the MBTA (16 USC 703-712). The MBTA states that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected. The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter, any migratory bird, its eggs, parts, and nests, except as authorized under a valid permit.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies “taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a MOU with the Fish and Wildlife Service that promotes the conservation of migratory bird populations.”

Project implementation is necessary during the nesting season (February 15 through August 31). In accordance with EO 13186 and the provisions of the MBTA, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active.

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Chapter 6. References

- California Burrowing Owl Consortium (CBOC). 1993. Burrowing Owl Survey Protocol and mitigation Guidelines. April 1993.
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Appendix A Coastal Development Permit
Emergency Permit #5-09-131-G

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CALIFORNIA COASTAL COMMISSION

South Coast Area Office
200 Oceangate, Suite 1000
Long Beach, CA 90802-4302
(562) 590-5071

**EMERGENCY PERMIT**

DATE: JULY 15, 2009

EMERGENCY PERMIT: 5-09-131-G

APPLICANT: California Department of Transportation (CalTrans)
Attn: Chris Flynn

LOCATION: Pacific Coast Highway (northbound lane and shoulder adjacent to Bolsa Chica Ecological Reserve), between Warner Avenue and Seapoint Avenue, City of Huntington Beach, Orange County

EMERGENCY WORK PROPOSED: Installation of 475 linear feet of sheetpile (30 ft. deep), parallel to and five (5) feet bayward of the edge of pavement, backfill area between pavement and sheetpile, and restore damaged pavement. All work will be conducted within the CalTrans right-of-way.

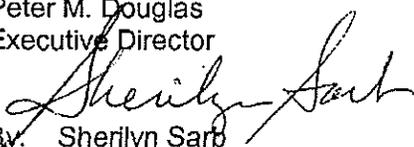
This letter constitutes approval of the emergency work you or your representative has requested to be done at the location listed above. I understand from your information that an unexpected occurrence in the form of high tides causing channel bank erosion of the roadway embankment and collapse of the pavement requires immediate action to prevent or mitigate loss or damage to life, health, property or essential public services. 14 Cal. Admin. Code Section 13009. The Executive Director hereby finds that:

- (a) An emergency exists which requires action more quickly than permitted by the procedures for administrative or ordinary permits and the development can and will be completed within 30 days unless otherwise specified by the terms of the permit;
- (b) Public comment on the proposed emergency action has been reviewed if time allows; and
- (c) As conditioned the work proposed would be consistent with the requirements of the California Coastal Act of 1976.

The work is hereby approved, subject to the attached conditions.

Very Truly Yours,

Peter M. Douglas
Executive Director

By: 
Sherilyn Sarb

Title: Deputy Director

CONDITIONS OF APPROVAL:

1. The enclosed form must be signed by the permittee and returned to our office within 15 days.
2. Only that work specifically described above and for the specific property listed above is authorized. Any additional work requires separate authorization from the Executive Director.
3. The work authorized by this permit must be completed within 120 days of the commencement of sheet pile installation.
4. In exercising this permit the permittee agrees to hold the California Coastal Commission harmless from any liabilities for damage to public or private properties or personal injury that may result from the project.
5. This permit does not obviate the need to obtain necessary authorizations and/or permits from other agencies (e.g. City of Huntington Beach, California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers).
6. Construction Responsibilities and Debris Removal

The permittee shall comply with the following construction related requirements:

- (a) No construction materials, debris, waste, oil or liquid chemicals shall be placed or stored where it may be subject to tidal or wave erosion and dispersion, stormwater, or where it may contribute to or come into contact with nuisance flow;
 - (b) Any and all debris resulting from construction activities shall be removed from the site within 1 week of completion of construction;
 - (c) Work shall be staged and conducted from the roadway (as opposed to from the bay) to the maximum extent possible. No machinery or construction materials not essential for project implementation shall be allowed at any time in bay waters;
 - (d) If turbid conditions are generated during construction, a silt curtain shall be utilized to minimize and control turbidity to the maximum extent practicable;
 - (e) All stock piles and construction materials shall be covered, enclosed on all sides, shall be located as far away as possible from drain inlets and any waterway, and shall not be stored in contact with the soil;
 - (f) All debris and trash shall be disposed of in the proper trash and recycling receptacles at the end of each construction day;
 - (g) The discharge of any hazardous materials into coastal waters or any receiving waters shall be prohibited.
 - (h) All temporary construction access measures (e.g. access ramps) shall be removed in their entirety upon completion of the emergency work and the area restored to the pre-construction condition.
7. Authorization of this emergency permit shall not preclude implementation, through the regular coastal development permit process, of other hazard avoidance and/or protective response options.
 8. The sheet pile shall be installed no more than 5 feet bayward of the existing pavement (or pre-existing pavement in areas of pavement collapse) and shall be no more than approximately 475 linear feet long. The top elevation of the sheetpile shall not exceed the elevation of the adjacent pavement. Steel sheetpile is preferred. If an alternative material is necessary the applicant shall consult with the Executive Director regarding use of such materials. Request for permanent

use of plastic or similar material will likely result in additional long-term monitoring/inspection requirements and commitment to install a different material if the material installed is found to have adverse impacts on the marine environment.

9. Prior to commencement of work, the applicant shall have oil spill contingency measures in place in the event of oil leak or spill from the existing 6" oil line adjacent to the work area, including but not limited to, identification of the oil line owner/operator and validated 24-hour contact information for the oil line owner/operator, identification of the location of pumps, valves, etc. that would need to be shut down/closed in the event of an oil leak or spill and instructions/procedures needed to implement the shut down/closure, and provision of containment equipment in the event of a leak or spill. The applicant shall request that the owner/operator of the oil line reduce/minimize flows through the oil line or shut down the oil line prior to the commencement of work, if feasible.
10. Pre-project site biological conditions shall be documented through photographs of the site, mapping and other appropriate documentation prior to commencement of work. Post-project conditions shall also be similarly documented and an analysis prepared identifying all impacts to biological resources caused by the proposed project. Impacts to wetland and other habitat shall be mitigated. A mitigation plan, along with the pre and post project biological monitoring documentation shall be submitted in conjunction with the follow-up regular coastal development permit application. Existing native vegetation and soil shall be salvaged, where feasible, for use in any future mitigation plan.
11. Construction activities shall, to the maximum extent feasible, minimize or avoid significant adverse impacts on biological resources. A biological survey shall be completed prior to initiation of construction activities and shall provide recommendations for a biological monitor to be present during construction, if necessary.
12. Public access impacts shall be minimized. Lane closures, traffic direction and flow, and detours shall be managed by the applicant during implementation of the proposed emergency work in a manner that has the least effect upon public access to and along the coast. The duration of lane closures shall be minimized by expediting installation of the proposed emergency work through use of extended work days and night time work to the extent possible and to the extent that such extended work periods do not significantly adversely impact sensitive biological resources in and adjacent to the work area, to be determined in consultation with the applicant's biological monitor and California Department of Fish and Game and U.S. Fish and Wildlife Service personnel. Adjustments to the work period shall be made as necessary to protect biological resources.
13. Other than temporary placement of white pavement delineators/channelizers (i.e. flat approximately 2 inch wide by 3 foot tall painted posts with reflectors) about every 20 feet along the length of the proposed sheetpile, the permit does not authorize installation of any guard rail, cable handrail, or similar such structures. Permanent retention of the temporary delineators/channelizers and/or installation of any guard rail, cable handrail, or similar, may be requested by the applicant through the follow-up regular coastal development permit application as required in Special Condition No. 16. If such elements are requested, the submittal shall include substantiation of the need for such structures, an analysis of alternatives, and a visual impact analysis and any additional information requested by the Executive Director during the processing of the follow-up application.
14. The applicant shall comply with the "PCH Erosion Control Project Emergency Consultation Recommended Avoidance and Minimization Measures" prepared by

Sally Brown, U.S. Fish and Wildlife Service. In addition, the applicant shall comply with proposed Liquid Waste Management Measures, Spill Prevention and Control Measures, and Contaminated Soil Management Measures. Wherever such documents request submittal of a report or documentation to the agency that authored the requirements, a copy of said reports or documentation shall also be submitted to the Executive Director of the Coastal Commission.

15. Immediately following installation of the sheetpile, and at least monthly (preferably bi-monthly) through the first entire winter following sheetpile installation, the applicant shall monitoring for erosion in the project vicinity and provide documentation of monitoring efforts. The applicant shall submit the results of the monitoring and recommendations to address observed or anticipated erosion in conjunction with the follow-up permit application required in Special Condition No. 16.
16. Follow-Up: Within 180 days of the date of this permit, and any additional time granted by the Executive Director for good cause (e.g. additional time needed to prepare required studies) the permittee shall submit a complete application for a regular Coastal Development Permit for the emergency work that the applicant wishes to be a permanent development and any additional development the permittee wishes to undertake in conjunction with the project. At a minimum, the submittal shall contain the materials, studies, analyses required by the other conditions of this permit.
17. The follow-up application submittal shall, at minimum, address the erosional effects of the sheetpile on adjacent areas of unprotected embankment and in front of the sheetpile. In conjunction with such analysis a hydraulic analysis must examine conditions in the project area including those present during periods of high flow from the East Garden Grove-Wintersburg Channel (CO5) and during extreme tidal range typical of December/January conditions.

This emergency work is considered to be temporary work done in an emergency situation. If the property owner wishes to have the emergency work become a permanent development, a Coastal Development Permit must be obtained. A regular permit would be subject to all of the provisions of the California Coastal Act and may be conditioned accordingly. These conditions may include provisions for public access (such as an offer to dedicate an easement) and/or a requirement that a deed restriction be placed on the property assuming liability for damages incurred from hazards.

If you have any questions about the provisions of this emergency permit, please call the Commission office in Long Beach (562) 590-5071.

Enclosures: Acceptance Form
Coastal Permit Application Form

cc: City of Huntington Beach

CALIFORNIA COASTAL COMMISSION

South Coast Area Office
200 Oceangate, Suite 1000
Long Beach, CA 90802-4302
(562) 590-5071



EMERGENCY PERMIT ACCEPTANCE FORM

TO: CALIFORNIA COASTAL COMMISSION
SOUTH COAST DISTRICT OFFICE
P.O. BOX 1450
200 OCEANGATE, SUITE 1000 (10TH FLOOR)
LONG BEACH, CA 90802-4416

RE: Emergency Permit No.5-09-131-G

INSTRUCTIONS: After reading the attached Emergency Permit, please sign this form and return to the South Coast District Office within 15 working days from the permit's date.

I hereby understand all of the conditions of the emergency permit being issued to me and agree to abide by them.

I also understand that the emergency work is TEMPORARY and that a regular Coastal Permit is necessary to make it a permanent installation. I agree to apply for a regular Coastal Permit within 180 days of the date of the emergency permit (i.e., by 1/11/2010), OR I will remove the emergency work authorized by such permit in its entirety within 365 days of the date of the emergency permit (i.e., by 7/15/2010).

Signature of property owner or
Authorized representative

Name

Address

Date of Signing

Appendix B USACE Emergency Permit File
No. SPL-2009-00531-SCH

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DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

July 20, 2009

REPLY TO
ATTENTION OF:

Office of the Chief
Regulatory Division

Jason Yeung, Maintenance Engineering
California Department of Transportation, District 12
Attention: Arianne Preite
3337 Michelson Drive, Suite CN380
Irvine, CA 92612-0699

Dear Mr. Yeung:

This is in reply to your application (File No. SPL-2009-00531-SCH) dated July 13, 2009, for a Department of the Army Permit to perform emergency repairs which include bank stabilization activities, in association with the Bolsa Chica Emergency Roadway Embankment Repair Project (see enclosed plans and map). Emergency activities will result in the discharge of permanent fill into approximately 0.01 acre of wetland waters of the U.S. and 0.01 acre of non-wetland waters of the U.S. The proposed work would take place along State Route 1 (SR-1), between at Post Miles 29.11 to 29.18, in the City of Huntington Beach, Orange County, California.

Based on the information you have provided, the Corps of Engineers has determined that your proposed activity complies with the terms and conditions of Regional General Permit (RGP) No. 63, for Emergency Repairs.

As long as you comply with the general permit conditions of RGP No. 63, an individual permit is not required.

Specifically, you are authorized to:

1. Install approximately 475 linear feet of sheet piling (including a cable handrail) at a distance five (5) feet from the existing edge of pavement.

Furthermore, you must comply with the following non-discretionary Special Conditions:

Special Conditions:

1. The permittee shall abide by the terms and conditions of the California Coastal Commission (CCC) Emergency Permit (5-09-131-G) dated July 15, 2009.
2. This Corps permit does not authorize you to take any threatened or endangered species, in particular the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*), federally endangered brown pelican (*Pelecanus occidentalis*) and light footed clapper rail (*Rallus longirostris levipes*) and California least tern (*Sternula antillarum browni*) or their designated critical habitats. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA). The enclosed U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with incidental take that is also specified in the BO (FWS-OR/09B0048-09F1004). Your authorization under this Corps permit is conditional upon your compliance with all mandatory terms and conditions the attached BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute non-compliance with your Corps permit. However, the USFWS is the appropriate authority to determine compliance with the terms and conditions of the BO, and with the ESA. For further clarification on this point, you should contact the USFWS. Should the USFWS determine that the conditions of the BO have been violated, normally the USFWS will enforce the violation of the ESA, or refer the matter to the Department of Justice.
3. The permittee shall conduct a qualitative pre- and post-construction wetland impact assessment report and submit it to the Corps before August 20, 2009.
4. The permittee shall mitigate for 0.01 acre of permanent impacts to wetland waters of the U.S. The amount of mitigation shall be determined by the Corps upon review of the pre – and post construction wetland impact assessment report.
5. The Permittee shall submit to the Corps and NOAA's National Marine Fisheries Service (NMDS), CCC, Regional Water Quality Control Board (RWQCB) -Santa Ana a conceptual mitigation plan with clear timelines to the Corp for review and approval within 35 calendar days upon receipt of authorization to work in waters of the U.S. (August 20, 2009).
6. The Permittee shall clearly mark the limits of the workspace with flagging or similar means to ensure mechanized equipment does not enter preserved waters of the U.S. and riparian wetland/habitat areas. Adverse impacts to waters of the U.S. beyond the Corps-approved construction footprint are not authorized. Such impacts could result in permit suspension and revocation, administrative, civil or criminal penalties, and/or substantial, additional, compensatory mitigation requirements.

7. The Permittee shall implement all applicable provisions and stipulations of the *Programmatic Agreement Among the Federal Highway Administration, The Advisory Council on Historic Preservation, The California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California (PA)*, dated January 1, 2004, to ensure compliance of Section 106 of the National Historic Preservation Act of 1966.

8. The permittee shall ensure that best management practices (BMPs) are implemented to minimize potential water pollution during construction and future operation of the proposed project, which include but are not limited to:

- a. Implement temporary soil stabilization (preservation of existing vegetation);
- b. Implement temporary Sediment Control BMPs (Temporary Fiber Rolls; Temporary Gravel Bag Berm, Street Sweeping, Temporary Storm Drain Inlet Protection);
- c. Implement non-Storm Water Management BMPs (Dewatering Operations, Vehicle and Equipment Cleaning/Fueling/ Maintenance, Pile Diving Operations, Material Use Over Water, Concrete Finishing, Structure Demolition/Removal Over of Adjacent to Waters);
- d. Implement Water Management and Materials Pollution Control BMPs (Material Delivery and Storage, Stockpile Management, Spill Prevention and Control, Solid Waste Management, Contaminated Soil Management, Concrete Waste Management, Sanitary/Septic Waste Management, and Liquid Waste Management);
- e. Removed all spoils and material disposal from Coastal Zone. Contractor may utilize silt curtains and/or turbidity curtain, as feasible;
- f. Removed topsoil from the project site; and
- g. Place advance warning and cautionary signs at Golden West, as well as Warner Avenue on the shoulders.

RWQCB-Santa Ana:

1. Project activities must not depress the dissolved oxygen content of receiving waters below 5 mg/L as a result of controllable water quality factors. When natural dissolved oxygen content is less than 5 mg/L, the discharger must not cause further depression.
2. Project activities must not raise the pH of receiving waters above 8.5 or lower pH below 6.5 as the result of controllable water quality factors.
3. Project-related activities shall not cause the background natural turbidity, as measured in Nephelometric Turbidity Units (NTUs), in receiving waters to be increased

by values greater than the following Basin Plan objectives at a distance of 100 feet from the activity:

- a. If natural turbidity is between 0 and 50 NTU, the maximum increase shall not exceed 20% of the measured natural turbidity.
- b. If natural turbidity is 50 to 100 NTU, the increase shall not exceed 10 NTU.
- c. If natural turbidity is greater than 100 NTU, the maximum increase shall not exceed 10% of the measured natural turbidity.

4. An effective monitoring plan must be developed and implemented to document compliance with conditions 1, 2, and 3 above. Any suspected violation of these conditions must be reported to Regional Board staff in writing within 24-hours of discovery. The monitoring plan and records of monitoring activities must be maintained on site for the duration of work and be available for inspection upon request.

Emergency (RGP63):

1. The work authorized by this RGP must be underway no later than seven (7) calendar days from date of issuance of this letter of verification. All work must be completed no later than July 27, 2009. If the Permittee is unable to complete the authorized work by this date, the Permittee must request, in writing, an extension from the Corps prior to the deadline.
2. As directed in Regional General Permit (RGP) No. 63, any work authorized by this RGP must be the minimum necessary to alleviate the immediate emergency, unless complete reconstruction does not result in significantly increased impacts to aquatic resources and logistical concerns indicate such reconstruction is as expedient considering the condition of the project site and is limited to in-kind replacement or refurbishment.
3. As directed in Regional General Permit (RGP) No. 63, you shall provide a written report to this office (within 30 days of completing the project) after completion of any action conducted under this RGP. PROVIDING THIS REPORT IS MANDATORY. At a minimum the Report shall include the following:
 - A) The name, address, and telephone number of the applicant and the applicant's agent (if appropriate)
 - B) Full description of the activity including:
 - i) description of the emergency and the potential for loss of life or property
 - ii) purpose of the activity
 - iii) final goal of the entire activity
 - iv) location (e.g., latitude/longitude or UTM coordinates; section/township/range on appropriate USGS topographic map; Thomas Guide map, or other source to accurately portray project location)
 - v) size and description of project area (include maps or drawings showing the areal and lineal extent of the project, and pre- and post-construction photographs)

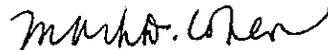
- vi) quantities of materials used
- C) information on receiving waterbody impacted including:
 - i) name of waterbody
 - ii) type of receiving waterbody (e.g., river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, wetland type, etc.)
 - iii) temporary/permanent adverse impact(s) in acres/cubic yards/linear feet
 - iv) compensatory mitigation in acres/cubic yards/linear feet
 - v) other mitigation steps (to avoid, minimize, compensate)
- D) information on federally listed or proposed endangered species or designated or proposed critical habitat (notification must be provided to FWS and/or NMFS as appropriate) including:
 - i) temporary/permanent adverse impacts
 - ii) compensatory mitigation
 - iii) other mitigation steps (to avoid, minimize, compensate)

A general permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, State, or local authorizations required by law.

Thank you for participating in our regulatory program. If you have any questions, please contact Sophia Huynh of my staff at 213.452.3357 or via e-mail at Sophia.C.Huynh@usace.army.mil.

Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,



Mark D. Cohen
Deputy Chief, Regulatory Division

Enclosure

Appendix C Informal Section 7 Consultation,
USFWS FWS-OR-09B0048-
09F1004

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-OR-09B0048-09F1004

JUL 20 2009

Colonel Thomas H. Magness, IV
District Commander, Los Angeles
U.S. Army Corps of Engineers
P.O. Box 532711
Los Angeles, California 90053

Attention: Sophia C. Huynh, Environmental Protection Specialist (SPL-2009-00531-SCH)

Subject: Informal Section 7 Consultation for the Pacific Coast Highway Erosion Control Project, Orange County, California

Dear Colonel Magness:

This is in response to your correspondence dated July 20, 2009 requesting our concurrence with your determination that the proposed Pacific Coast Highway Erosion Control Project is not likely to adversely affect the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) and the federally endangered brown pelican (*Pelecanus occidentalis*), light-footed clapper rail (*Rallus longirostris levipes*), and California least tern (*Sternula (Sterna) antillarum browni*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

The proposed project is located on northbound State Route 1 Pacific Coast Highway (PCH) south of Warner Avenue between postmile 29.11 and 29.18 in the City of Huntington Beach, Orange County, California. In this area, peak high tides in late June 2009 and subsequent tide/scour action has caused the unforeseen and rapid loss of sections of roadway pavement, removed the lateral support, and undermined approximately 475 linear feet of Pacific Coast Highway that is heavily used by summer recreation traffic and cycle traffic. The loss of pavement and unstable embankment condition affect the safety of the motoring and cycling public. As the exposed sub-base of the roadway saturates and drains with each tidal cycle, the entire length of PCH in the project area has lost its supporting embankment. The rate of pavement and material loss due to tidal action and longitudinal scour is currently undergoing daily acceleration and is anticipated to accelerate more rapidly during the July and August peak high tides. Additional loss of pavement and embankment will also endanger the 6-inch oil pipeline buried longitudinally in the roadway, threatening rupture of the pipeline and discharge of oil into the adjacent Bolsa Chica Ecological Reserve.

TAKE PRIDE
IN AMERICA 

Implementation of the project as proposed will result in the repair of lost pavement and embankment and protect the oil pipeline. The project will also install approximately 475 linear feet of sheet piling and a cable handrail at a distance five (5) feet from the existing edge of pavement, and it will install 500 feet of metal beam guardrail to comply with safety standards. All heavy equipment work will be conducted from the existing pavement road surface, and all material and equipment storage will be outside the California Department of Fish and Game parking lot just south of the project site, as the parking lot is located within designated critical habitat for the western snowy plover.

The emergency placement of the sheet piles is anticipated to occur on a 24-hour schedule, occurring at both high and low tides. Project construction will require disturbance of topsoil that is contaminated with lead. All spoils and material disposal, including contaminated topsoil, will be removed out of the California Coastal Zone and disposed of properly. In order to prevent the spread of contaminated sediment into adjacent habitat areas which could result in chronic bioaccumulation or food-chain effects, a screen silt fence attached to a float boom will be utilized to capture sediment and contain it until it settles. Structural backfill operations will take place only during low tides. A minimum of soil disturbance is expected at the base of the sheet piles. Sections of unstable, undermined pavement will be saw cut to expose the fissures and repaired with structural backfill, roadway base and hot-mix asphalt concrete. Project implementation is anticipated to start July 21, 2009, with 24-hour a day construction operation and a duration of approximately 1 week.

Habitat in the project area consists of nine community types: estuarine wetland (1.95 acres (ac)), native dune mat (5.28 ac), dune scrub (0.61 ac), invaded dune mat (0.75 ac), invaded ice plant dune mat (1.56 ac), exotic annual grassland (0.35 ac), coastal scrub (0.54 ac), disturbed (0.44 ac), and bare ground (0.44 ac). The project as proposed will result in direct impacts to a total of about 0.064 ac of habitat. Anticipated permanent impacts to Jurisdictional Waters of the United States include the loss of 0.01 ac of wetlands and 0.01 ac of deepwater habitat. There are no temporary impacts. The federally listed western snowy plover, brown pelican, light-footed clapper rail, and California least tern have been observed in or near the project impact areas utilizing the marine environment and adjacent habitat areas. These species are not expected to nest within the project impact area but may forage or rest in the area.

The following measures have been incorporated into the project design to avoid impacts to federally listed species (PCH Erosion Control Project Emergency Consultation Recommended Avoidance and Minimization Measures Sally Brown, U.S. Fish and Wildlife Service, 07-02-09; Revised by Arianne Preite, Caltrans, 07-16-09):

- 1) No equipment storage or staging will be conducted for the project at the CDFG parking lot just south of the project limits to avoid impacts to western snowy plover critical habitat.

- 2) Best Management Practices will be utilized during construction to limit the spread of resuspended sediment. These may include silt curtains, and or turbidity curtains which would contain resuspended sediment onsite until it settles.
- 3) A qualified biologist will be on site to serve as biological monitor during vegetation clearing, grading, and construction activities for the project to ensure that no take occurs. As feasible, the biological monitor will coordinate with CDFG land managers to determine the most effective method to monitor the effects of noise and activity on any nearby nesting listed birds.
- 4) Under the supervision of the biological monitor, bright orange plastic construction fencing, stakes, flags, or markers that are clearly visible to personnel on foot and in heavy equipment will be used to delimit areas of grading, staging, and avoidance for the proposed project. These markers will be in place prior to project initiation (that includes any clearing, grubbing, grading, or staging of equipment or vehicles) and will remain in place until all construction activities are finished.
- 5) If it is necessary to conduct vegetation clearing, grading, and construction activities during the February 28- August 31 bird breeding season, surveys will be conducted for listed nesting and breeding birds prior to commencing these activities within 500 feet of the project impact area and at any distance where construction noise will exceed hourly sound levels of 60 dBA L_{eq} . If feasible, the biological monitor will obtain noise levels in order to comply with this measure. If nest(s) or breeding behavior (courtship, nest building, territorial defense, etc.) are detected during these surveys no vegetation clearing, grading, or construction activities will be allowed within 100 feet of the nest(s). If the biological monitor determines that project activities, such as noise and activity, continue to affect nesting birds in a manner that could be detrimental to their survival or reproductive success, additional actions, such as an increase in buffer width, will be undertaken. Vegetation clearing, grading, and construction activities may resume when nesting activity and fledglings are no longer in the area.
- 6) Biological monitoring results will be reported to the Carlsbad Fish and Wildlife Office within 30 days of the completion of construction operations. The report will include the following information: 1) dates during which project construction occurred; 2) estimates of habitat disturbed, by vegetation type and disturbance type (i.e., permanent, temporary); 3) any observations of federally listed species or their sign onsite or in the vicinity of construction activities; 4) non-compliance/incident reports and the resolution of each reported situation; 5) any other pertinent data concerning Caltran's success in meeting recommended avoidance and minimization measures, and an explanation of failure to meet such measures, if any; 6) an evaluation of the efficacy of the avoidance and minimization measures at avoiding and minimizing impacts to listed species; and 7) pertinent recommendations. The report will include high-quality, well-labeled maps

or GIS coverages that depict the precise location(s) of project activities, the location of known, suspected, or potential biological resources (including nests) on or near construction areas, the location of observations of listed species or their sign on or near construction areas, and a delineation of the major vegetation communities on, and adjacent to, construction activities. All maps will have a title, date, scale, legend, and north arrow.

- 7) Within 1 working day of discovering a dead, injured, or sick federally listed species, the biological monitor will notify Larry Farrington of our Law Enforcement Division at (301) 328-6307 and Sally Brown of our office at (760) 431-9440 x278. Written notification to both offices must be made within 5 calendar days and include the date, time, and location of the animal(s), and any other pertinent information. The location where the animal(s) were found should be marked in an appropriate manner and photographed. Care must be taken in handling sick or injured animals to ensure effective treatment and care. Injured animals should be transported to a qualified veterinarian. Should any treated animals survive, our office should be contacted regarding the final disposition of the animals. Dead specimens should be sealed in an appropriately sized container and refrigerated to preserve biological material in the best possible state.
- 8) Project construction includes the placement of sheet pile, which will require pile driving. To minimize impacts of pile driving, a vibrating driver, crane, vibratory hammer, or hydraulic press will be used.
- 9) Construction activities will be completed as rapidly as feasible to limit the duration of disturbance due to noise and activity in the project area.
- 10) Tall equipment that is not in active use will be stored at a far enough distance from areas occupied by listed bird species that predators/raptors will not be able to use it as a perch to prey on listed bird species. The biological monitor will ensure that predators/raptors do not perch on equipment.
- 11) The biological monitor will ensure that predators/raptors do not perch on tall signage, lighting, or other roadside features. Caltrans is not required to install bird exclusion devices, such as bird control spikes, as long as a biological monitor is present.
- 12) The planting of invasive plant species, as defined by the California Invasive Plant Council's Invasive Plant Inventory (<http://cal-ipc.org>), will be prohibited. A landscape plant palette will be provided to the Carlsbad Fish and Wildlife Office for approval prior to any onsite landscape planting.
- 13) All spoils and material disposal, including contaminated topsoil, will be removed out of the California Coastal Zone and disposed of properly.

- 14) Both day and night work is proposed with this project. Any necessary construction lighting will be shielded and directed away from adjacent native habitats.
- 15) The project construction will be carried out under standard Best Management Practices (BMPs) (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, fuel spill clean-up, etc.). During and after project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, and other toxic substances will be enforced. Silt fencing will be installed when appropriate to prevent sediment from entering wetland areas during construction.
- 16) No construction access, parking, storage of construction materials, or dumping of trash and debris will occur within adjacent areas of native habitat. All movement of employees, construction contractors and equipment, including ingress and egress of equipment and personnel will be limited to existing roads and designated construction zones, access ramps, and staging areas. All adjacent habitat areas to be avoided will be clearly noted on the plans and staked by the biological monitor. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other toxic substances will occur only in designated areas within the proposed limits of the project site. These designated areas will be clearly marked and located in such a manner as to prevent any run-off from entering waters of the United States, including wetlands.
- 17) Spoils, rubble, and trash will not be deposited on the adjacent native habitats. The accumulation of garbage onsite and on the adjacent habitat, including all food-related trash items, such as wrappers, cans, bottles, and food scraps generated during construction activities, will be removed daily to avoid attracting predators to the area.
- 18) The use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species will be prohibited.
- 19) Contractor pets will be prohibited in and adjacent to the project area.
- 20) The deliberate feeding of wildlife will be prohibited.
- 21) An employee education program for all construction personnel will be developed and implemented by the biological monitor. For the life of the project, each employee (including temporary contractors and subcontractors) will receive a training/awareness program prior to conducting any work on the site. At a minimum, the program will include the following topics: 1) biology, conservation, and legal status of the western snowy plover, brown pelican, light-footed clapper rail, and California least tern 2) responsibilities of the biological monitor; 3) delineation and flagging of adjacent habitat; 4) limitations on all movement of those employed onsite, including ingress and egress of equipment and personnel, to designated construction zones (personnel will not

be allowed access on adjacent sage scrub habitat); 5) onsite pet prohibitions; 6) use of trash containers for disposal and removal of trash; and 7) project features designed to reduce the impacts to listed species and habitat and promote continued successful occupation of adjacent habitat areas.

- 22) Equipment/materials for the proposed project will not be stored outside of paved areas.
- 23) Caltrans will discuss these avoidance/minimization measures with the contractor through an attachment to the Confirmation of Verbal Agreement according to emergency project procedures in order to ensure they are implemented.
- 24) Work shall be staged and conducted from the roadway (as opposed to from the Bolsa Bay) to the maximum extent possible. No machinery or construction materials not essential for project implementation shall be allowed at any time in the Bolsa Bay waters.
- 25) Caltrans has estimated the area of permanent impact to be approximately 0.01 ac of wetland waters of the U.S. and 0.01 ac of non-wetland waters (deep-water habitat) of the U.S. Caltrans intends to provide offsetting conservation in the amount of at least 0.01 ac of wetland waters of the U.S. and 0.01 ac of non-wetland waters of the U.S. The offsetting conservation will be discussed in a mitigation plan, with a draft anticipated to be prepared by August 14, 2009 and the final mitigation plan by October 31, 2009. Preliminary areas under consideration for offsetting conservation include removal of an asphalt trail south of the project area, or restoration of a portion of the SR-39/SR-1 lot, or planting of cordgrass within the Bolsa Chica reserve.

With the implementation of the above measures, we concur with your determination that the proposed project is not likely to adversely affect the western snowy plover, brown pelican, California least tern, and light-footed clapper rail. Therefore, the interagency consultation requirements of section 7 of the Act have been satisfied. Although our concurrence ends informal consultation, obligations under section 7 of the Act shall be reconsidered if new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered or this action is subsequently modified in a manner that was not considered in this assessment.

This document does not authorize take under the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. §§ 703-712). Caltrans has proposed the following measures to minimize potential impacts to nesting birds protected by the MBTA:

- 1) Caltrans will avoid take of active nests. An onsite biological monitor will coordinate during construction activities in the nesting season to ensure that active nests are not taken. This biological monitor will be present during the construction operation.

Colonel Magness (FWS-OR-09B0048-09F1004)

7

Thank you for your coordination on this project. If you have any questions regarding this letter, please contact Sally Brown of my staff at (760) 431-9440 x278.

Sincerely,



 Karen A. Goebel
Assistant Field Supervisor

cc:

Jeff Stoddard, California Department of Fish and Game, Newport Beach, CA
Arianne Priete, California Department of Transportation, Irvine, CA

Appendix D Vascular Plant Species Observed

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APPENDIX D

VASCULAR PLANT SPECIES OBSERVED

The following vascular plant species were observed in the study area by LSA biologists Robert Steers, Ph.D. and Kristen Yee and Caltrans biologist Arianne Preite during site surveys conducted on April 14 and 15, 2009 and June 16, 2009.

* Introduced, nonnative species

ANGIOSPERMAE: DICOTYLEDONAE

Aizoaceae

- * *Carpobrotus edulis*
- * *Malephora crocea*
- * *Mesembryanthemum crystallinum*
- * *Mesembryanthemum nodiflorum*
- * *Malephora crocea*
- * *Tetragonia tetragonioides*

Amaranthaceae

- * *Amaranthus albus*

Anacardiaceae

Rhus integrifolia

Apiaceae

- * *Apium graveolens*
- * *Foeniculum vulgare*

Asteraceae

- Amblyopappus pusillus*
- Ambrosia chamissonis*
- Ambrosia psilostachya*
- Artemisia californica*
- Baccharis pilularis*
- * *Centaurea melitensis*
- * *Chrysanthemum coronarium*
- Conyza canadensis*
- Encelia californica*
- * *Gazania linearis*
- * *Hedypnois cretica*
- Heterotheca grandiflora*
- Isocoma menziesii* var. *menziesii*

DICOT FLOWERING PLANTS

Carpet-Weed Family

- Hottentot-fig
- Crocea iceplant
- Crystal ice plant
- Small-flowered ice plant
- Crocea ice plant
- New Zealand spinach

Amaranth Family

- Tumbling pigweed

Sumac Family

- Lemonade berry

Carrot Family

- Common celery
- Sweet fennel

Sunflower Family

- Coast weed
- Beach burweed
- Western ragweed
- California sagebrush
- Coyote bush
- Tocalote
- Garland chrysanthemum
- Common horseweed
- California encelia
- Gazania
- Crete hedypnois
- Telegraph weed
- Menzies' goldenbush

<i>Jaumea carnosa</i>	Fleshy jaumea
<i>Osteospermum fruticosum</i>	African daisy
<i>Pluchea odorata</i>	Marsh fleabane
* <i>Senecio vulgaris</i>	Common groundsel
* <i>Sonchus oleraceus</i>	Common sow-thistle
<i>Xanthium strumarium</i>	Common cocklebur
Bataceae	Saltwort Family
<i>Batis maritima</i>	American saltwort
Bignomiaceae	Bignonia Family
<i>Tecomaria capensis</i>	Cape honeysuckle
Boraginaceae	Borage Family
<i>Heliotropium curassavicum</i>	Salt heliotrope
Brassicaceae	Mustard Family
* <i>Cakile maritima</i>	Sea-rocket
* <i>Lepidium didymum</i>	Lesser wart-cress
<i>Lepidium oblongum</i>	Peppergrass
* <i>Matthiola incana</i>	Stock
* <i>Raphanus sativus</i>	Wild radish
* <i>Sisymbrium irio</i>	London rocket
Capparaceae	Caper Family
<i>Isomeris arborea</i>	Bladderpod
Caryophyllaceae	Pink Family
* <i>Herniaria hirsuta</i> ssp. <i>cinerea</i>	Hairy rupturewort
* <i>Polycarpon tetraphyllum</i>	Fourleaf manyseed
* <i>Silene gallica</i>	Common catchfly
* <i>Spergularia bocconeii</i>	Boccone's sandspurrey
Chenopodiaceae	Saltbush Family
<i>Atriplex canescens</i> ssp. <i>canescens</i>	Fourwing saltbush
<i>Atriplex lentiformis</i> ssp. <i>lentiformis</i>	Big saltbush
* <i>Atriplex semibaccata</i>	Australian saltbush
<i>Atriplex triangularis</i>	Halberd-leaved saltbush
<i>Atriplex watsonii</i>	Watson's saltbush
* <i>Bassia hyssopifolia</i>	Five-hook bassia
* <i>Chenopodium album</i>	Lamb's quarters
<i>Chenopodium californicum</i>	California goosefoot
* <i>Chenopodium murale</i>	Nettle-leaved goosefoot
<i>Salicornia virginica</i>	Common woody pickleweed
* <i>Salsola tragus</i>	Russian-thistle
<i>Suaeda esteroa</i>	Estuary sea-blite
<i>Suaeda taxifolia</i>	Woolly sea-blite

Convolvulaceae

Calystegia soldanella

Crassulaceae

Crassula connata

Cuscutaceae

Cuscuta salina var. *major*

Euphorbiaceae

* *Chamaesyce maculata*

Fabaceae

* *Medicago polymorpha*

* *Melilotus indicus*

Frankeniaceae

Frankenia salina

Geraniaceae

* *Erodium cicutarium*

* *Erodium moschatum*

Lamiaceae

Salvia mellifera

Malvaceae

* *Malva parviflora*

* *Malva sylvestris*

Moraceae

* *Ficus benjamina*

Myoporaceae

* *Myoporum laetum*

Myrtaceae

* *Melaleuca nesophila*

Nyctaginaceae

Abronia umbellatum ssp. *umbellatum*

Onagraceae

Camissonia cheiranthifolia ssp. *suffruticosa*

Camissonia micrantha

* *Oenothera laciniata*

Morning-Glory Family

Beach morning-glory

Stonecrop Family

Sand pygmy-stonecrop

Dodder Family

Salicornia dodder

Spurge Family

Spotted spurge

Legume Family

California burclover

Annual Yellow sweetclover

Frankenia Family

Alkali heath

Geranium Family

Red-stemmed filaree

White-stemmed filaree

Mint Family

Black sage

Mallow Family

Cheeseweed

High mallow

Mulberry Family

Weeping Chinese banyan

Myoporum Family

Myoporum

Myrtle Family

Pink melaleuca

Four O'Clock Family

Sand-verbena

Evening Primrose Family

Beach evening primrose

Small primrose

Cutleaf evening primrose

Oxalidaceae

- * *Oxalis pes-caprae*

Plantaginaceae

- * *Plantago arenaria*
- * *Plantago coronopus*
- * *Plantago lanceolata*
- * *Plantago major*

Plumbaginaceae

- Limonium californicum*
- * *Limonium perezii*

Polygonaceae

- * *Emex spinosa*
- Eriogonum fasciculatum*
- Eriogonum cf. latifolium*
- Eriogonum parvifolium*
- Nemacaulis denudata var. denudata*
- * *Polygonum aviculare*
- * *Rumex crispus*

Primulaceae

- * *Anagallis arvensis*

Rubiaceae

Galium aparine

Saururaceae

Anemopsis californica

Solanaceae

- * *Nicotiana glauca*
- Solanum americanum*

ANGIOSPERMAE: MONOCOTYLEDONAE

Arecaceae

- * *Washingtonia robusta*

Cyperaceae

Bolboschoenus robustus

Oxalis Family

Bermuda-buttercup

Plantain Family

Sand plantain
Cut-leaf plantain
English plantain
Common plantain

Leadwort Family

California marsh-rosemary
Perez's sea-lavender

Buckwheat Family

Devil's thorn
California buckwheat
Coast buckwheat
Bluff buckwheat
Wolly-heads
Common knotweed
Curly dock

Primrose Family

Scarlet pimpernel

Madder Family

Common bedstraw

Lizard's-Tail Family

Yerba mansa

Nightshade Family

Tree tobacco
White nightshade

MONOCOT FLOWERING PLANTS

Palm Family

Mexican fan palm

Sedge Family

Pacific coast bulrush

Juncaceae

- Juncus acutus* ssp. *leopoldii*
- Juncus balticus*

Liliaceae

- * *Aloe* sp.

Poaceae

- * *Avena barbata*
- * *Bromus catharticus*
- * *Bromus diandrus*
- * *Bromus hordeaceus*
- * *Bromus madritensis* ssp. *rubens*
- * *Cynodon dactylon*
- Distichlis spicata*
- * *Ehrharta erecta*
- * *Hordeum murinum* ssp. *leporinum*
- * *Lolium multiflorum*
- Monanthochloe littoralis*
- * *Parapholis incurva*
- * *Pennisetum clandestinum*
- * *Pennisetum setaceum*
- * *Polypogon monspeliensis*
- * *Schismus barbatus*
- * *Vulpia myuros* var. *myuros*

Rush Family

- Southwestern spiny rush
- Wire rush

Lily Family

- Aloe

Grass Family

- Slender wild oat
- Rescue grass
- Ripgut grass
- Soft chess
- Foxtail chess
- Bermuda grass
- Saltgrass
- Panic veldtgrass
- Bare barley
- Italian ryegrass
- Shoregrass
- Sickle grass
- Kikuyu grass
- African fountain grass
- Rabbitfoot grass
- Mediterranean grass
- Rattail fescue

Taxonomy and scientific nomenclature conform to Hickman (1993). Common names for each taxa generally conform to Roberts (1998), although Abrams (1923, 1944, 1951) and Abrams and Ferris (1960) are used, particularly when species specific common names are not identified in Roberts (1998).

Appendix E Wildlife Species Observed

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APPENDIX E

WILDLIFE SPECIES OBSERVED

This is a list of the birds and mammals noted by LSA biologists from during 2009 surveys in the biological study area and/or the immediate vicinity of the Bolsa Chica Roadway Embankment Repair Project along Pacific Coast Highway in the Bolsa Chica Ecological Reserve and the Bolsa Chica State Beach in the City of Huntington Beach, California. Presence may be noted if a species is seen or heard, or identified by the presence of tracks, scat, or other signs.

* Species not native to the study area

LEPIDOPTERA

Pieridae

* *Pieris rapae*

BUTTERFLIES

Whites and Sulphurs

Cabbage white

OSTEICHTHEYS

Urolophidae

Urobatis halleri

BONY FISHES

Round Rays

California stingray

Mugilidae

Mugil cephalus

Ray-finned Fish

Striped mullet

AMPHIBIA

Hylidae

Pseudacris hypochondriaca

AMPHIBIANS

Treefrogs and Relatives

Baja California treefrog

REPTILIA

Phrynosomatidae

Sceloporus occidentalis

Uta stansburiana

REPTILES

Phrynosomatid Lizards

Western fence lizard

Common side-blotched lizard

AVES

Anatidae

Anas strepera

Anas platyrhynchos

BIRDS

Ducks, Geese, and Swans

Gadwall

Mallard

Merus serrator
Oxyura jamaicensis

Pelecanidae

Pelecanus occidentalis

Phalacrocoracidae

Phalacrocorax auritus

Ardeidae

Ardea herodias
Ardea alba
Egretta thula
Butorides striatus
Nycticorax nycticorax

Falconidae

Falco sparverius

Charadriidae

Charadrius vociferus

Recurvirostridae

Himantopus mexicanus
Recurvirostra americana

Scolopacidae

Catoptrophorus semiplamatus
Tringa melanoleuca
Limnodromus sp.

Laridae

Larus delawarensis
Larus occidentalis
Larus californicus
Sternula antillarum
Sterna caspia
Sterna forsteri
Sterna elegans
Rhynchops niger

Columbidae

* *Columba livia*
Zenaida macroura

Red-breasted Merganser
Ruddy duck

Pelicans

Brown pelican

Cormorants

Double-crested cormorant

Herons, Bitterns, and Allies

Great blue heron
Great egret
Snowy egret
Green heron
Black-crowned night-heron

Caracaras and Falcons

American kestrel

Plovers and Lapwings

Killdeer

Stilts and Avocets

Black-necked stilt
American avocet

Sandpipers, Phalaropes, and Allies

Willet
Greater yellowlegs
Dowitcher

Gulls, Terns, and Skimmers

Ring-billed gull
Western gull
California gull
Least tern
Caspian tern
Forster's tern
Elegant tern
Black skimmer

Pigeons and Doves

Rock (Feral) pigeon
Mourning dove

Trochilidae

Calypte anna
Selasphorus sasin

Tyrannidae

Sayornis nigricans

Corvidae

Corvus brachyrhynchos
Corvus corax

Hirundinidae

Hirundo rustica

Sturnidae

* *Sturnus vulgaris*

Emberizidae

Pipilo crissalis
Passerculus sandwichensis
Melospiza melodia

Fringillidae

Carpodacus mexicanus

Passeridae

* *Passer domesticus*

MAMMALIA

Sciuridae

Spermophilus beecheyi

Geomyidae

Thomomys bottae

Leporidae

Sylvilagus audubonii

Canidae

Canis latrans

Mephitidae

Mephitis mephitis

Hummingbirds

Anna's hummingbird
Allen's hummingbird

Tyrant Flycatchers

Black phoebe

Crows and Jays

American crow
Common raven

Swallows

Barn swallow

Starlings

European starling

Emberizids

California towhee
Savannah sparrow
Song sparrow

Fringilline and Cardueline Finches and Allies

House finch

Old World Sparrows

House sparrow

MAMMALS

Squirrels, Chipmunks, and Marmots

California ground squirrel

Pocket Gophers

Botta's pocket gopher

Rabbits and Hares

Audubon's cottontail

Foxes, Wolves, and Allies

Coyote

Skunks

Striped skunk

Procyonidae

Procyon lotor

Raccoons and Allies

Raccoon

Taxonomy and nomenclature are based on the following.

Damselflies and dragonflies: Manolis, T. (2003, *Dragonflies and Damselflies of California*, University of California Press, Berkeley).

Butterflies: North American Butterfly Association (2001, *NABA checklist and English Names of North American Butterflies*, Second Edition, North American Butterfly Association, Morristown, New Jersey).

Fishes: Moyle, P.B. (2002, *Inland Fishes of California*, Second Edition, University of California Press, Berkeley).

Amphibians and reptiles: Crother, B.I. ed. (2008, *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico*, *Herpetological Circular* 37) for species taxonomy and nomenclature; Stebbins, R.C. (2003, *A Field Guide to Western Reptiles and Amphibians*, third edition, Houghton Mifflin, Boston) for sequence and higher order taxonomy.

Birds: American Ornithologists' Union (1998, *The A.O.U. Checklist of North American Birds*, Seventh Edition, American Ornithologists' Union, Washington D.C.; and 2000, 2002, 2003, 2004, 2005, 2006, 2007, and 2008 supplements; see <http://aou.org.whsites.net/checklist/index.php3>).

Mammals: Wilson, D.E., and D.M. Reeder, eds. (2005, *Mammal Species of the World*, 3rd ed. Johns Hopkins University Press, Baltimore, Maryland; see <http://vertebrates.si.edu/mammals/msw/>).

Appendix F Light-footed Clapper Rail and
California Black Rail Survey
Report

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Konecny Biological Services

Biological Consulting, Research, Conservation

June 26, 2009

09-14-A

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, CA 92614

Attn: Ms. Angela Roundy

Re: Results of a Focused Survey for the Light-footed Clapper Rail and California Black Rail at the Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project, Orange County, California, 2009.

Dear Ms Roundy:

This letter report presents the results of a focused survey for the light-footed clapper rail (*Rallus longirostris levipes*) and the California black rail (*Laterallus jamaicensis coturniculus*) at the Bolsa Chica Ecological Reserve for the Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project, Orange County, California. The light-footed clapper rail is listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). The California black rail is listed as a threatened species and a fully protected species by the CDFG.

Surveys for the light-footed clapper rail and California black rail were conducted by wildlife biologist John Konecny of Konecny Biological Services (KBS), following methodology recommended by the Clapper Rail Study Team. This activity is authorized by KBS's USFWS section 10(a) permit number TE837308-5, and a CDFG Memorandum of Understanding.

INTRODUCTION

The light-footed clapper rail is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. Light-footed clapper rail occurred historically along the coast of southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico (Grinnell and Miller 1944, USFWS 1994).

The light-footed clapper rail is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.) (Grinnell and Miller 1944, USFWS 1994). Light-footed clapper rails have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush (*Scirpus* sp.) at Buena Vista, Agua Hedionda, Batiqitos, San Elijo, and San Dieguito Lagoons in San Diego County; and in spiny rush (*Juncus acutus*) at Naval Air Station (NAS) Point Mugu.

Populations of light-footed clapper rails have undergone decline in the United States due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The statewide breeding rail population in 2007 was reported to be 443 pairs in 19 marshes (Zembal *et al* 2007); the largest number of rails in recent history, an 8.3% increase over the former high count total from 2006, and the largest since the statewide census began in 1980. However, nearly 70% percent of these pairs were found in only two coastal salt marsh complexes at Upper Newport Bay in Orange County and the Tijuana Marsh National Wildlife Refuge in southern San Diego County.

1501 East Grand Avenue #2403, Escondido, California, 92027
Tel (760) 489-5276 E-mail jkonecny@cox.net

Zembal and Massey (1986) have shown that paired light-footed clapper rails can be detected “clapping” throughout the year, but have a bimodal peak in vocalizing during mid-February to mid-April and again in September to October. The initial peak in vocalizing corresponds to the onset of breeding season. In contrast to “clapping”, single male and female “keking” is highly seasonal, almost exclusively occurring between February and June.

The California black rail is a small, sparrow-sized secretive rail, blackish above with white speckling, has a chestnut nape, grayish-black underparts, narrow white barring on the flanks, and a short black bill. The California black rail occurs in the lower Colorado River area from the Imperial Dam, south to the Mexican border, with smaller, isolated populations scattered from Marin and San Luis Obispo Counties in coastal California, southward to San Diego County, northwestern Baja California, and the lower Imperial Valley (Eddleman *et al* 1994, Small 1994). California black rails tend to favor mixed pickleweed, cordgrass, and bulrush marshes in coastal habitats; and bulrush, cattail, arrowweed (*Pluchea sericea*), and common threesquare (*Schoenoplectus pungens*) freshwater marshes in inland areas (Conway and Sulzman 2007, Small 1994). Black rails typically forage on aquatic and terrestrial invertebrates and seeds. Like the light-footed clapper rail, the California black rail has undergone decline due to habitat degradation and destruction. The population of California black rails along the Colorado River from Needles, California, to Yuma, Arizona, probably numbers between 75-100 individuals (Evens *et al.* 1991).

PROJECT LOCATION

The Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project is located within the Bolsa Chica Ecological Reserve (ER) in coastal Orange County, California. The Bolsa Chica ER is bounded by Warner Avenue on the north, Pacific Coast Highway and the Bolsa Chica State Beach on the west, residential development on the east, and the City of Huntington Beach on the south.

The light-footed clapper rail and California black rail survey area is located on the west side of the ER, immediately adjacent to Pacific Coast Highway, beginning at the south parking lot at Inner Bolsa Bay and continuing northward for approximately one mile (1.6 kilometers) to the uppermost area of Outer Bolsa Bay (Figure 1) Specifically, survey area is located within Township 5 South, Range 9 West, and in an unnumbered section of the U.S. Geological Survey Seal Beach, Ca. 7.5-minute quadrangle.

PROJECT SITE DESCRIPTION

The Bolsa Chica ER is a tidal saltmarsh complex. Remnant coastal strand is present along the entire western length of the survey area, immediately east of Pacific Coast Highway, and is characterized by beach-primrose (*Camissonia cheiranthifolia*), hottentot fig (*Carpobrotus edulis*), and sea rocket (*Cakile edentula*). Intertidal saltmarsh is present in a ring around Outer and Inner Bolsa Bay. The high saltmarsh is characterized by pickleweed, alkali-heath (*Frankenia salina*), and in the Inner Bolsa Bay, spiny rush. Little high saltmarsh is present on the west side of Outer Bolsa Bay. Below the high saltmarsh, patches of cordgrass are present scattered throughout, the largest being present just north of the south parking lot. The low saltmarsh transitions into mudflat, and mudflat into open water. Elevation of the Bolsa Chica light-footed clapper rail and California black rail survey area ranges from approximately 10 feet (3 meters) above Mean Sea Level (MSL) to 0 MSL.

METHODS

At this time, the USFWS does not have a survey protocol for the light-footed clapper rail. Surveys were conducted following a methodology recommended to the USFWS by the Clapper Rail Study Team.

Six focused light-footed clapper rail and California black rail surveys were conducted between April 18th and May 30th, 2009. Dawn surveys were conducted on April 18th, May 9th, May 16th, and May 23rd, 2009. Dusk surveys were conducted on April 29th and May 30th, 2009. Dawn surveys were initiated at sunrise. Dusk surveys were initiated two hours before sunset. Each survey lasted approximately two hours. A summary of the environmental conditions on the six survey dates is provided in Table 1 below.

Table 1. Summary of Weather Conditions During Six Light-footed Clapper Rail/California Black Rail Surveys at the Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project, Orange County, California, 2009.

Survey #	Date	Surveyor (Species) *	Time	Weather Conditions
1	04/18/09	JK (LFCR/CBR)	0600-0910	100% overcast, 59-63°F, wind 3-5 mph
2	04/29/09	JK, RE, AP, MT (LFCR/CBR)	1730-2000	5% overcast, 65-57°F, wind 5-20 mph
3	05/09/09	JK, MB (LFCR/CBR)	0610-0830	100% overcast, 60-64°F, wind 1-3 mph
4	05/16/09	JK (LFCR/CBR)	0600-0755	100% overcast, 58-63°F, wind 7-10 mph
5	05/23/09	JK (LFCR/CBR)	0550-0800	100 % overcast, 60-65°F, wind 7-10 mph
6	05/30/09	JK (LFCR/CBR)	1755-2000	10% overcast, 66-60°F, wind 10-15 mph

* JK - John Konecny; RE - Richard Erickson; AP – Arianne Preite; MT - Matt Teutimez; MB - Mark Billings; LFCR - Light-footed Clapper Rail; CBR - California Black Rail

The surveys were conducted by stopping at points approximately 100 feet (34 meters) apart along the perimeter of the survey area at Bolsa Chica and listening for vocalizing light-footed clapper rails or California black rails. If rails were not detected passively, a call-prompt or digital vocalization of the light-footed clapper rail “duet” and California black rail “kee-kee-doo” and “growl” calls were played with an iPod and amplified speakers. A response was listened for two minutes. This procedure was repeated again before proceeding to the next survey station. All potential light-footed clapper rail and California black rail habitat within the survey area was investigated.

RESULTS

No light-footed clapper rails or California black rails were detected in the Caltrans Sr-1 Bolsa Chica Roadway Embankment Reconstruction Project survey area in 2009. Six Belding’s Savannah sparrow (*Passerculus sandwichensis beldingi*) territories were detected with the survey area in 2009 (Figure 2). The Belding’s Savannah sparrow is listed as an endangered species by the CDFG. Five of these territories were present in Outer Bolsa Bay, and one in Inner Bolsa Bay. Additional territories were present on the east side of both Inner and Outer Bolsa Bays, outside of the survey area. California least terns (*Sterna antillarum browni*) and California brown pelicans (*Pelecanus occidentalis californicus*) were also observed foraging and flying overhead in the survey area. Both of these are listed as endangered species by the USFWS and CDFG. The California brown pelican has been proposed for delisting by the USFWS. No other endangered or threatened species were detected in the survey area.

DISCUSSION

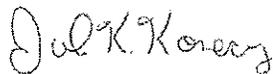
Described as “formerly common in all coastal marshes” by Grinnell and Miller (1944), the light-footed clapper rail or California black rail have never been a common bird species at the Bolsa Chica ER in recent history, or at least since development claimed much of the area in the 1960’s. Hamilton and Willick (1996), only lists Orange County records for the California black rail at Upper Newport Bay.

Zemba (2007) has not detected breeding pairs of light-footed clapper rail at Bolsa Chica since the state-wide survey was initiated in 1980. Single light-footed clapper rails were detected at Bolsa Chica in the winters of 2006 and 2007 (Zemba 2007). Unless cordgrass becomes more robust in Outer Bolsa Bay, this area can only be considered minimal habitat for the light-footed clapper rail. The best remaining habitat in the survey area for the light-footed clapper rail is the cordgrass patch just north of the south parking lot.

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represents my work. The results of focused surveys for listed species are typically considered valid for one year by the USFWS and CDFG. If you have any questions or require additional information, please call me at (760) 489-5276.

Sincerely,



John K. Konecny
Wildlife Biologist
TE837308-5

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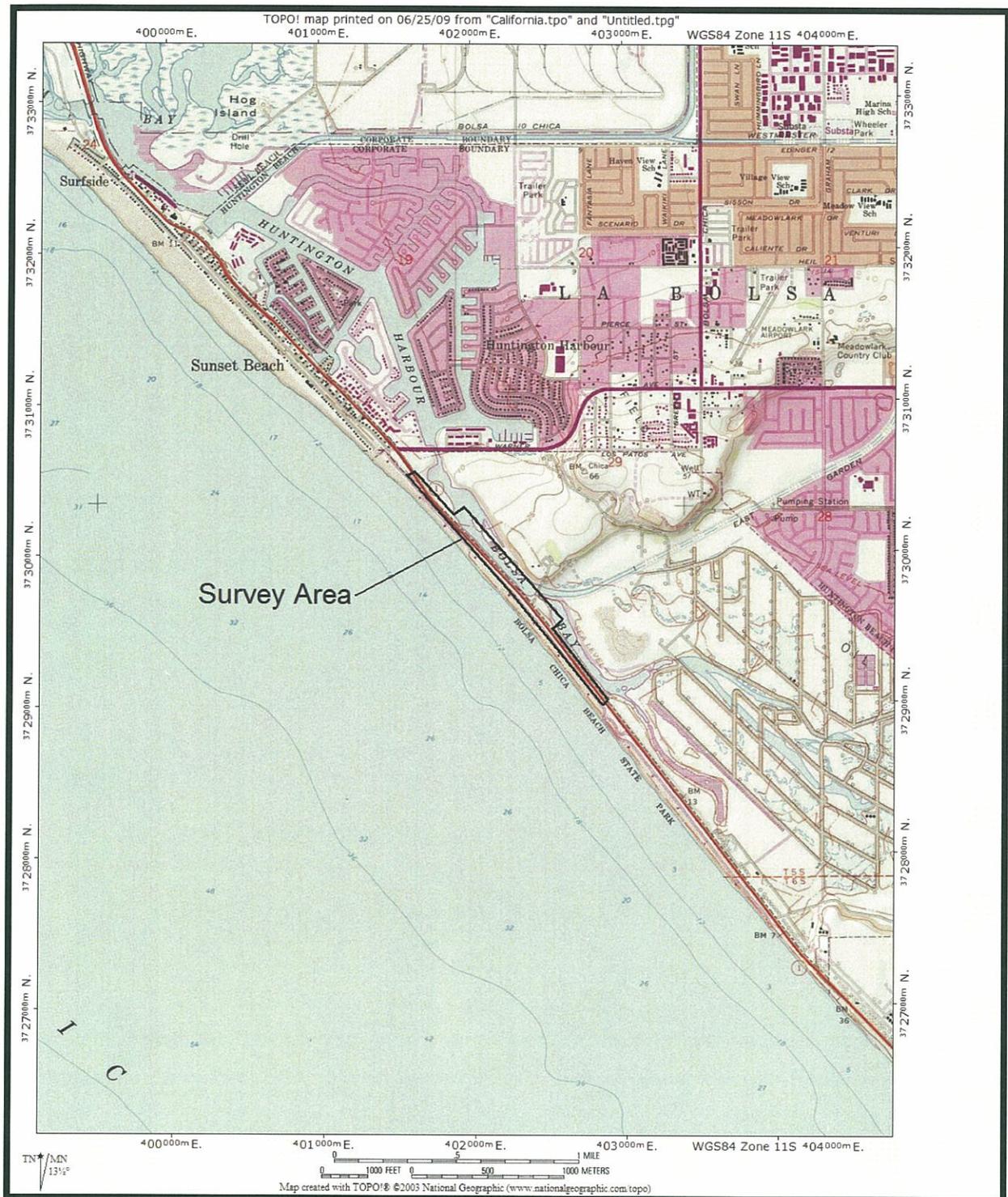


Figure 1. Location of the Light-footed Clapper Rail and California Black Rail Survey Area at the Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project, Orange County, California, 2009.

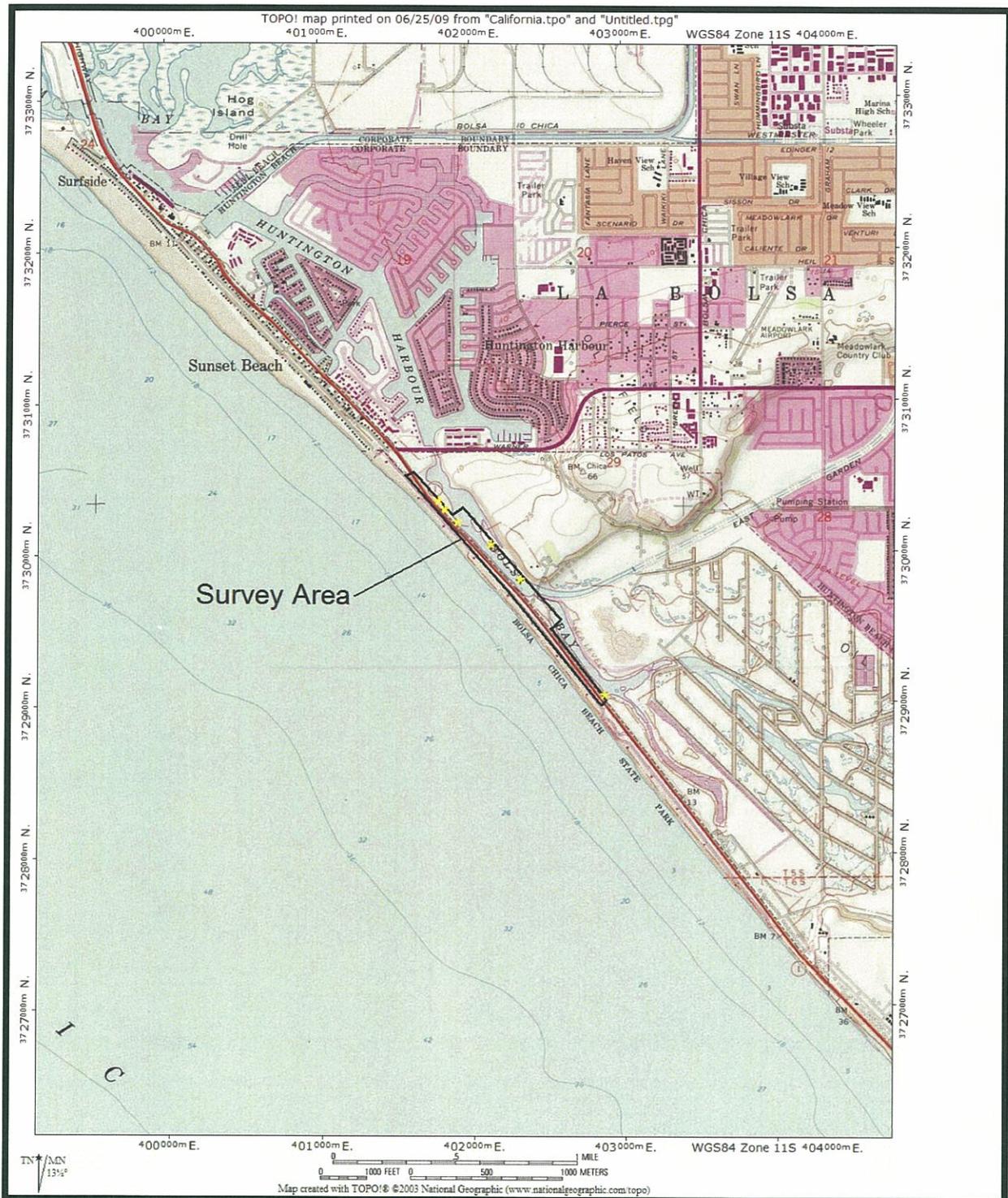


Figure 2. Location of Six Belding’s Savannah Sparrow Territories (yellow asterisks) at the Caltrans SR-1 Bolsa Chica Roadway Embankment Reconstruction Project Survey Area, Orange County, California, 2009.

Appendix G Burrowing Owl Survey Report

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BERKELEY
CARLSBAD
FORT COLLINS

FRESNO
PALM SPRINGS
POINT RICHMOND

RIVERSIDE
ROCKLIN
SAN LUIS OBISPO
SOUTH SAN FRANCISCO

July 31, 2009

Arianne Preite
California Department of Transportation
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

Subject: Nesting Season Survey Results for Burrowing Owl, SR-1 Bolsa Chica Roadway
Embankment Reconstruction Project, City of Huntington Beach, County of Orange,
California

Dear Ms. Preite:

This letter report and accompanying figures present the results of four burrowing owl (*Athene cunicularia*) nesting season surveys conducted by LSA Associates, Inc. (LSA) along the east side of Pacific Coast Highway (PCH; State Route [SR] 1) between Warner Avenue and Seapoint Avenue (Figures 1 and 2). The surveys were conducted pursuant to the Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by the California Burrowing Owl Consortium (CBOC 1993).

Burrowing owls are known to inhabit the general region (Stoddard 2009), but no burrowing owl or burrowing owl sign were detected during the nesting season survey in June 2009.

PROJECT SITE

The SR-1 Bolsa Chica Roadway Embankment Reconstruction Project (project) is located in the City of Huntington Beach, in Orange County, within the jurisdiction of the California Department of Transportation (Caltrans) District 12. Protective betterment improvements are proposed along the approximately 1-mile-long project area along the east side of SR-1, also known as PCH. The linear work area is 0.5 mile long, and begins at Warner Avenue and extends south toward Seapoint Avenue. This segment of SR-1 is a four-lane conventional highway that runs north and south, with two lanes in each direction. Post miles for the improvements range from 29.5 to 29.0. This segment lies between the Bolsa Chica Ecological Reserve (east) and Bolsa Chica State Beach (west). The northbound portion of SR-1 is subjected to landslides, erosion, and flooding during storms with high tide conditions.

The proposed project is located in Township 5 South, Range 11 West, Section 29 of the *Seal Beach, California* United States Geological Survey (USGS) topographic quadrangle map. The elevation is approximately 5 to 8 feet (ft) above mean sea level (amsl).

The dominant plant communities consist of estuarine wetland vegetation, dune mats, and dune scrub. Estuarine wetland vegetation occurs in the low to high marsh along most of the survey area. Plant species include a prostrate vine called American saltwort (*Batis maritima*) as well as upland species such as common woody pickleweed (*Salicornia virginica*), woolly sea-blite (*Suaeda taxifolia*), and alkali heath (*Frankenia salina*).

Dune mat vegetation is the dominant plant community in the survey area. The native dune mat vegetation is dominated by beach evening primrose (*Camissonia cheiranthifolia*), beach-bur (*Ambrosia chamissonis*), sea-rocket (*Cakile maritime*), salt grass (*Distichlis spicata*), and beach sand-verbena (*Abronia umbellata* ssp. *umbellata*). Disturbed dune mat vegetation was dominated by invasive herbaceous annuals like nonnative sea-rocket, yellow sweet-clover (*Melilotus indicus*), and various exotic annual grasses (mostly common ripgut grass [*Bromus diandrus*]).

Dune scrub vegetation was usually inland from dune mat vegetation or upland from estuarine wetland vegetation along most of the survey area. Stands of this vegetation type were dominated by spreading goldenbush (*Isocoma menziesii*), with Brewer's saltbush (*Atriplex lentiformis*) present in some stands. Other perennials included coyote bush (*Baccharis pilularis*) and western ragweed (*Ambrosia psilostachya*). Several species found in dune scrub on the north end of the project area, at the corner of PCH and Warner Avenue (the southeast corner near the Bolsa Chica Conservancy Interpretive Center) were planted for restoration. These included fourwing saltbush (*Atriplex canescens*), California sagebrush (*Artemisia californica*), bladderpod (*Isomeris arborea*), California buckwheat (*Eriogonum fasciculatum*), and bluff buckwheat (*E. parvifolium*).

Suitable burrowing owl habitat exists within the project area, particularly in the sparsely vegetated patches of the dune scrub plant community; however, more suitable burrowing owl habitat occurs approximately 500 ft across the open water on the coastal bluff. This bluff/mesa area is part of an extensive grassland habitat area ideal for foraging. Overall, the estuary area is open, with dirt walking trails along narrow berms between water bodies.

METHODOLOGY

In recent years, burrowing owls have been observed at several locations in the project vicinity (within approximately 0.5 mile); therefore, on April 2, 2009, a habitat suitability assessment was conducted by Angela Roundy and Kristen Yee during a project-related site visit. Suitably sized burrows, foraging habitat, and suitable prey for burrowing owl were identified. These findings, coupled with the recent observations, indicated the need for protocol-level burrowing owl surveys to determine if burrowing owl are using the project area or habitat within a 500 ft buffer.

On the mornings of June 5, 8, 9, and 11, 2009, LSA biologists Angela Roundy, Kristen Yee, Ingrid Quon, and/or Leo Simone conducted four burrowing owl surveys to assess the presence of burrowing owls within the direct project impact area and areas adjacent to the project area (500 ft buffer), including the western edge of the coastal bluff east of the project area and the open water. These surveys followed the survey methods recommended in the Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1993).

The survey visually covered the entire study area (the project area plus a 500 ft buffer, where access was possible), including the eastern coastal bluff at or just beyond the 500 ft buffer. This survey was conducted by two biologists walking parallel transects at 10-meter (m) (approximately 30 ft) spacing or less, as appropriate, allowing for 100 percent visual coverage of the ground. Due to access constraints associated with the nearby water and PCH, the survey did not include complete peripheral transect surveys within 150 m (approximately 500 ft) of the project site. The developed areas were

visually inspected with binoculars where habitat appeared appropriate. Owls are known to use developed areas, but they generally avoid areas with numerous tall structures.

The LSA biologists searched for burrowing owls, burrows, and sign (e.g., feathers, tracks, pellets). Burrowing owl habitat is determined to be occupied by either observing a burrowing owl at a burrow, finding a suitably sized burrow devoid of cobwebs, or finding molted feathers, cast pellets, prey remains, or excrement at or near a burrow entrance. Active burrows generally have some sign and are moderately to well groomed.

Table A: Survey and Monitoring Conditions and Results

Date 2009	Time	Weather Conditions	Results	Personnel
April 2	midday	Mild, clear, light air	Several burrows of suitable size for use by owls within the project area and/or buffer.	AR, KY
June 5	0500–0645	Mild (approx. 58–64°F), overcast, light air	All burrows are without owl sign or are active rodent burrows: Approx. 10 large burrows (6+-inch diameter). Approx. 40 small burrows (3–4-inch diameter.).	AR, KY
June 8	0500–0800	Mild (approx. 60–64°F), overcast, light air	Same.	IQ, LS
June 9	0500–0740	Mild, (approx. 62°F), overcast, light air	Same.	IQ, LS
June 11	0515–0810	Mild, (approx. 62°F), overcast, light air	Same.	IQ, LS

Personnel: AR = Angela Roundy, IQ = Ingri Quon, KY = Kristen Yee, LS = Leo Simone

RESULTS

Following the habitat assessment in April 2009, four surveys for burrowing owl were conducted. The four June 2009 nesting season surveys did not detect burrowing owls or burrowing owl sign. Several burrows suitable for use by burrowing owls were detected within the survey area; however, all burrows were either abandoned (i.e., filled with vegetation and/or cobwebs) or currently being used by rodents, most frequently California ground squirrels (*Spermophilus beecheyi*) and occasionally Botta's pocket gophers (*Thomomys bottae*) (Figure 3). These rodent burrows, both inside and outside of the project area, can be modified for use by burrowing owls.

Burrowing owls are known from other parts of the Bolsa Chica Ecological Reserve and vicinity, approximately 0.5 to 1.25 miles to the east or over 2 miles to the southeast (Stoddard 2009). No sign was detected within the survey area. Burrowing owl habitat is considered to be occupied by either observing a burrowing owl at a suitably sized burrow entrance or finding molted feathers, cast pellets, prey remains, or excrement at or near the burrow entrance (CBOC 1993).

Additional wildlife observed during the surveys included gadwall (*Anas strepera*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), green heron (*Butorides striatus*), greater yellowlegs

Additional wildlife observed during the surveys included gadwall (*Anas strepera*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), green heron (*Butorides striatus*), greater yellowlegs (*Tringa melanoleuca*), elegant tern (*Sterna elegans*), black skimmer (*Rhynchops niger*), common raven (*Corvus corax*), black phoebe (*Sayornis nigricans*), mourning dove (*Zenaida macroura*), and house finch (*Carpodacus mexicanus*). A complete list of animal species from the area is included in Appendix A (attached).

CONCLUSION

The nesting season surveys found no burrowing owls or burrowing owl sign. Ground-disturbing activities for construction are expected to begin in 2009; if the construction start date is more than 30 days past these nesting season surveys, a preconstruction survey (one survey visit) should be conducted no more than 30 days prior to ground disturbance to ensure that no owls are occupying the project area (CBOC 1993). If an owl is found using a burrow within the direct impact area of the project, passive relocation may be necessary. Passive relocation should occur between September 1 and January 31, outside of the breeding season.

Please contact Art Homrighausen or me at (949) 553-0666 if you have any questions or comments about this report.

Sincerely,

LSA ASSOCIATES, INC.



Ingrid Quon
Senior Biologist

cc: Jeffrey Stoddard, California Department of Fish and Game

Attachments: Figure 1: Project Vicinity Map
Figure 2: Project Location Map
Figure 3: Site Photos
Appendix A: Animal Species Detected

REFERENCES

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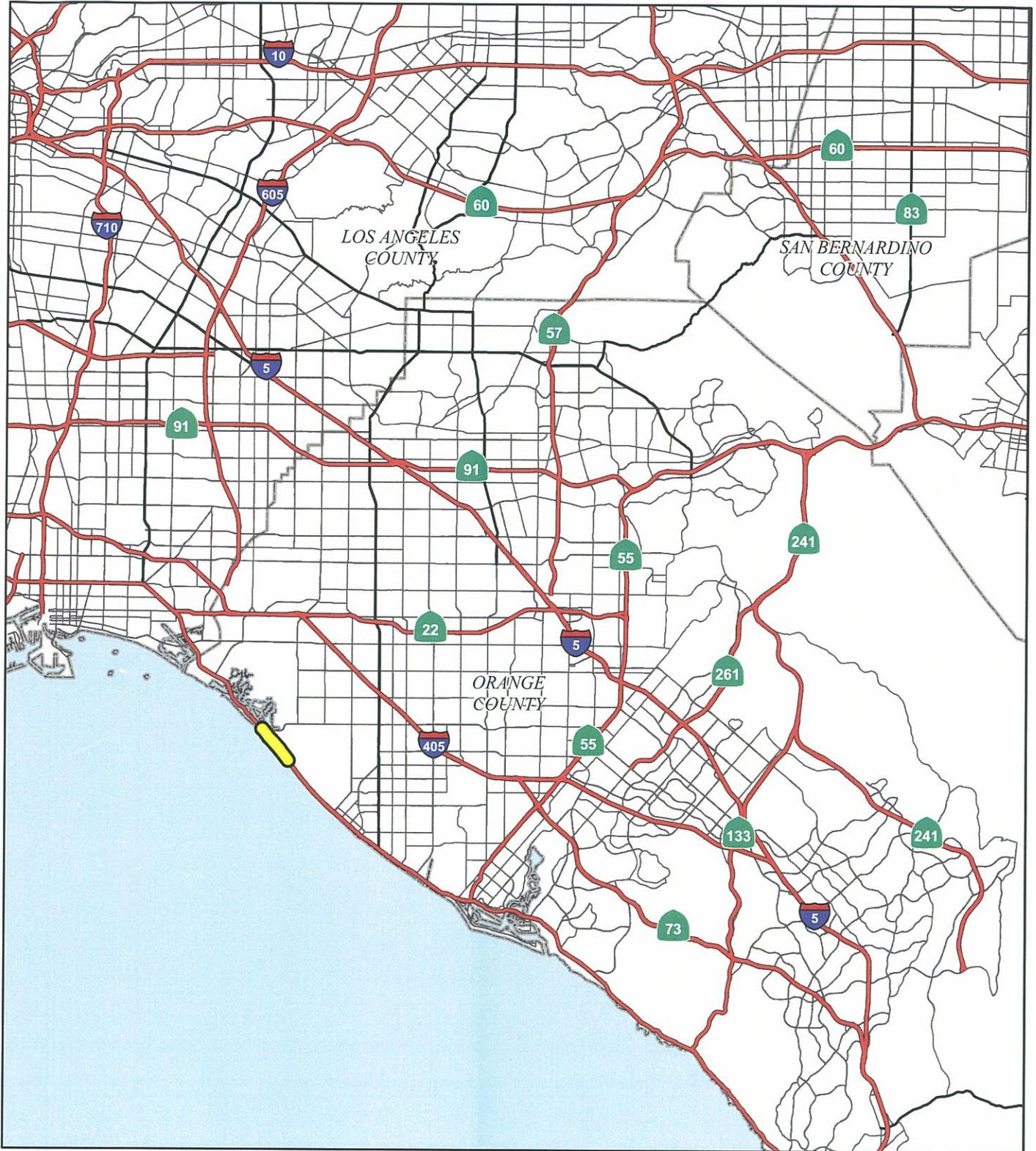
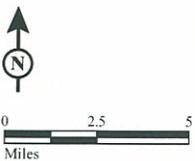


FIGURE 1

LEGEND

 Project Location



*SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project*
Project Vicinity Map

12-ORA-1 PM 28.7/29.7
EA 0K0100

SOURCE: Thomas Bros. (2007).

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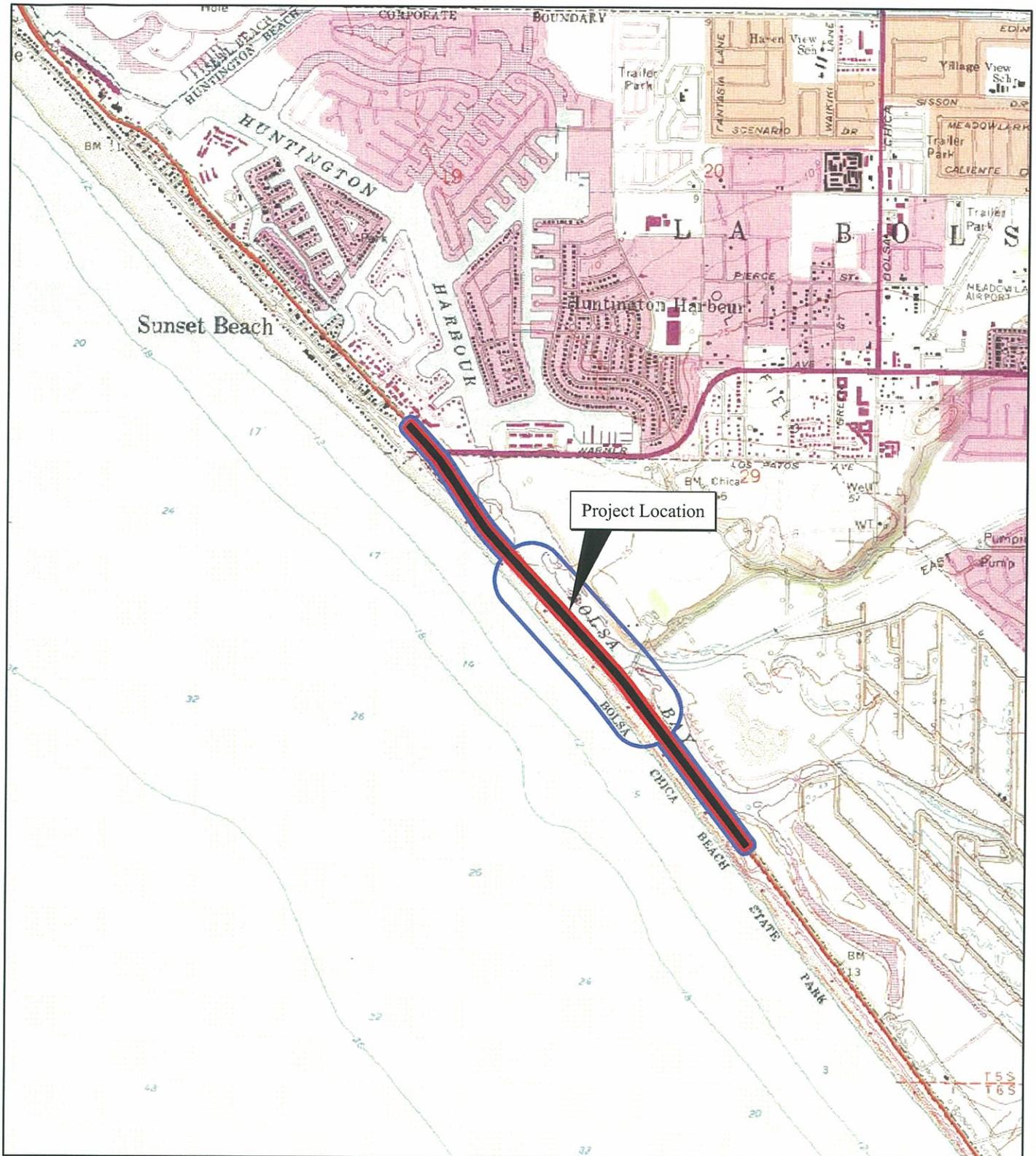
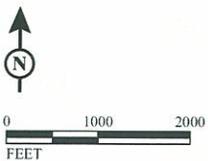


FIGURE 2

LEGEND

-  Project Location
-  Biological Study Area (BSA) (50' buffer)
-  Wildlife Survey Area (WSA) (500' buffer)



SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project

Project Location Map

12-ORA-1 PM 28.7/29.7

EA 0K0100

SOURCE: USGS 7.5' QUAD - SEAL BEACH ('81); CALIF.

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A. View to the south of a suitable burrowing owl survey area. Botta's pocket gopher and California ground squirrel burrows occurred in this area (06-08-09).



B. California ground squirrel burrow in the survey area adjacent to Pacific Coast Highway (06-08-09).

LSA

FIGURE 3

*SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project*

Site Photos

APPENDIX A ANIMAL SPECIES DETECTED

This is a list of the conspicuous aerial insects, bony fishes, amphibians, reptiles, birds, and mammals noted by LSA biologists from June 5 to 11, 2009, in the project area and/or the immediate vicinity of the Bolsa Chica Roadway Embankment Reconstruction Project along Pacific Coast Highway in the Bolsa Chica Ecological Reserve and Bolsa Chica State Beach in the City of Huntington Beach, California. Presence may be noted if a species is seen or heard, or identified by the presence of tracks, scat, or other signs.

* Species not native to the study area

LEPIDOPTERA

Pieridae

* *Pieris rapae*

OSTEICHTHEYS

Urolophidae

Urobatis halleri

Mugilidae

Mugil cephalus

AMPHIBIA

Hylidae

Pseudacris hypochondriaca

REPTILIA

Phrynosomatidae

Sceloporus occidentalis

Uta stansburiana

AVES

Anatidae

Anas strepera

Anas platyrhynchos

BUTTERFLIES

Whites and Sulphurs

Cabbage white

BONY FISHES

Round Rays

California stingray

Ray-finned Fish

Striped mullet

AMPHIBIANS

Treefrogs and Relatives

Baja California treefrog

REPTILES

Phrynosomatid Lizards

Western fence lizard

Common side-blotched lizard

BIRDS

Ducks, Geese, and Swans

Gadwall

Mallard

Pelecanidae*Pelecanus occidentalis***Phalacrocoracidae***Phalacrocorax auritus***Ardeidae***Ardea herodias**Ardea alba**Egretta thula**Butorides striatus**Nycticorax nycticorax***Falconidae***Falco sparverius***Charadriidae***Charadrius vociferus***Recurvirostridae***Himantopus mexicanus**Recurvirostra americana***Scolopacidae***Tringa melanoleuca**Limnodromus sp.***Laridae***Larus delawarensis**Larus occidentalis**Larus californicus**Sternula antillarum**Sterna forsteri**Sterna elegans**Rhynchops niger***Columbidae*** *Columba livia**Zenaida macroura***Trochilidae***Calypte anna**Selasphorus sasin***Tyrannidae***Sayornis nigricans***Pelicans**

Brown pelican

Cormorants

Double-crested cormorant

Hérons, Bitterns, and Allies

Great blue heron

Great egret

Snowy egret

Green heron

Black-crowned night-heron

Caracaras and Falcons

American kestrel

Plovers and Lapwings

Killdeer

Stilts and Avocets

Black-necked stilt

American avocet

Sandpipers, Phalaropes, and Allies

Greater yellowlegs

Dowitcher

Gulls, Terns, and Skimmers

Ring-billed gull

Western gull

California gull

Least tern

Forster's tern

Elegant tern

Black skimmer

Pigeons and Doves

Rock (Feral) pigeon

Mourning dove

Hummingbirds

Anna's hummingbird

Allen's hummingbird

Tyrant Flycatchers

Black phoebe

Corvidae

Corvus brachyrhynchos
Corvus corax

Hirundinidae

Hirundo rustica

Sturnidae

* *Sturnus vulgaris*

Emberizidae

Pipilo crissalis
Passerculus sandwichensis beldingii
Melospiza melodia

Fringillidae

Carpodacus mexicanus

Passeridae

* *Passer domesticus*

MAMMALIA**Sciuridae**

Spermophilus beecheyi

Geomyidae

Thomomys bottae

Leporidae

Sylvilagus audubonii

Canidae

Canis latrans

Mephitidae

Mephitis mephitis

Procyonidae

Procyon lotor

Crows and Jays

American crow
Common raven

Swallows

Barn swallow

Starlings

European starling

Emberizids

California towhee
Belding's Savannah sparrow
Song sparrow

Fringilline and Cardueline Finches and Allies

House finch

Old World Sparrows

House sparrow

MAMMALS**Squirrels, Chipmunks, and Marmots**

California ground squirrel

Pocket Gophers

Botta's pocket gopher

Rabbits and Hares

Audubon's cottontail

Foxes, Wolves, and Allies

Coyote

Skunks

Striped skunk

Raccoons and Allies

Raccoon

Taxonomy and nomenclature are based on the following.

Damselflies and dragonflies: Manolis, T. (2003, *Dragonflies and Damselflies of California*, University of California Press, Berkeley).

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Birds: American Ornithologists' Union (1998, *The A.O.U. Checklist of North American Birds*, Seventh Edition, American Ornithologists' Union, Washington D.C.; and 2000, 2002, 2003, 2004, 2005, 2006, 2007, and 2008 supplements; see <http://aou.org.whsites.net/checklist/index.php3>).

Mammals: Wilson, D.E., and D.M. Reeder, eds. (2005. *Mammal Species of the World*, 3rd ed. Johns Hopkins University Press, Baltimore, Maryland; see <http://vertebrates.si.edu/mammals/msw/>).

Appendix H Jurisdictional Delineation Report

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Wetlands Delineation and Assessment of Jurisdictional Waters Report

Bolsa Chica Roadway Embankment Reconstruction Project

SR-1 Between Warner Avenue and Seapoint Avenue

12-ORA-1 PM 28.7-29.7

EA 0K0100

August 2009

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Summary

The following assessment of regulatory jurisdiction has been prepared for use by the United States Army Corps of Engineers (Corps) and the Regional Water Quality Control Board (RWQCB) as part of the agencies' review of their respective jurisdictions under Sections 404 and 401 of the federal Clean Water Act (CWA). It is also applicable to California Coastal Commission (CCC) analysis and findings pursuant to the California Coastal Act (CCA).

The California Department of Transportation (Caltrans) proposes to conduct the following project activities along the roadway embankment: restore the partially washed out highway embankment and asphalt pavement, and install new metal sheet piling for future embankment/shore protection. The project was elevated to Emergency status on July 1, 2009.

A delineation of wetlands and other jurisdictional waters within the study area was conducted by LSA biologists Angela Roundy and Kristen Yee, with assistance by Jim Harrison, Elizabeth Delk, Robert Steers and Caltrans biologist Arianne Preite on March 31, April 2, and June 4, 5, 11, and 16, 2009. Two hydrological features (Inner Bolsa Bay and Outer Bolsa Bay) were identified within the biological study area (BSA).

The BSA includes a total of 1.91 acres (ac) of waters subject to Corps jurisdiction pursuant to Section 10 of the Rivers and Harbors Act. These areas of Section 10 Corps jurisdiction include deepwater aquatic (1.35 ac) and wetland waters of the United States (0.56 ac). Corps jurisdiction pursuant to Section 404 of the CWA includes the Section 10 waters plus an additional 0.69 ac for a total of 2.60 ac. These areas of Section 404 Corps jurisdiction include deepwater aquatic habitat (1.54 ac) and wetland waters of the United States (0.96 ac). For the purpose of this Jurisdictional Delineation, all areas subject to jurisdiction of the RWQCB coincide with areas subject to Corps jurisdiction. The BSA also includes a total of 3.55 ac subject to CCC jurisdiction as wetlands pursuant to the CCA. There are no areas within the BSA subject to direct permit jurisdiction of the California Department of Fish and Game (CDFG). However, CDFG is a stakeholder through its management of the Bolsa Chica Ecological Reserve and as an advisor to the CCC.

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Chapter 1 Description of Project

The California Department of Transportation (Caltrans) proposes this roadway embankment reconstruction project to restore the partially washed out highway embankment and asphalt pavement, and install new metal sheet piling for future embankment/shore protection along northbound State Route 1 (SR-1, or Pacific Coast Highway [PCH]).

The biological study area (BSA) is located along northbound SR-1 between Warner Avenue and Seapoint Avenue in the City of Huntington Beach (City), County of Orange, California. On the east, or inland side of SR-1, the BSA is within the Bolsa Chica Ecological Reserve (hereafter referred to as the Reserve), while the portion of the BSA on the west side of SR-1 is within Bolsa Chica State Beach (hereafter referred to as the State Beach). The regional location and project vicinity are shown in Figure 1 (Appendix A). Post miles (PM) for the BSA range from PM 28.7 to PM 29.7. Post miles where direct impacts from construction are to occur range from PM 29.11 to PM 29.18. The Expenditure Authorization (EA) number for the project is OK0100.

SR-1 was added to the State Highway system by the State Highway Board Amendment of 1919. SR-1 begins in Orange County at the Interstate 5 (I-5)/SR-1 junction at the boundaries of the Cities of San Juan Capistrano and Dana Point. This segment of SR-1 is a four-lane conventional highway that runs north and south, with two lanes in each direction. This segment lies between the Reserve and the State Beach.

The northbound segment of SR-1 is subjected to landslides, erosion, and flooding during storms with high tide condition. The roadway embankment of the northbound lane began eroding at an alarming rate during Spring 2009. On March 5, 2009, Caltrans closed half the shoulder and installed a protective barrier because the roadway began sloughing off into the adjacent estuary. On July 1, 2009, Caltrans declared the project to be an emergency project.

Emergency construction began on July 27, 2009, and is expected to last for approximately 2 weeks, with crews working 12-hour days to minimize delays on SR-1 during the peak summer season. All work for this project will be conducted within the Caltrans right-of-way (ROW).

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Chapter 2 Purpose of Assessment

The purpose of this assessment is to delineate wetlands and other jurisdictional waters and to identify functions and values of the project area. This information and analysis has been prepared for the United States Army Corps of Engineers (Corps), the Regional Water Quality Control Board (RWQCB), the California Coastal Commission (CCC), and the California Department of Fish and Game (CDFG) as an assessment of project impacts required for the following permit authorizations and after-the-fact notifications:

- Corps Regional General Permit (RGP) No. 63 for Emergency Repairs (File No. SPL-2009-00531-SCH dated July 20, 2009)
- After-the-Fact Reporting to RWQCB (forthcoming)
- CCC Emergency Permit (No. 5-09-131-G dated July 15, 2009) and After-the-Fact Coastal Development Permit (CDP) (forthcoming)
- CDFG After-the Fact Reporting (forthcoming)

This jurisdictional delineation is also an important source of California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) information for the evaluation of potential impacts associated with the proposed SR-1 Bolsa Chica Roadway Embankment Reconstruction Project.

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Chapter 3 Regulatory Background

3.1 United States Army Corps of Engineers

The Corps regulates discharges of dredged or fill material into waters of the United States. These waters include wetland and nonwetland bodies of water that meet specific criteria. Corps regulatory jurisdiction pursuant to Section 404 of the Clean Water Act (CWA) is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in the Corps regulations. The following definition of waters of the United States is taken from the discussion provided at 33 Code of Federal Regulations (CFR) 328.3:

“The term waters of the U.S. means:

- (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce . . . ;
- (2) All interstate waters including interstate wetlands;
- (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams) . . . the use, degradation or destruction of which could affect interstate or foreign commerce . . . ;
- (4) All impoundments of waters otherwise defined as waters of the U.S. under the definition; and
- (5) Tributaries of waters defined in paragraphs (a) (1)–(4) of this section.”

The Corps typically regulates as waters of the United States any body of water displaying an ordinary high water mark (OHWM). Corps jurisdiction over nontidal waters of the United States extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4). The OHWM is defined as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the

surrounding area” (33 CFR 328.3). Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible. Under Section 404, Corps jurisdiction over tidal waters of the United States shoreward extends to the line on the shore reached by the highest high water.

Under Section 10, Corps jurisdiction over tidal waters of the United States extends from the ordinary low tide 3 nautical miles seaward. Corps jurisdiction shoreward extends to the line on the shore reached by the mean high water. This jurisdiction extends to this edge even though portions of the water body may be extremely shallow and are thus considered “navigable in law” although they may not be navigable in fact (33 CFR 329.12).

As discussed above, Corps regulatory jurisdiction under Section 404 of the CWA is founded on a connection between the water body in question and interstate commerce. This connection may be direct, through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in the Corps regulations. In the past, an indirect nexus could potentially be established if isolated waters provided habitat for migratory birds, even in the absence of a surface connection to a navigable water of the United States. The 1984 rule that enabled the Corps to expand jurisdiction over isolated waters of this type became known as the Migratory Bird Rule. However, on January 9, 2001, the United States Supreme Court narrowly limited the Corps jurisdiction of “nonnavigable, isolated, intrastate” waters based solely on the use of such waters by migratory birds and particularly, the use of indirect indicators of interstate commerce (e.g., use by migratory birds that cross state lines) as a basis for jurisdiction. The court’s ruling derives from the case *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No. 99-1178 (SWANCC). The Supreme Court determined that the Corps exceeded its statutory authority by asserting CWA jurisdiction over an abandoned sand and gravel pit in northern Illinois, which provides habitat for migratory birds.

In 2006, the United States Supreme Court further considered the Corps jurisdiction of “waters of the U.S.” in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208), collectively referred to as *Rapanos*. The Supreme Court concluded that wetlands are “waters of the U.S.” if they significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as navigable. On June 5, 2007, the Corps issued guidance regarding the *Rapanos* decision. This guidance states that the Corps will continue to assert

jurisdiction over traditional navigable waters, wetlands adjacent to traditional navigable waters, relatively permanent nonnavigable tributaries that have a continuous flow at least seasonally (typically 3 months), and wetlands that directly abut relatively permanent tributaries. The Corps will determine jurisdiction over waters that are nonnavigable tributaries that are not relatively permanent waters and wetlands adjacent to nonnavigable tributaries that are not relatively permanent waters only after making a significant nexus finding relative to traditional navigable waters.

Furthermore, the preamble to Corps regulations (Preamble Section 328.3, Definitions) states that the Corps does not generally consider the following waters to be waters of the United States. The Corps does, however, reserve the right to regulate these waters on a case-by-case basis.

- Nontidal drainage and irrigation ditches excavated on dry land
- Artificially irrigated areas that would revert to upland if the irrigation ceased
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons
- Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for purposes of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States

Waters found to be isolated and not subject to CWA regulation are often still regulated by the RWQCB under the State Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

3.1.1 Wetlands

Wetland delineations for Section 404 purposes must be conducted according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Regional Supplement) (Corps 2008) and the *Corps of Engineers 1987 Wetland Delineation Manual* (1987 Manual) (Environmental Laboratory 1987).

Where there are differences between the two documents, the Regional Supplement takes precedence over the 1987 Manual.

The Corps and the United States Environmental Protection Agency (EPA) define wetlands as follows:

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions.”

In order to be considered a jurisdictional wetland under Section 404, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several indicators may be analyzed to determine whether the criteria are satisfied.

Hydrophytic vegetation and hydric soils indicators provide evidence that episodes of inundation have lasted more than a few days or have occurred repeatedly over a period of years, but do not confirm that an episode has occurred recently. Conversely, wetland hydrology indicators provide evidence that an episode of inundation or soil saturation occurred recently, but does not provide evidence that episodes have lasted more than a few days or have occurred repeatedly over a period of years. Because of this, if an area lacks one of the three characteristics under normal circumstances, the area is considered nonwetland under most circumstances.

Determination of wetland limits may be obfuscated by a variety of natural environmental factors or human activities, collectively called difficult wetland situations, including cyclic periods of drought and flooding or highly ephemeral stream systems. During periods of drought, for example, bank return flows are reduced and water tables are lowered. This results in a corresponding lowering of ordinary high water and invasion of upland plant species into wetland areas. Conversely, extreme flooding may create physical evidence of high water well above what might be considered ordinary and may allow the temporary invasion of hydrophytic species into nonwetland areas. In highly ephemeral systems typical of Southern California, these problems are encountered frequently. In these situations, professional judgment based on years of practical experience and extensive knowledge of local ecological conditions comes into play in delineating wetlands. The Regional Supplement (Corps 2008) provides additional guidance for difficult wetland situations.

3.1.1.1 Hydrophytic Vegetation

Hydrophytic vegetation is plant life that grows and is typically adapted for life in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, herb, and woody vine layers) are considered hydrophytic. Hydrophytic species are those included on the *National List of Plant Species That Occur in Wetlands: California (Region 0)* (Reed 1988), published by the United States Fish and Wildlife Service (USFWS). Each species on the list is rated according to a wetland indicator category, as shown in Table A. To be considered hydrophytic, the species must have wetland indicator status (i.e., be rated as OBL, FACW, or FAC).

Table A Hydrophytic Vegetation

Category	Probability
Obligate Wetland (OBL)	Almost always occur in wetlands (estimated probability > 99 percent)
Facultative Wetland (FACW)	Usually occur in wetlands (estimated probability 67–99 percent)
Facultative (FAC)	Equally likely to occur in wetlands and nonwetlands (estimated probability 34–66 percent)
Facultative Upland (FACU)	Usually occur in nonwetlands (estimated probability 67–99 percent)
Obligate Upland (UPL)	Almost always occur in nonwetlands (estimated probability > 99 percent)

The delineation of hydrophytic vegetation is typically based on the most dominant species from each vegetative stratum (strata are considered separately); when more than 50 percent of these dominant species are hydrophytic (i.e., FAC, FACW, or OBL), the vegetation is considered hydrophytic. In particular, the Corps recommends the use of the “50/20” rule (also known as the dominance test) from the Regional Supplement (Corps 2008) for determining dominant species. Under this method, dominant species are the most abundant species that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance measure for the stratum. In cases where indicators of hydric soil and wetland hydrology are present but the vegetation initially fails the dominance test, the prevalence index must be used. The prevalence index is a weighted average of all plant species within a sampling plot. The prevalence index is particularly useful when communities only have one or two dominants, where species are present at roughly equal coverage, or when strata differ greatly in total plant cover. In addition, Corps guidance provides that morphological

adaptations may be considered when determining hydrophytic vegetation when indicators of hydric soil and wetland hydrology are present (Corps 2008). If the plant community passes either the dominance test or prevalence index after reconsidering the indicator status of any plant species that exhibit morphological adaptations for life in wetlands, then the vegetation is considered hydrophytic.

3.1.1.2 Hydric Soils

Hydric soils¹ are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.² Soils are considered likely to meet the definition of a hydric soil hydric when one or more of the following criteria are met:

1. All Histels except Folistels and Histosols except Folists; or
2. Soils that are frequently ponded for long duration or very long duration³ during the growing season; or
3. Soils that are frequently flooded for long duration or very long duration during the growing season.

Hydric soils develop under conditions of saturation and inundation combined with microbial activity in the soil that causes a depletion of oxygen. While saturation may occur at any time of year, microbial activity is limited to the growing season, when soil temperature is above biologic zero (the soil temperature at a depth of 50 centimeters (cm), below which the growth and function of locally adapted plants are negligible). Biogeochemical processes that occur under anaerobic conditions during the growing season result in the distinctive morphologic characteristics of hydric soils. Based on these criteria, a National List of Hydric Soils was created from the National Soil Information System (NASIS) database and is updated annually.

¹ The hydric soil definition and criteria included in the 1987 Manual are obsolete. Users of the Manual are directed to the United States Department of Agriculture (USDA) Natural Resources Conservation Service website for the most current information on hydric soils.

² Current definition as of 1994 (Federal Register [FR] July 13, 1994).

³ Long duration is defined as a single event ranging from 7 to 30 days. Very long duration is defined as a single event that lasts longer than 30 days.

The Regional Supplement (Corps 2008) has a number of field indicators that may be used to identify hydric soils. The USDA Natural Resources Conservation Service (2003) has also developed a number of field indicators that may demonstrate the presence of hydric soils. These indicators include hydrogen sulfide generation, accumulation of organic matter, and the reduction, translocation, and/or accumulation of iron and other reducible elements. These processes result in soil characteristics that persist during both wet and dry periods. Separate indicators have been developed for sandy soils and for loamy and clayey soils.

3.1.1.3 Wetland Hydrology

Under natural conditions, development of hydrophytic vegetation and hydric soils are dependent on a third characteristic: wetland hydrology. Areas with wetland hydrology are those where the presence of water has an overriding influence on vegetation and soil characteristics due to anaerobic and reducing conditions, respectively (Environmental Laboratory 1987). The wetland hydrology parameter is satisfied if the area is seasonally inundated or saturated to the surface for a minimum of 14 consecutive days during the growing season in most years (Corps 2008).

Hydrology is often the most difficult criterion to measure in the field due to seasonal and annual variations in water availability. Some of the indicators that are commonly used to identify wetland hydrology include visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels (rhizospheres) resulting from prolonged anaerobic conditions.

3.2 Regional Water Quality Control Board

The California RWQCB is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the Corps (i.e., waters of the United States, including any wetlands). RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Act.

3.3 California Coastal Commission

The CCC, through provisions of the California Coastal Act (CCA), is empowered to issue a CDP for many projects located within the Coastal Zone. In areas where a local entity has a certified Local Coastal Program (LCP), the local entity (e.g., City of Huntington Beach) can issue a CDP only if it is consistent with the LCP. The CCC,

however, has appeal authority for portions of LCPs and retains jurisdiction over certain public trust lands and in areas without an LCP.

The CCC's definition of wetlands, as defined in Section 30121 of the CCA and Title 14 Section 13577 of the CCC's regulations, is distinctly different from the Corps definition of wetlands. According to the CCC's regulations, wetlands are defined as "land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes." Both definitions focus on three fundamental wetland characteristics: hydrology, soils, and vegetation. However, while the Corps definition requires the existence of all three wetland characteristics for an area to be considered a wetland, the CCC's definition of wetlands is based on the existence of only two characteristics: wetland hydrology sufficient to either support a prevalence of hydrophytic vegetation or promote the formation of hydric soils. (Exceptions include certain areas that lack wetland soils and vegetation.) It is noted that, under certain circumstances, reliable indicators of all required characteristics are not necessarily apparent, and areas may be delineated as wetlands by the Corps on the basis of indicators of only two of the three characteristics. The CCC routinely makes jurisdictional wetlands determinations based on the presence of one characteristic indicator (i.e., wetland soils or vegetation) under the assumption that wetland hydrology must be present in order for the indicator to be present. Nevertheless, the presence of wetland hydrology during some portion of most years is fundamental to the existence of any wetland, and the CCC will sometimes discount vegetation or soil indicators when there is sufficient evidence to conclusively refute the presence of wetland hydrology.

3.4 California Department of Fish and Game

The CDFG, through provisions of the California Fish and Game Code (Section 1600 et seq.), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks and at least an intermittent flow of water. The CDFG regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by the CDFG.

In obtaining CDFG agreements, the limits of wetlands are not typically determined. The reason for this is that CDFG generally includes, within the jurisdictional limits of streams and lakes, any riparian habitat present. Riparian habitat includes willows, mulefat, and other vegetation typically associated with the banks of a stream or lake

shorelines and may not be consistent with Corps definitions. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Thus, defining the limits of CDFG jurisdiction based on riparian habitat will automatically include any wetland areas and may include additional areas that do not meet Corps criteria for soils and/or hydrology (e.g., where riparian woodland canopy extends beyond the banks of a stream away from frequently saturated soils).

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Chapter 4 Environmental Setting

The approximately 33 ac BSA is located in the City of Huntington Beach, Orange County, California (Figure 1 in Appendix A). The BSA is found on the United States Geological Survey (USGS) *Seal Beach, California* 7.5-minute topographic map, Section 29, Township 5 South, Range 11 West. The range of elevation within the BSA encompasses the sloping bank of Bolsa Bay and adjacent undulating dunes, ranging from approximately 1.67 to 2.67 meters (m) (5 to 8 feet [ft]) in elevation.

The BSA extends for 50 ft on either side of SR-1, and, as described in the Project Description section above, the portion of the BSA to the east of SR-1 is within the Reserve while the portion of the BSA on the west side of SR-1 is located within the State Beach. Within the Reserve, the BSA encompasses a portion of Inner Bolsa Bay and Outer Bolsa Bay, as well as associated coastal wetlands and adjacent uplands. Within the State Beach, the BSA encompasses portions of the State Beach access roads and parking areas, as well as areas of upland vegetation and planted coastal scrub restoration areas.

Two hydrologic features, Inner Bolsa Bay and Outer Bolsa Bay, were identified within the BSA as shown in Figures 2 through 4 in Appendix A. Inner Bolsa Bay and Outer Bolsa Bay are the subject of this wetlands delineation and jurisdictional assessment and are described below.

4.1 Bolsa Chica Ecological Reserve and the Inner Bolsa Bay

Bolsa Chica consists of approximately 1600 acres (ac), 1,350 ac of which are publicly owned within the Reserve. A portion of the BSA is located within the Reserve. The Reserve's two entrances, at the southern and northern ends of the BSA, provide visitors with access to a trail system. The Reserve is adjacent to Inner Bolsa Bay and Outer Bolsa Bay. Coastal wetland and upland habitat within the Reserve portion of the BSA is moderate to high quality, and is periodically maintained by volunteers of the Bolsa Chica Conservancy.

Inner Bolsa Bay and Outer Bolsa Bay are tidally influenced basins with earthen bottoms. Water is exchanged between Inner Bolsa Bay and Outer Bolsa Bay through culverts in the levee that are located between them. There are two high and two low tides daily. Inner Bolsa Bay fluctuates approximately 2 to 3 ft as a result of tidal influence, while Outer Bolsa Bay fluctuates approximately 8 ft daily.

Historically, Bolsa Chica was part of a large, estuarine marsh complex. Activities beginning in the late 1800s significantly altered the area and isolated much of Bolsa Chica from tidal influence. In 2004, The Bolsa Chica Lowlands Restoration Project was initiated to restore portions of the wetland ecosystem of the Bolsa Chica lowlands. A direct connection from the Pacific Ocean to the Bolsa Chica lowlands was reestablished in 2006 through the creation of a new tidal inlet that cuts through the State Beach and crosses SR-1 near the Huntington Mesa, just south of the BSA. However, the only direct connection of the BSA to the Pacific Ocean occurs to the north. This connection passes under Warner Avenue and flows into Huntington Harbor and Anaheim Bay out to the Pacific Ocean.

Chapter 5 Methods

The fieldwork for this evaluation was conducted primarily by LSA biologists Angela Roundy and Kristen Yee on March 31, April 2, and June 4, 5, 11, and 16, 2009. LSA biologist Jim Harrison assisted in the fieldwork on March 31. Additional field assistance was provided by LSA biologist Elizabeth Delk and Caltrans biologist Arianne Preite on June 5, and LSA biologist Robert Steers on June 16. The study area was surveyed on foot for both federal and State jurisdictional areas. Representative site photos are included in Appendix A (Figures 2 and 3).

Areas of potential jurisdiction were evaluated according to Corps, CDFG, CCC, and RWQCB criteria. The boundaries of the potential jurisdictional areas were observed in the field and mapped on 11 aerial photographs (each scaled at 1 inch (in) = approximately 50 ft), which together show the entire study area. Measurements of federal and State jurisdictional areas mapped during the course of the field investigation were determined by a combination of direct measurements taken in the field and measurements taken from aerial photographs.

Areas supporting species of plant life potentially indicative of wetlands were evaluated according to routine wetland delineation procedures described in the Regional Supplement (Corps 2008). Representative sample plots were selected and examined in the field in those areas where the limits of wetland jurisdiction were in question or needed to be confirmed. The locations of sample plots and the potential jurisdictional areas are provided in Appendix A on Figure 4, Sheets 1 through 11.

At each sample plot, the dominant and subdominant plant species were identified and their wetland indicator status noted (Reed 1988). A small sample pit (approximately 24 in deep) was dug at each plot in order to examine soil characteristics and composition. Soil matrix colors were classified according to the Munsell Soil Color Charts (Munsell Color 2000). Hydrological conditions, including any surface inundation, saturated soils, groundwater levels, and/or other wetland hydrology indicators were noted. General site characteristics were also noted. Standard data forms were completed for each sample plot; copies of these data forms are included in Appendix B of this report.

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Chapter 6 Results

6.1 Delineation of Corps Section 10 Jurisdiction

The portions of Inner Bolsa Bay, Outer Bolsa Bay, and the Reserve that are located within the BSA comprise an estuarine marsh that is subject to daily tidal influences. Inner Bolsa Bay and Outer Bolsa Bay, including the portions that lie within the BSA, have an interstate commerce nexus, as they are extensions to the Pacific Ocean (a navigable water of the United States). As described in Chapter 4, Environmental Setting, Inner Bolsa Bay and Outer Bolsa Bay have one tidal connection with the Pacific Ocean that occurs north of the BSA.

Due to the tidal influence, the project is subject to Corps jurisdiction to the mean high water line under Section 10 of the Rivers and Harbors Act. The elevation of this line is calculated for some locations by the National Ocean Service (NOS), Office of Ocean and Earth Science, and is based on a 19-year mean of all high tide events. Although the Los Patos station provides tide measurements most relevant to the BSA, the nearest location with an NOS calculation of mean high water is the Newport Bay entrance in Corona del Mar.

In order to calculate mean high water specific to the BSA, a correlation between the 2009 National Oceanic and Atmospheric Administration (NOAA) and 19-year NOS data were determined by averaging and comparing the 2009 NOAA tide predictions for high tide heights at the Newport Bay entrance location with the 19-year average calculated by NOS for the same location. The mean high tide calculated using NOAA tide predictions is 4.50 ft, while the mean high water calculated by NOS is 4.65 ft. After determining the correlation between the two data sets, a mean high tide was calculated using 2009 NOAA tide predictions for the Los Patos station. This value, 3.50 ft, was then used as a conservative estimate of the mean high water line within the BSA. The mean high water line was then plotted within the BSA using USGS topographical data and geographical information system (GIS) software. This representation of Section 10 jurisdiction is an approximation due to the nature of the available data for the BSA. In a few locations, a minor adjustment was made in order to rectify this approximation with the observed high water mark.

The BSA includes a total of 1.91 ac of waters subject to Corps jurisdiction pursuant to Section 10 of the Rivers and Harbors Act. These areas of Section 10 Corps

jurisdiction include deepwater aquatic (1.35 ac) and wetland waters of the United States (0.56 ac) (Figure 4 of Appendix A).

6.2 Delineation of Corps Section 404 Jurisdiction

Because of the direct connection with the Pacific Ocean, as described above, Inner Bolsa Bay and Outer Bolsa Bay are subject to Corps jurisdiction at least to the high tide line under Section 404 of the CWA. The western shoreline along the Bay within the BSA shows direct evidence of an OHWM by the presence of aquatic invertebrate shells, a thin layer of muck, shelving in some areas, and drainage patterns. Sample plot results showed a consistent occurrence of OHWM indicators. No evidence of wetland hydrology or wetland soils was observed beyond the OHWM. In the absence of definitive tide data, this observable OHWM was used to denote the shore and limit of tidal waters. Please refer to the attached wetland data forms (Appendix B) for a full description of the sample plot results.

6.2.1 Vegetation

The project area consists of nine plant community types, including estuarine wetland (1.95 ac), native dune mat (5.28 ac), dune scrub (0.61 ac), invaded dune mat (0.75 ac), invaded iceplant dune mat (1.56 ac), exotic annual grassland (0.35 ac), coastal scrub (0.54 ac), disturbed (0.44 ac), and bare ground (0.44 ac). Additional descriptions of these habitat types and associated figures showing their locations within the BSA are included in the project's Natural Environment Study (NES) (LSA, August 2009).

6.2.1.1 Estuarine Wetland

The predominant vegetation associated with the estuarine wetlands within the BSA includes Watson's saltbush (*Atriplex watsonii*, FACW+), saltwort (*Batis maritima*, OBL), saltgrass (*Distichlis spicata*, FACW), alkali heath (*Frankenia salina*, FACW+), slender-leaved iceplant (*Mesybryanthemum nodiflorum*, FACU), shoregrass (*Monanthochloe littoralis*, OBL), fleshy jaumea (*Jaumea carnosa*, OBL), Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*, FACW), common woody pickleweed (*Salicornia virginica*, OBL), and estuary sea-blight (*Suaeda taxifolia*, FACW+).

6.2.1.2 Native Dune Mat

The native dune mat vegetation is dominated by beach evening primrose (*Camissonia cheiranthifolia*, UPL) and/or beach-bur (*Ambrosia chamissonis*, UPL). Sea-rocket (*Cakile maritima*, FACW) is usually common. Saltgrass is locally common, sand-verbena (*Abronia umbellatum* ssp. *umbellatum*, UPL) is occasional, and beach morning-glory (*Calystegia soldanella* UPL), is rare.

6.2.1.3 Invaded Dune Mat

Invaded dune mat vegetation was typically dominated by two invasive herbaceous annual plant species, ripgut brome (*Bromus diandrus*, UPL) and sea-rocket, which have displaced the native perennial species that were characteristic of past native dune mat vegetation. Hence, beach-bur or beach evening primrose were usually uncommon to occasional in this vegetation type. In one stand, beach-bur was co-dominant with ripgut brome. Annual yellow sweetclover (*Melilotus indicus*, FAC) was locally common in some stands. Other invasive annuals (rescue grass [*Bromus catharticus*, UPL], red brome [*Bromus madritensis* ssp. *rubens*, NI], musky stork's bill [*Erodium moschatum*, UPL], crete weed [*Hedypnois cretica*, UPL] and rat-tail fescue [*Vulpia myuros*, FACU*]) were occasional to common.

6.2.1.4 Invaded, Iceplant Dune Mat

As the name implies, iceplant dune mat vegetation is dominated by hottentot-fig (*Carpobrotus edulis*, UPL), which forms a nearly complete monoculture with rare occurrences of beach-bur or beach evening primrose.

6.2.1.5 Dune Scrub

Stands of dune scrub vegetation are dominated by coast goldenbush (*Isocoma menziesii*, FACW*). Big saltbush (*Atriplex lentiformis*, FAC) is locally abundant in a couple of stands. Other perennials include the shrub, coyote bush (*Baccharis pilularis*, UPL), and the herbaceous perennial, western ragweed (*Ambrosia psilostachya*, FAC). Several species found in dune scrub on the north side of the project area, at the corner of SR-1 and Warner Avenue (southeast corner near the visitor center), were planted for restoration. These include fourwing saltbush (*Atriplex canescens*, FACU), California sagebrush (*Artemisia californica*, UPL), bladderpod (*Isomeris arborea*, UPL), California buckwheat (*Eriogonum fasciculatum*, UPL), and coast buckwheat (*Eriogonum parvifolium*, UPL).

Because dune scrub vegetation is an upland plant community found adjacent to estuarine wetland vegetation within the BSA, plant species associated with salt marsh

habitat (i.e., estuarine wetland) are sometimes intermixed with the dune scrub habitat. Although this habitat type is dominated by a potential hydrophyte (coast goldenbush), it is LSA's professional opinion that this plant is persisting due to an affinity to saline soils rather than on the presence of wetland hydrology. Therefore, coast goldenbush is functioning as a halophyte rather than a hydrophyte within the areas of dune scrub vegetation.

6.2.1.6 Coastal Scrub

Coastal scrub vegetation was planted by State Parks along the edges of their buildings on the west side of SR-1 and also in a large open space at the south side of the project area near the entrance to beach parking at the State Beach. Their planting areas are dominated by California encelia (*Encelia californica* UPL). Other shrubs included black sage (*Salvia mellifera*, UPL), coast buckwheat, California buckwheat, St. Catherine's Lace (*Eriogonum cf. giganteum*, UPL), and lemonade berry (*Rhus integrifolia*, UPL) among others. Cape honeysuckle (*Tecomaria capensis*, UPL) and pink melaleuca (*Melaleuca nesophila*, UPL), which are two nonnative ornamentals, were also planted in these areas.

6.2.1.7 Exotic Annual Grassland

Exotic annual grassland is dominated by various nonnative annuals, primarily ripgut brome. Bur-clover (*Medicago polymorpha*, UPL) was also very common. Scattered individuals of goldenbush also occurred.

6.2.1.8 Disturbed

Disturbed areas are characterized by nonnative vegetation associated with past human disturbances, and can be found on old roads, roadsides, and in past clearings within the BSA. These areas are typically dominated by ripgut brome.

6.2.1.9 Bare Ground

Areas of bare ground were identified where relative cover of vegetation was less than 5 percent. Major roads (e.g., SR-1, beach parking lot roads) were not included in the areas identified as bare ground.

Based on the predominance of hydrophytic vegetation, the federal wetland criteria are satisfied within areas of estuarine wetland habitat within the BSA. The areas of native dune mat, dune scrub, invaded dune mat, invaded iceplant dune mat, exotic annual grassland, coastal scrub, disturbed habitat, and bare ground do not meet the federal criteria for hydrophytic vegetation due to a predominance of upland vegetation. In

addition, the areas of bare ground do not meet the federal criteria for hydrophytic vegetation due to the lack of vegetation.

6.2.2 Soils

Soil pits were dug in areas where jurisdictional status or jurisdictional limits were in question. Specifically, locations of soil pits SP1, SP3, SP5, SP6, and SP8 through SP18 were chosen in order to identify and differentiate between the extent of potential Corps Section 404 waters and the extent of additional areas of potential CCC jurisdictional wetlands; while locations of soil pits SP2, SP4, and SP19 were chosen in order to verify the conclusion that these areas were outside the maximum extent of both potential Corps and CCC jurisdiction. In addition, a control sample pit (SP7) was located within an area of invaded dune mat in order to examine soil conditions within a clearly upland area within the BSA. Soil pit locations are depicted in Figure 4.

Topsoils are generally black, brown or grayish brown (Munsell colors 2.5 Y, 7.5YR, and 10YR), and soil textures are characterized as sand, loamy sand, silty clay loam, and muck. Results from soil pits SP3 through SP7, SP9, SP13 through SP19 showed a profile of 100 percent sand with a lack of all hydric soil indicators. Soil pit SP2 had a profile of 100 percent sandy loam with a lack of all hydric soil indicators. Results at SP11 also showed a lack of hydric soil indicators but included a 0.25 in layer of mucky mineral at the surface with 100 percent sand in the remainder of the pit.

Sample plot SP1 was located within the area of seasonal ponding/depressions at the north end of the project and clearly met the wetland soils criteria for Indicator F8 (Redox Depressions). Soils within SP8 and SP10 satisfied the wetland criteria through the presence of Indicator S1 (Sandy Mucky Mineral), and SP12 satisfied the wetland criteria through the presence of Indicator F6 (Redox Dark Surface).

A layer of muck 0.5-1.0 cm in depth was also observed on the surface at SP8 and SP10. Although Indicator A9 (1 cm Muck) does not apply to Subregion LRRC, the correlation between the presence of a thin layer of muck and Indicator S1 was a useful characteristic that could be examined with a shallow pit in order to check that the extent of wetland soils was consistent along the shoreline in multiple areas where a full data sheet was not needed.

Based on the soil pit test results, soils within sample pits SP2 through SP7, SP9, SP11, and SP13 through SP19 do not meet the criteria for wetland soils, while the

federal wetland criteria for hydric soils are met within sample pits SP1, SP8, SP10, and SP12.

6.2.3 Hydrology

Wetland hydrology within the BSA was evident within Inner Bolsa Bay, Outer Bolsa Bay, and portions of the surrounding estuarine wetland habitat by direct observation of tidal patterns. The extent of the OHWM was determined based on a combination of hydrology indicators, each observed consistently at the same elevation along the shoreline of the bay. These wetland hydrology indicators include saturation, the presence of a thin muck surface, scattered occurrences of shelving, and prevalent aquatic invertebrate shell remains.

In addition, a high water table was observed within SP1, SP8, SP10, and SP12 at a depth of approximately 10 to 14 in below the surface. These observations were made during the transitional time between high and low tide. Because of the high permeability of the soils, it is likely that the water table would be closer to the surface during high tide.

Based on conditions observed at sample pits SP1, SP8, SP10, and SP12 during the site visits, it appears that soils remain saturated within 12 in of the surface or exhibit shallow inundation for well in excess of 14 consecutive days during the growing season in most years, thereby meeting the Section 404 federal criteria for wetland hydrology. Furthermore, due to the perennially inundated condition of Inner Bolsa Bay and Outer Bolsa Bay, wetland hydrology is clearly evident within the invert of the bay extending to the OHWM along the western shoreline. Pursuant to Section 10 of the Rivers and Harbors Act, the Corps will assert Section 10 jurisdiction over tidal areas up to the mean high tide line.

6.3 Delineation of CCC Jurisdiction

Potential for CCC jurisdiction exists due to the BSA's location within the Coastal Zone. Therefore, all of the areas satisfying the Corps jurisdictional criteria for waters and wetlands of the United States, as described above, are also subject to CCC jurisdiction as wetlands pursuant to the CCA.

Because CCC employs a one-parameter approach to delineating jurisdictional wetlands, CCC wetlands usually tend to be more inclusive and extensive. LSA biologists delineated potential CCC jurisdictional wetlands using this one-parameter

approach. As a result, CCC wetland jurisdiction was mapped where wetland vegetation extended beyond the limit of the highest high water mark. There were no hydric soils that extended beyond the limit of the highest high water. There is a total of 3.55 ac potentially subject to CCC wetland jurisdiction. See Figure 4 of Appendix A for the extent of CCC wetland jurisdiction.

In some areas extending beyond the limits mapped as CCC jurisdiction (see Sample Plots 4, 7, and 19 on Figure 4 of Appendix A), small patches of vegetation dominated by wetland indicator plants (e.g., saltgrass, salt heliotrope) are situated within larger habitat types (i.e., native dune mat, invaded dune mat, or dune scrub) dominated by upland plant species. Taking into context the overall habitat characteristics and vegetation composition, saltgrass is clearly not a dominant species within native dune mat, invaded dune mat, or dune scrub habitats. In addition, certain wetland indicator plants, such as saltgrass, can persist based on their affinity for saline soils rather than on the presence of wetland hydrology. In such cases, these plants would be functioning as halophytes rather than as hydrophytes. This is likely the situation, as described above, where small patches of saltgrass occur in a zone of predominantly upland habitat and lack both wetland hydrology and hydric soils as well.

6.4 Delineation of CDFG Jurisdiction

None of the areas identified within the project area are rivers, lakes, streams, or associated riparian habitat. All potential wetlands on the site are associated with a coastal salt marsh system. While impacts to salt marsh habitat are addressed through CEQA, salt marshes are typically not regulated under Section 1600 of the Fish and Game Code. Thus, there are no potential CDFG jurisdictional areas within the BSA.

6.5 Functions and Values of Wetlands and other Waters

The following is an assessment of the functions and values attributable to the identified wetlands in the BSA. All wetlands and other waters have some degree of functionality, and no single wetland can perform all of the functions considered below. The following functions are classified at low, moderate, or high value levels. Inner Bolsa Bay, Outer Bolsa Bay, and the adjacent estuarine wetlands subject to Corps and CCC jurisdiction are analyzed in Table B based on the criteria outlined below. The areas of additional CCC wetlands were not analyzed, since these areas are not considered to be a hydrologic feature (i.e., they are located outside the OHWM of the Bay and are not subject to regular availability of water).

Table B Functions and Values of Hydrologic Features within the BSA

Feature	Hydrologic Regime	Flood Storage and Flood Flow Modification	Sediment Retention	Nutrient Retention and Transformation	Toxicant Trapping	Social Significance	Wildlife Habitat	Aquatic Habitat
Inner Bolsa Bay	High	Low	Low	Low	Low	High	High	High
Outer Bolsa Bay	High	Moderate	Low	Low	Low	High	High	High
Estuarine Wetlands	High	Low	Low	High	Moderate	High	High	High

6.5.1 Hydrologic Regime

This function is the ability of a wetland or stream to absorb and store water below ground. The degree of this saturation is dependent on the soil composition and is affected by prior flooding events. For example, clay soils possess more pore space than sandy soils. However, the smaller pore size slows the rate at which water is absorbed and released and therefore has a lower capacity to store water than sandy soils. The storage of water below ground allows for the fluctuation between anaerobic and aerobic conditions that benefits environmental conditions necessary for microbial cycling. Sandy soils within the entire BSA would increase the likelihood of absorption and underground storage, thereby providing a high value.

6.5.2 Flood Storage and Flood Flow Modification

This function is determined based on the ability of a wetland or stream at which the peak flow in a watershed can be attenuated during major storm events and during peak domestic flows. In other words, this is the ability of a wetland or stream to take in surface water that may otherwise cause flooding. This is dependent on the size, amount of water it can hold, and location in the watershed. Areas high in the watershed may have more ability to reduce flooding in downstream areas, but areas lower in the watershed may have greater benefits to a specific area. Vegetation, shape, and the configuration of the wetland or stream may also affect flood storage by dissipating energy of flows during flood events. The entire BSA is at the lowest extent of the watershed so does not provide any reduction of flooding to areas higher in the watershed. Outer Bolsa Bay receives flows from the Wintersburg Flood Control Channel, and overflow within Outer Bolsa Bay would be received by Inner Bolsa Bay. As a result, Inner Bolsa Bay provides a low amount of flood storage and flood flow modification while Outer Bolsa Bay provides a moderate amount. The shape of the estuarine wetlands within the BSA does not allow these areas to contain

flows; therefore, estuarine wetlands provide a low level of flood storage and flood flow modification.

6.5.3 Sediment Retention

Removal of sediment is the process that keeps sediments from migrating downstream. This is accomplished through the natural process of sediment retention and entrapment. This function is dependent on the sediment load being delivered by runoff into the watershed. Similar to that mentioned above, vegetation, shape, and the configuration of a wetland will also affect sediment retention if water is detained for long durations, such as dense vegetation, bowl shape, and slow-moving water. This function would be demonstrated (i.e., high) if the turbidity of the incoming water is greater than that of the outgoing water. Although the vegetation, shape, and configuration of Inner Bolsa Bay, Outer Bolsa Bay, and the surrounding wetlands has the capacity to retain sediment, the BSA receives very little water from upstream sources; therefore, sediment retention within these areas is low.

6.5.4 Nutrient Retention and Transformation

Nutrient cycling consists of two variables: uptake of nutrients by plants and detritus turnover in which nutrients are released for uptake by plants downstream. Wetland systems in general are much more productive with regard to nutrients than upland habitats. The regular availability of water associated with the wetland or stream may cause the growth of plants (nutrient uptake), associated detritivores, and generate nutrients that may be utilized by a variety of aquatic and terrestrial wildlife downstream. Inner Bolsa Bay and Outer Bolsa Bay have a low abundance of vegetation due to the depth of the water. However, the vegetation within the estuarine wetlands surrounding the Bay have a high level of nutrient retention and transformation due to the density of vegetation and regular access to fluctuating water levels.

6.5.5 Toxicant Trapping

The major processes by which wetlands remove nutrients and toxicants are as follows: (1) by trapping sediments rich in nutrients and toxicants, (2) by absorption to soils high in clay content or organic matter, and (3) through nitrification and denitrification in alternating oxic and anoxic conditions. Removal of nutrients and toxicants is closely tied to the processes that provide for sediment removal. As stated above, the vegetation, shape, and configuration of Inner Bolsa Bay and Outer Bolsa

Bay would be suitable for sediment retention, but the system does not receive significant water sources from upstream. A low level of toxicant trapping for this system can occur from toxicants received from the exchange of water with the Pacific Ocean rather than from upstream sources. The portion of the BSA with the highest potential for toxicant trapping is the densely vegetated estuarine wetlands.

6.5.6 Social Significance

This is a measure of the probability that a wetland or stream will be utilized by the public because of its natural features, economic value, official status, and/or location. This includes being utilized by the public for recreational uses such as boating, fishing, birding, walking, and other passive recreational activities. In addition, a wetland or stream that is utilized as an outdoor classroom, as a location for scientific study, or is located near a nature center would have a higher social significance standing. Inner Bolsa Bay, Outer Bolsa Bay, and the estuarine wetlands within the BSA are part of the Reserve and provide high social significance.

6.5.7 Wildlife Habitat

General habitat suitability is the ability of a wetland to provide habitat for a wide range of wildlife. Vegetation is a large component to wildlife habitat. As plant community diversity increases along with connectivity with other habitats, so does potential wildlife diversity. In addition, a variety of open water, intermittent, and perennial ponding is also an important habitat element for wildlife. There is high wildlife habitat value within the variety of water regimes and wetland vegetation throughout Inner Bolsa Bay, Outer Bolsa Bay, and the estuarine wetlands within the BSA.

6.5.8 Aquatic Habitat

The ability of a wetland or stream to support aquatic species requires that there is ample food supply, pool and riffle complexes, and sufficient soil substrate. Food supply is typically in the form of aquatic invertebrates and detrital matter from nearby vegetation. Pool and riffle complexes provide a variety of habitats for species diversity as well as providing habitat for breeding and rearing activities. Species diversity is directly related to the complexity of the habitat structure. There is high aquatic value throughout the Inner Bolsa Bay, Outer Bolsa Bay, and estuarine wetlands within the BSA.

Chapter 7 Conclusions

The following conclusions are based on the observations of trained and experienced delineators of wetlands and jurisdictional waters. The conclusions are based on the application of pertinent manuals, regulations, and guidance to the conditions observed within the study area. The conclusions are subject to verification by the applicable agencies.

7.1 United States Army Corps of Engineers

7.1.1 Section 10 Waters

Based on the results of the wetland delineation, the proposed project encompasses a total of 1.91 ac of waters potentially subject to Corps jurisdiction pursuant to Section 10 of the Rivers and Harbors Act (Figure 4 of Appendix A). These areas of potential Corps jurisdiction include deepwater aquatic habitat (1.35 ac) and wetland waters of the United States (0.56 ac).

7.1.2 Section 404 Waters

Corps jurisdiction pursuant to Section 404 of the CWA includes the Section 10 waters plus an additional 0.69 ac of adjacent wetlands for a total of 2.60 ac. These areas of Section 404 Corps jurisdiction include deepwater aquatic habitat (1.54 ac) and wetland waters of the United States (0.96 ac) (Figure 4 of Appendix A).

A significant nexus finding by the Corps is not required due to the direct connection of Bolsa Bay to a designated navigable water of the United States (Pacific Ocean).

7.2 Regional Water Quality Control Board

For purposes of this jurisdictional delineation, the areas subject to RWQCB jurisdiction coincide with areas identified as potential Corps jurisdiction.

7.3 California Coastal Commission

All of the areas satisfying the Corps jurisdictional criteria for waters and wetlands of the United States (1.54 ac deepwater aquatic and 0.96 ac wetland waters of the United States), as described above, are also subject to potential CCC jurisdiction as wetlands

pursuant to the CCA. An additional 0.95 ac meet the CCC criteria for wetlands, for a total of 3.55 ac subject to potential CCC jurisdiction within the BSA. See Figure 4 of Appendix A for the extent of potential CCC wetland jurisdiction.

7.4 California Department of Fish and Game

As described above, none of the areas identified within the project site are rivers, lakes, streams, or associated riparian habitat. All potential wetlands on the site are associated with a coastal salt marsh system. While impacts to salt marsh habitat are addressed through CEQA, salt marshes are typically not regulated under Section 1600 of the Fish and Game Code. Thus, there are no potential CDFG jurisdictional areas within the BSA.

7.5 Functions and Values

The hydrologic features within the BSA (Inner Bolsa Bay, Outer Bolsa Bay, and the estuarine wetlands) provide a high contribution to the hydrologic regime within the area but a low level of sediment retention. Flood storage and flood flow modification, nutrient retention/transformation, and toxicant trapping values are all low to moderate. Each of the remaining wetland functions that were assessed (social significance, wildlife habitat, and aquatic habitat) are extremely high due to the setting of the BSA within the Reserve.

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Appendix A Figures

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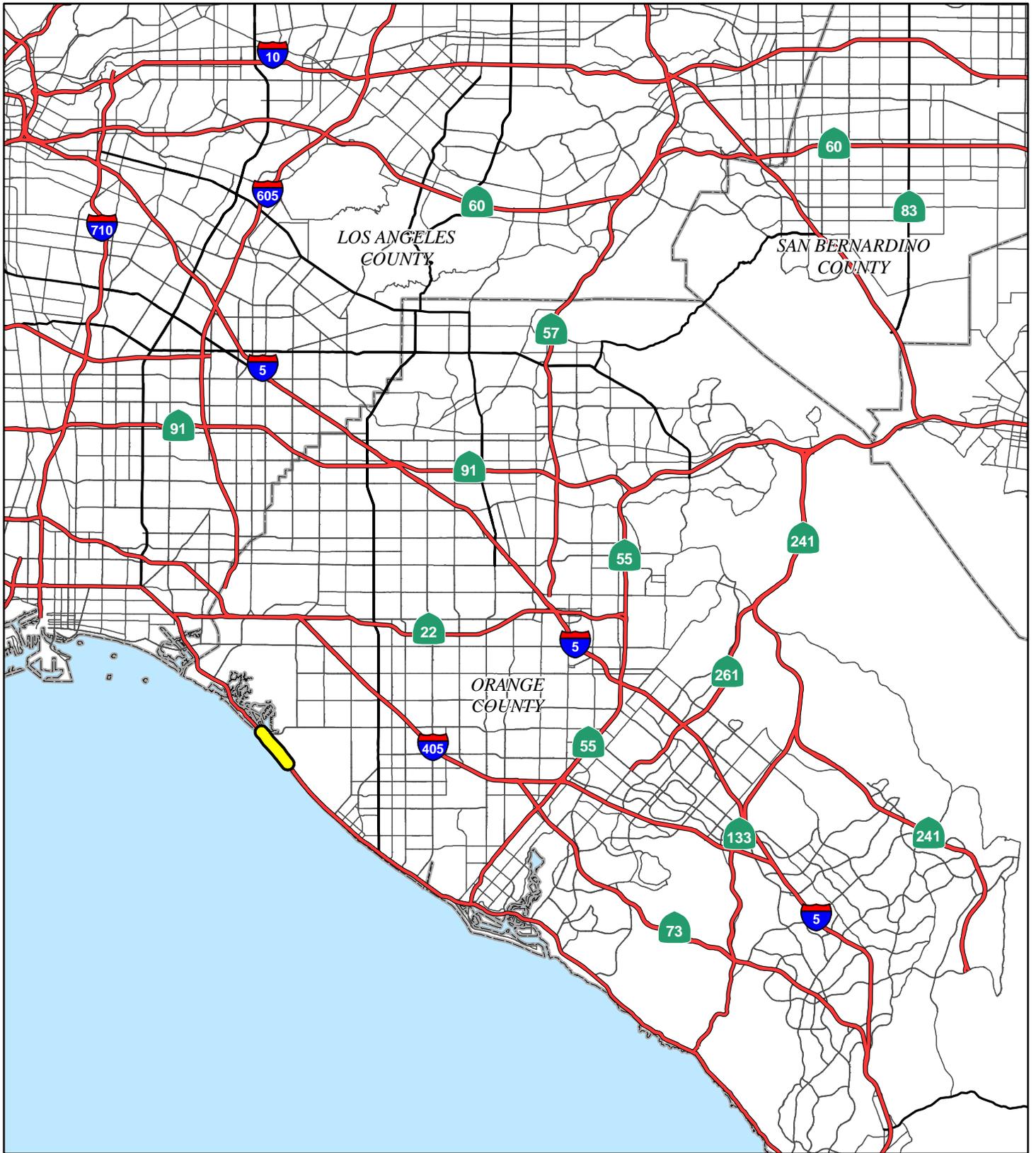


FIGURE 1

LEGEND
 Project Location



0 2.5 5
 Miles

SOURCE: Thomas Bros, (2007).

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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*

Project Vicinity Map

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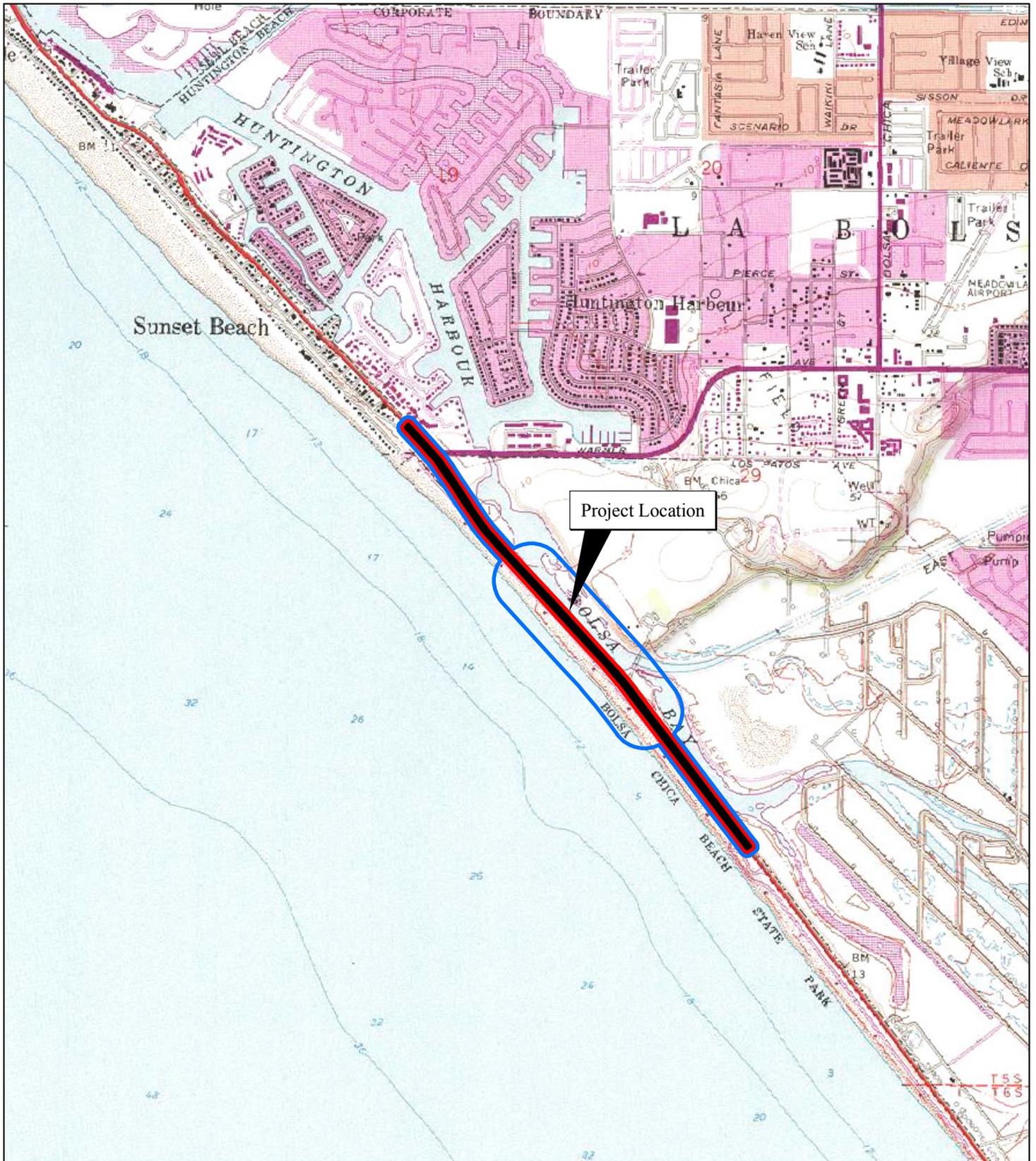
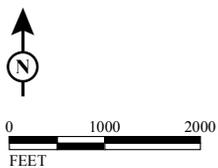


FIGURE 2

LEGEND

-  Project Location
-  Biological Study Area (BSA) (50' buffer)
-  Wildlife Survey Area (WSA) (500' buffer)



*SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project*

Project Location Map

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View of planted Coastal Scrub vegetation within the BSA along the Bolsa State Beach frontage road west of SR-1, facing south (05.06.09).



View of trail east of SR-1, facing south. Visible vegetation types include Estuarine Wetland (adjacent to Bolsa Bay), Dune Scrub (left of trail) and Native Dune Mat (right of trail) (05.06.09).



View of upper salt marsh zone in Estuarine Wetland. Vegetation becomes inundated periodically during heavy rainfall events or during exceptionally high tidal events. Photo taken near the northeast corner of the SR-1/Warner Avenue intersection, facing northeast. (06.11.09)



View of Estuarine Wetland vegetation (adjacent to Bolsa Bay) and Native Dune Mat vegetation (adjacent to roadside) within the BSA to the east of SR-1, facing south. (06.05.09)



View of Estuarine Wetland vegetation within the BSA east of SR-1, facing north (05.06.09).



View of Exotic Annual Grassland within the BSA east of SR-1, facing south (05.06.09)



Invaded Dune Mat vegetation within the BSA near the northwest corner of the SR-1/Warner Avenue intersection, facing southeast (04.15.09).



View of Disturbed vegetation within the BSA west of SR-1, facing north (05.06.09)

FIGURE 3
SHEET 1 OF 2

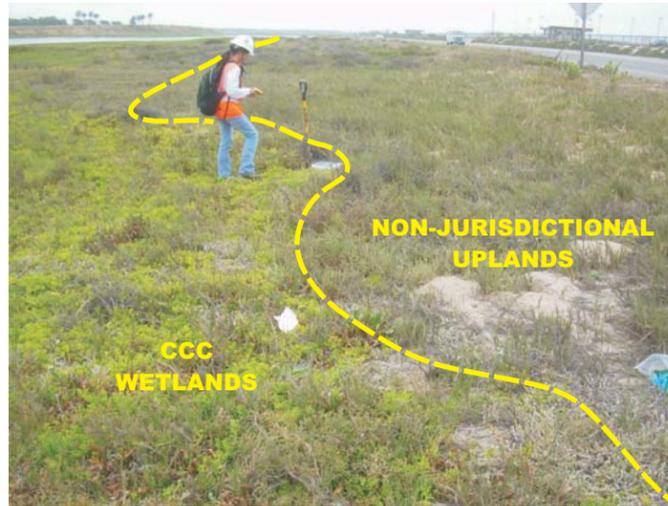
*SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project*

Representative Site Photos

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View of SP2 demonstrating transition between upland habitat and wetland area subject to jurisdiction of Corps and CCC.



View of transition between CCC wetlands and adjacent non-jurisdictional upland habitat. Sheet 3, facing south (06.11.09).



View of SP7. Matrix consists of 100% sand (06.05.09).



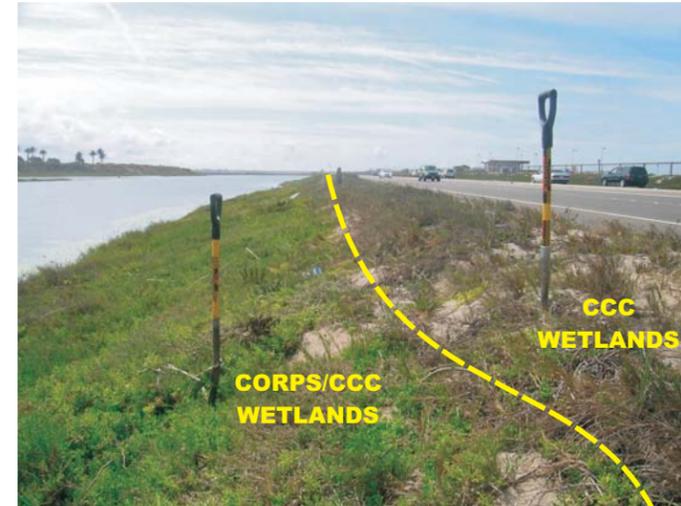
View of SP10 within estuarine wetlands subject to jurisdiction of Corps and CCC (06.04.05)



Investigation of OHWM indicators beneath mat of estuarine wetland vegetation. OHWM indicators observed include saturation, presence of a thin muck surface, shelving and prevalent aquatic invertebrate shell remains (06.05.09).



Close up view of one type of OHWM indicator present within the BSA: aquatic invertebrate shells (06.05.09).



View of sheet 5 (facing south) demonstrating the extent of wetlands subject to Corps and CCC jurisdiction and the adjacent wetlands subject to CCC jurisdiction only.



View of SP16. Area is outside the observed OHWM, and subject to jurisdiction of the CCC (06.11.09).

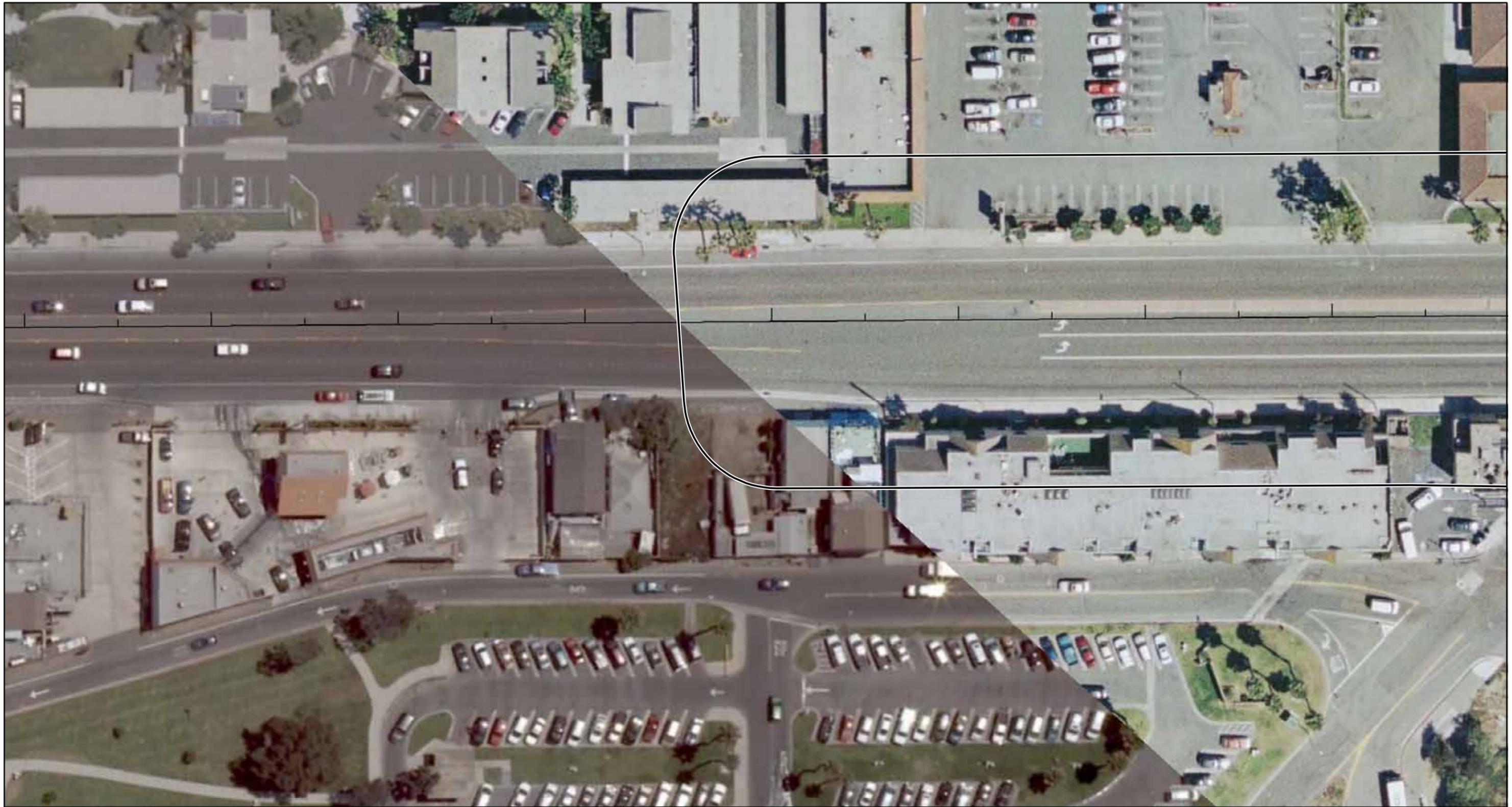
FIGURE 3
SHEET 2 OF 2

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project

Representative Site Photos

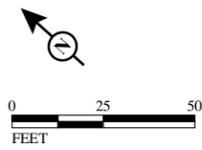
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LEGEND

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|---|---|---|-------------------------|
|  | Biological Study Area |  | Sample Pit (with ID) |
|  | CCC Wetlands only |  | Corps Section 10 Waters |
|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)
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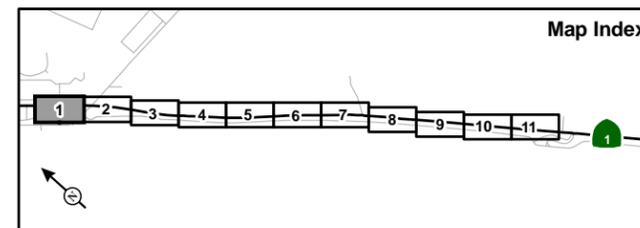
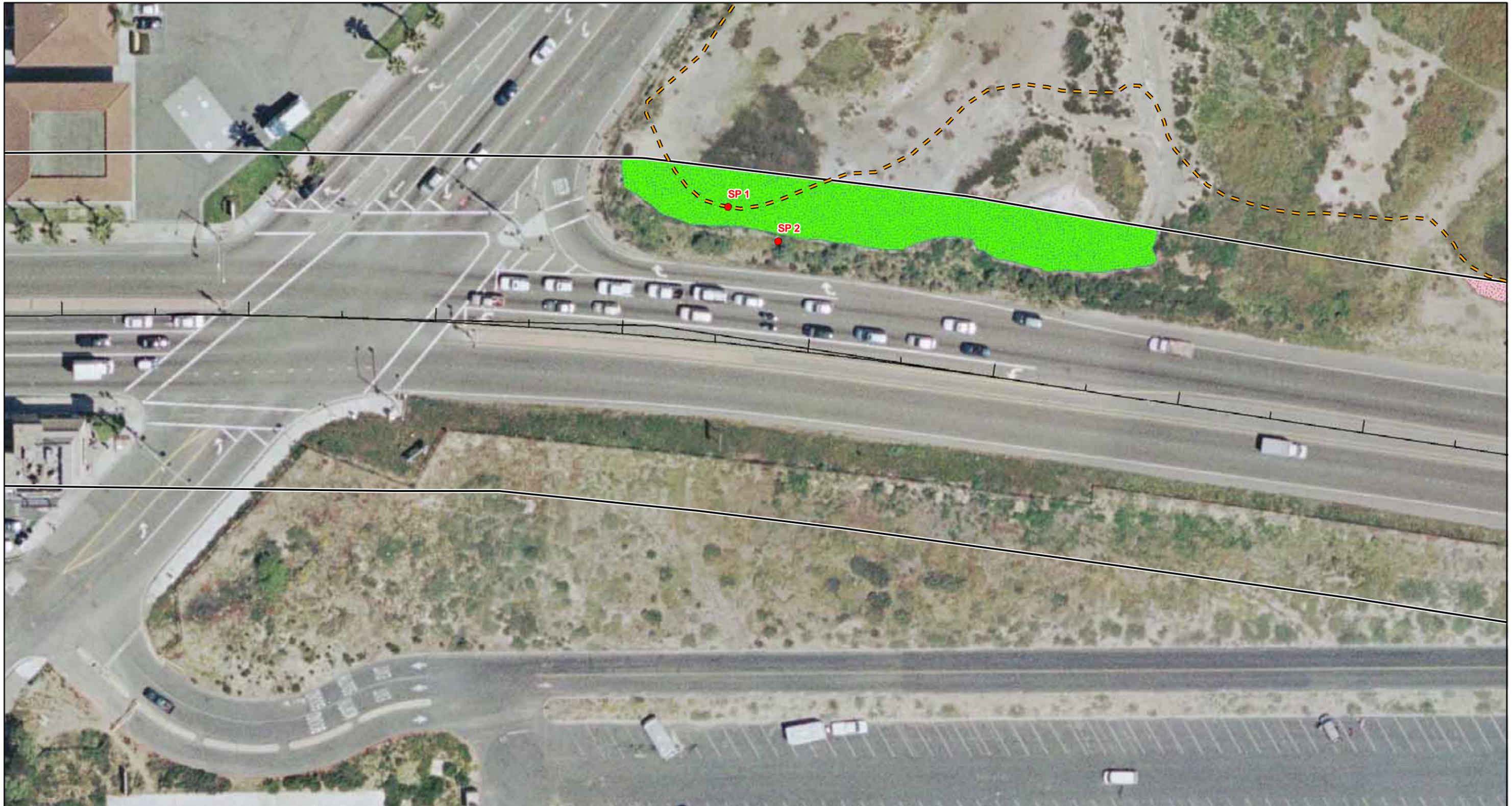


FIGURE 4
 Sheet 1 of 11

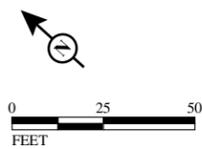
SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
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SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)
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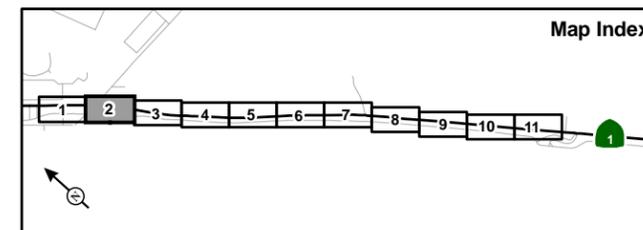


FIGURE 4
 Sheet 2 of 11

SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
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|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |

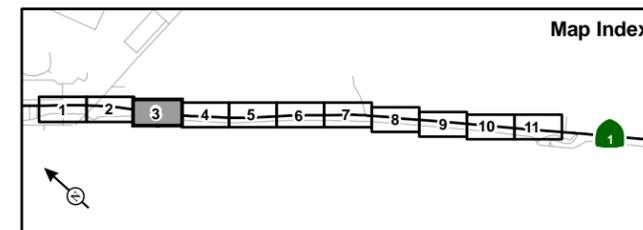
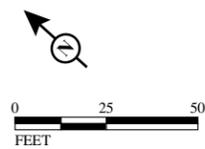


FIGURE 4
Sheet 3 of 11

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
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|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |

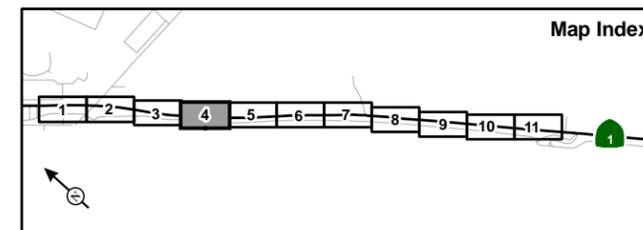


FIGURE 4
Sheet 4 of 11

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
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|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
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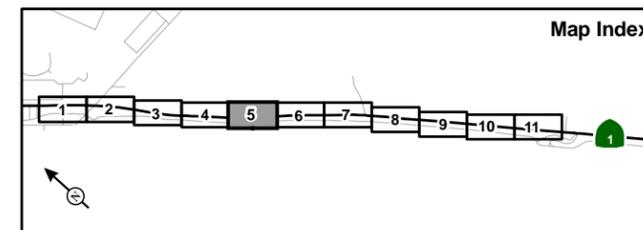
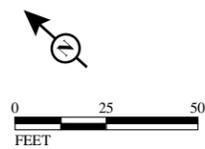
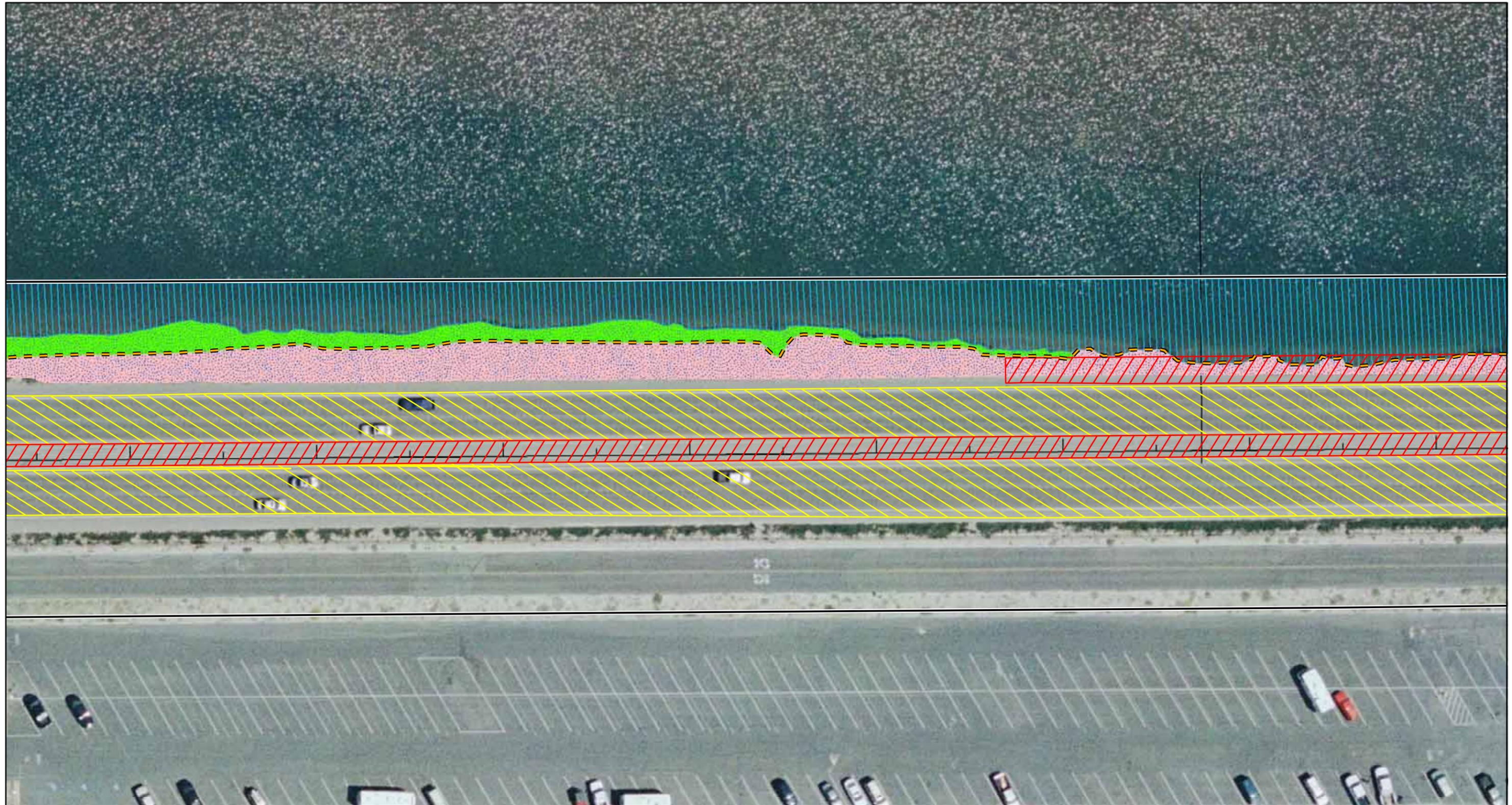


FIGURE 4
Sheet 5 of 11

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
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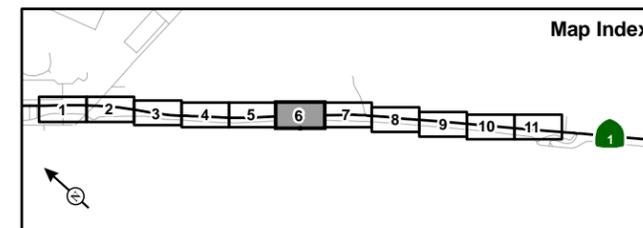


FIGURE 4
Sheet 6 of 11

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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|---|---|---|-------------------------|
|  | Biological Study Area |  | Sample Pit (with ID) |
|  | CCC Wetlands only |  | Corps Section 10 Waters |
|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |

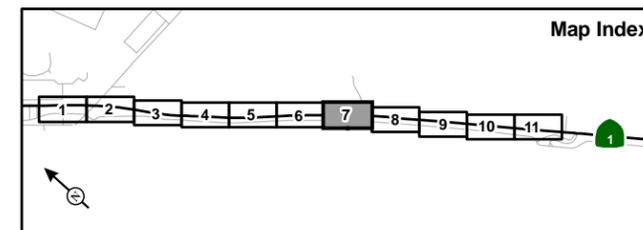
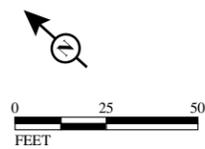
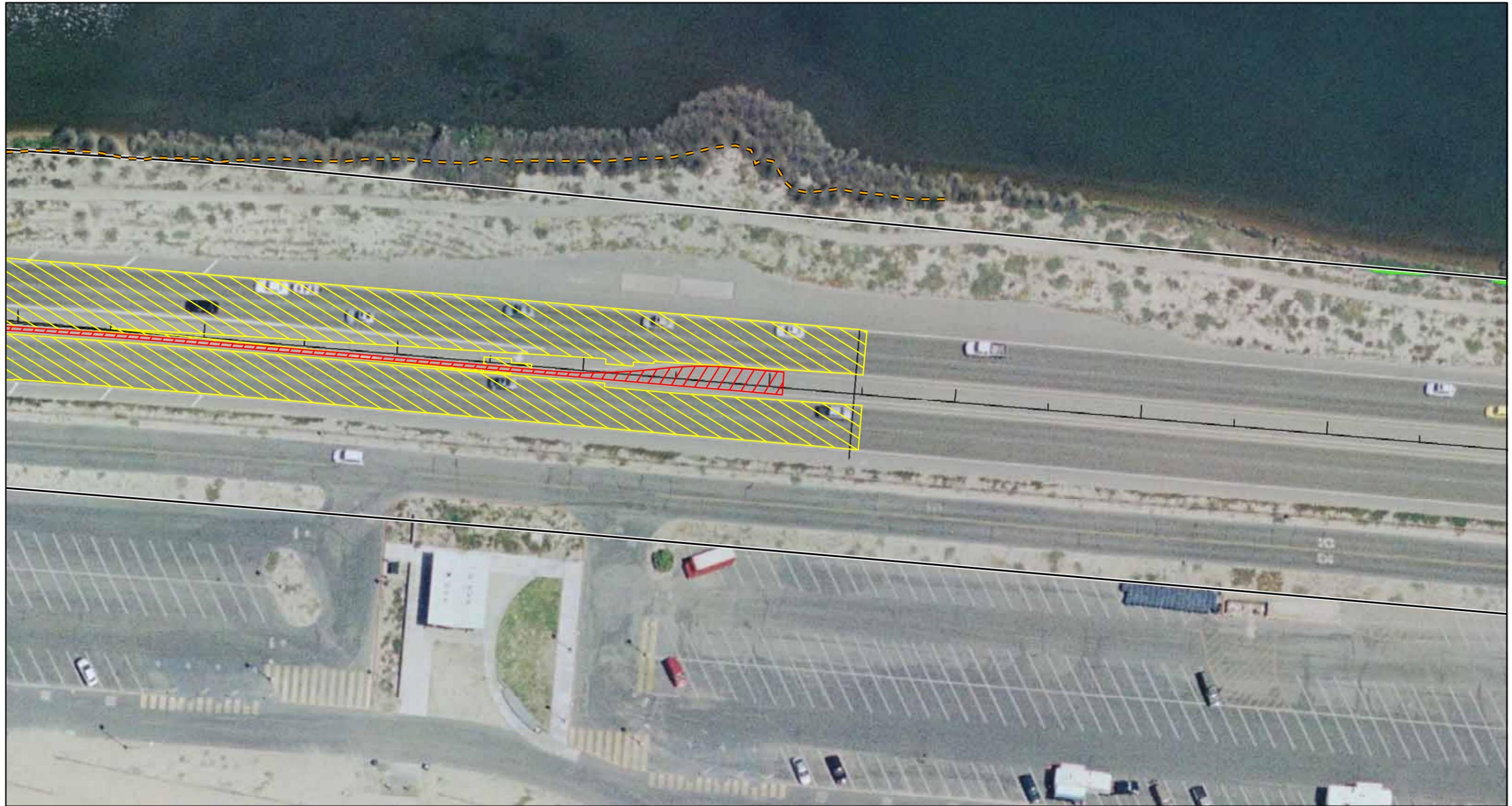


FIGURE 4
Sheet 7 of 11

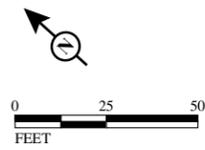
SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
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SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)
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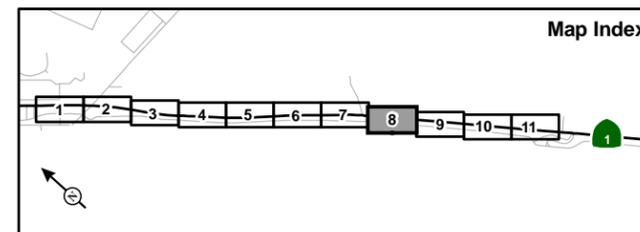
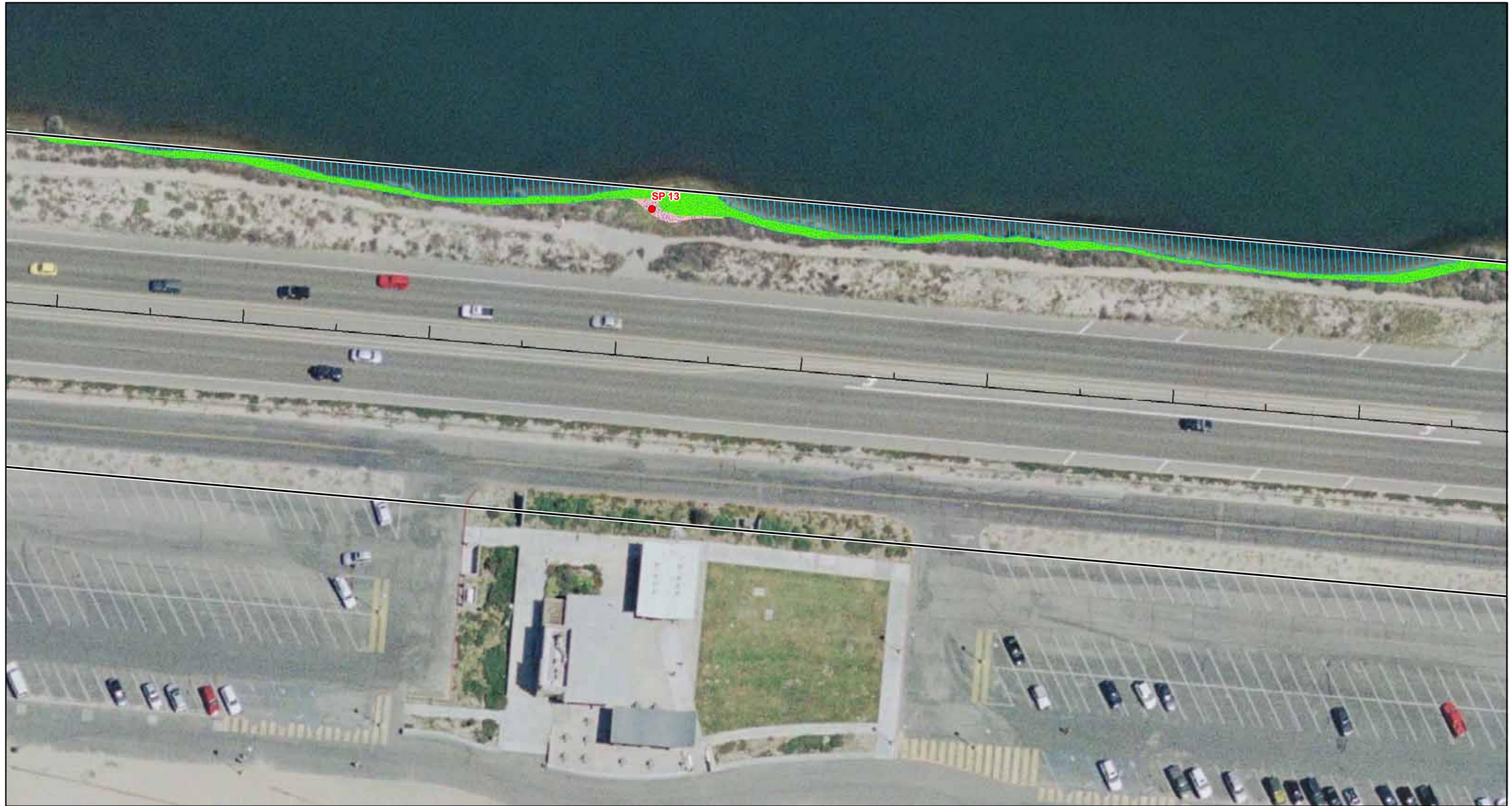


FIGURE 4
 Sheet 8 of 11

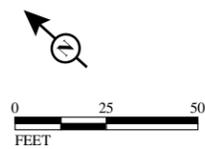
SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Jurisdictional Delineation Map

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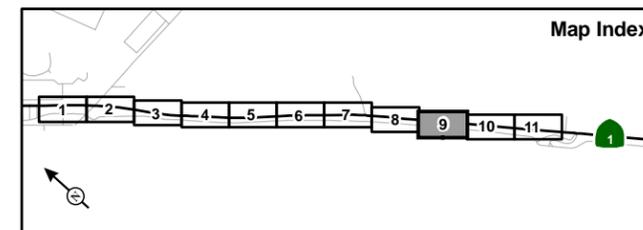
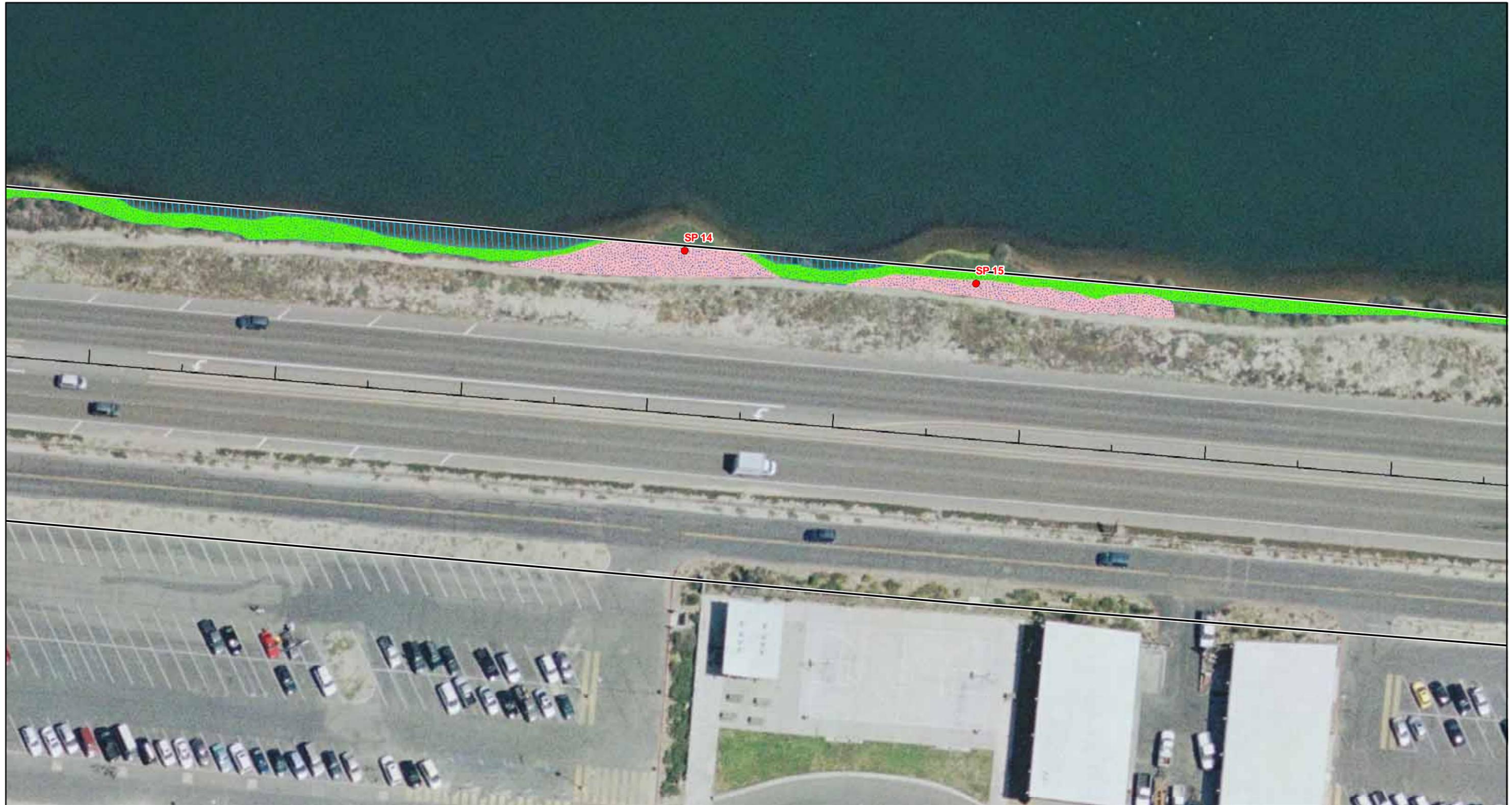


FIGURE 4
 Sheet 9 of 11

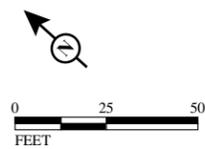
SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Jurisdictional Delineation Map

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|  | Biological Study Area |  | Sample Pit (with ID) |
|  | CCC Wetlands only |  | Corps Section 10 Waters |
|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |



SOURCE: Aerial - MSVE (2008); Aerial and CAD - Caltrans (04/09/2009)
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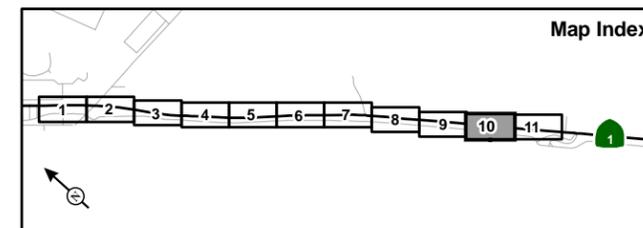
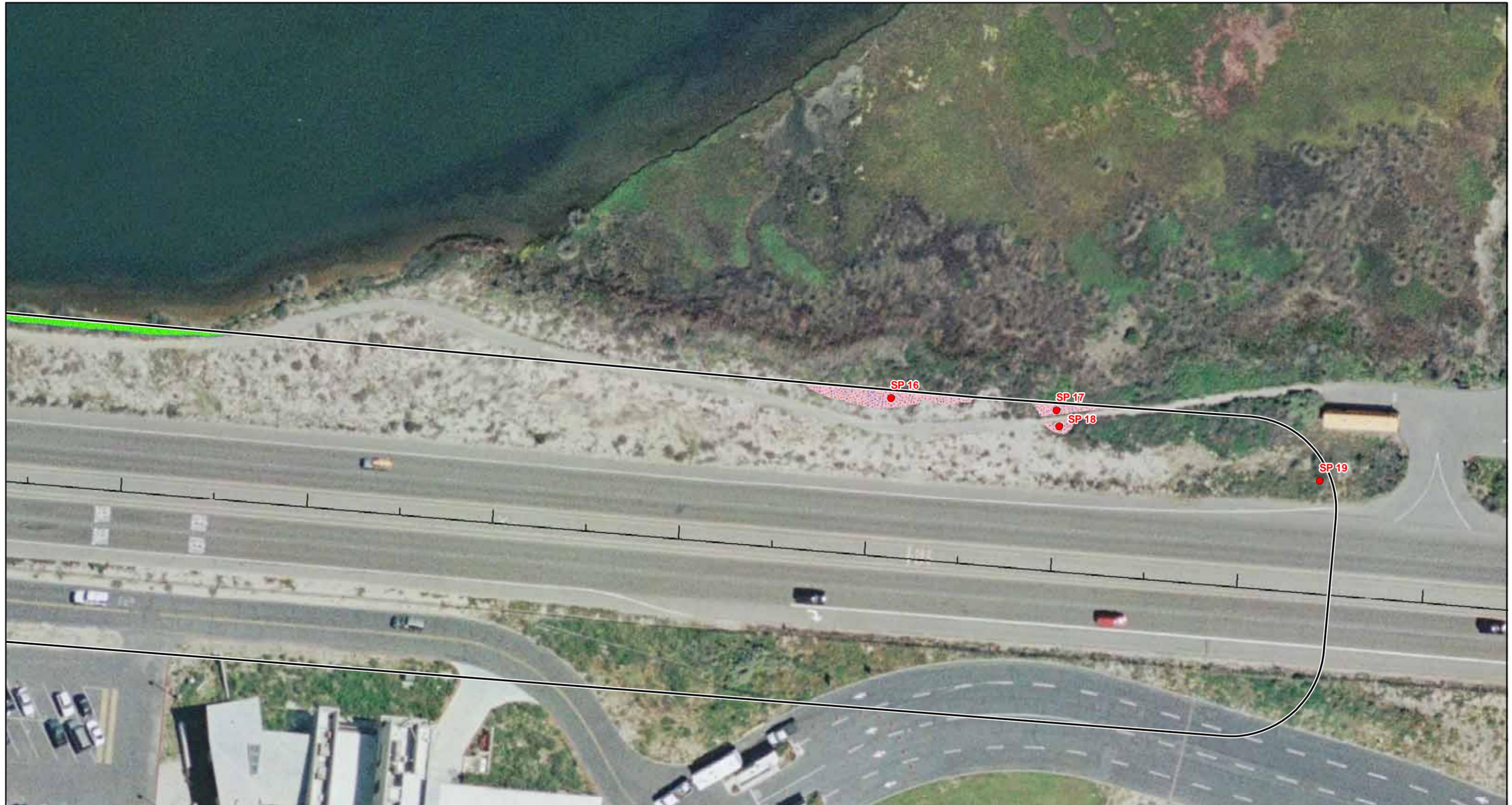


FIGURE 4
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SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Jurisdictional Delineation Map

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LEGEND

- | | | | |
|---|---|---|-------------------------|
|  | Biological Study Area |  | Sample Pit (with ID) |
|  | CCC Wetlands only |  | Corps Section 10 Waters |
|  | Corps Section 404/CCC Wetlands |  | Permanent Impact Area |
|  | Corps Section 404/CCC Deepwater Aquatic |  | Temporary Impact Area |

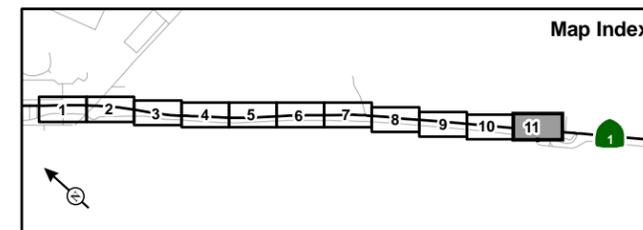
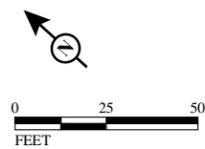


FIGURE 4
Sheet 11 of 11

SR-1 Bolsa Chica Roadway Embankment
Reconstruction Project
Jurisdictional Delineation Map

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Appendix B Data Forms: Routine Wetlands Delineation

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Innatington Beach / Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP1
 Investigator(s): A Randy K. Yee Section, Township, Range: S39, T55, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.711262 Long: 118.062394 Datum: GCS NAD 83
 Soil Map Unit Name: Beachps NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <u>PH is located on sheet 2, estuarine wetland area.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
Herb Stratum (Plot size: <u>10x10'</u>)				
1. <u>Salicornia virginica</u>	<u>20</u>	<u>X</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Batis maritima</u>	<u>30</u>	<u>X</u>	<u>OBL</u>	
3. <u>Monanthochloe littoralis</u>	<u>20</u>	<u>X</u>	<u>OBL</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
<u>70</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3"	2.5Y 4/2	70					silty clay loam	
	7.5YR 5/3	20					"	
	GLEYS 2.5/1	10					"	
3-12"	7.5YR 4/3	95	7.5YR 2.5/1	5	D	PL	"	PL = distinct, blackish in color

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

- Areas less than 20' away have ponded water
- Entire area subject to periodic ponding due to effects of the tide

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
Water Table Present? Yes No Depth (inches): 10"
Saturation Present? Yes No Depth (inches): surface
(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- see soil remarks
- Hydrology indicators clearly evident

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP2
 Investigator(s): A Roundy, K. Yee Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): NONE Slope (%): 0
 Subregion (LRR): LRRC (Medit. Calif) Lat: 33.711173 Long: 118.062379 Datum: GCSNAD83
 Soil Map Unit Name: Beachps NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: <u>Pit on sheet 2, upland area, ~10' from road shoulder</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
4. _____				Prevalence Index worksheet:	
= Total Cover				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: _____)				OBL species <u>0</u> x 1 = <u>0</u>	
1. <u>None</u>				FACW species <u>3</u> x 2 = <u>6</u>	
2. _____				FAC species <u>0</u> x 3 = <u>0</u>	
3. _____				FACU species <u>0</u> x 4 = <u>0</u>	
4. _____				UPL species <u>2</u> x 5 = <u>10</u>	
5. _____				Column Totals: <u>5</u> (A) <u>16</u> (B)	
= Total Cover				Prevalence Index = B/A = <u>3.2</u>	
Herb Stratum (Plot size: <u>5'x5'</u>)				Hydrophytic Vegetation Indicators:	
1. <u>Mesembryanthemum crystallinum</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	<input type="checkbox"/> Dominance Test is >50%	
2. <u>Distichlis spicata</u>	<u>5</u>		<u>FACW</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹	
3. <u>Frankenia salina</u>	<u>1</u>		<u>FACW+</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Rorippa diandrya</u>	<u>2</u>		<u>UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
5. <u>Polypogon monspeliensis</u>	<u>3</u>		<u>FACW+</u>		
6. _____					
7. _____					
8. _____					
= Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
1. <u>None</u>					
2. _____					
= Total Cover					
% Bare Ground in Herb Stratum: _____		% Cover of Biotic Crust: _____			

Remarks:
Based on the dominance and prevalence tests, the wetland criteria for hydrophytic vegetation is not met.

SOIL

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20r	10YR 3/2	100	—	—	—	—	sandy loam	soil dry through pit

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
No hydric soil indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chico Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/16/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP3
 Investigator(s): K. Yee, R. Steefs Section, Township, Range: S39, T55, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR): LRRC (Medit Calif) Lat: 33 709213 Long: 118.060672 Datum: GCS NAD83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: <u>Pit is located on sheet 3.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>				Prevalence Index worksheet:
2. _____				Total % Cover of: _____ Multiply by: _____
3. _____				OBL species _____ x 1 = _____
4. _____				FACW species _____ x 2 = _____
5. _____				FAC species _____ x 3 = _____
_____ = Total Cover				FACU species _____ x 4 = _____
Herb Stratum (Plot size: <u>5'x5'</u>)				
1. <u>Frankenia ssp.</u>	<u>30</u>	<u>X</u>	<u>FACW+</u>	UPL species _____ x 5 = _____
2. <u>California virginica</u>	<u>45</u>	<u>X</u>	<u>OBL</u>	Column Totals: _____ (A) _____ (B)
3. <u>Batis maritima</u>	<u>58</u>	<u>X</u>	<u>OBL</u>	Prevalence Index = B/A = _____
4. <u>Ampelopsis watsonii</u>	<u>2</u>		<u>FACW+</u>	
5. <u>Limonium californicum</u>	<u>1</u>		<u>OBL</u>	
6. <u>Distichlis spicata</u>	<u>41</u>		<u>FACW</u>	
7. _____				
8. _____				
<u>137</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				Hydrophytic Vegetation Indicators:
2. _____				<input checked="" type="checkbox"/> Dominance Test is >50%
_____ = Total Cover				<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)				
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				

Remarks:
Based on the dominance test, the wetland criteria for hydrologic vegetation is met.

SOIL

Sampling Point: SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1"	2.5Y 2.5/1		—	—	—	—	sand + organic matter	
1-20"	2.5Y 3/2	75	—	—	—	—	sand	
"	2.5Y 6/2	25	—	—	—	—	sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
 sand is damp throughout pit - yet no hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrologic indicators were observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 5/16/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP4
 Investigator(s): K. Yee, R. Steers Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.709163 Long: 118.060721 Datum: GCS NAD 83
 Soil Map Unit Name: Bpaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: <u>Pit is approx. 15' from shoulder of road</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5'x5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Distichlis spicata</u>	<u>40</u>	<u>X</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Cakile maritima</u>	<u>1</u>		<u>FACW</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Heliotropium curassavicum</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Heteranthera grandiflora</u>	<u>1</u>		<u>UPL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Atriplex semibaccata</u>	<u>2</u>		<u>FAC</u>	
6. <u>Salsola tragus</u>	<u>1</u>		<u>FACU</u>	
7. _____				
8. _____				
<u>85</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks:
Based on the Dominance Test, the wetland criteria for hydrophytic vegetation is met

SOIL

Sampling Point: SP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12"	2.5Y 3/2	75	—	—	—	—	sand	No redox: dry sand
"	2.5Y 6/2	25	—	—	—	—	"	throughout pit

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:
 No hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/16/09
 Applicant/Owner: Caltans State: _____ Sampling Point: SP5
 Investigator(s): F. Yee, R. Steers Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.708766 Long: 118.060313 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p style="font-size: 1.2em;">Pit is located in an area dominated by shoregrass</p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: _____)				Total % Cover of: _____ Multiply by: _____
1. <u>None</u>				OBL species _____ x 1 = _____
2. _____				FACW species _____ x 2 = _____
3. _____				FAC species _____ x 3 = _____
4. _____				FACU species _____ x 4 = _____
5. _____				UPL species _____ x 5 = _____
_____ = Total Cover				Column Totals: _____ (A) _____ (B)
Herb Stratum (Plot size: <u>5 x 5'</u>)				Prevalence Index = B/A = _____
1. <u>Mondanchochloe littoralis</u>	<u>80</u>	<input checked="" type="checkbox"/>		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Distichlis spicata</u>	<u>15</u>			
3. <u>Atriplex natschii</u>	<u>8</u>			
4. <u>Suaeda taxifolia</u>	<u>1</u>			
5. <u>Limonium californica</u>	<u>1</u>			
6. _____				
7. _____				
8. _____				
<u>105</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks:
 Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15"	2.5Y 3/2	75	—	—	—	—	sand	No redox damp sand
	2.5Y 6/2	25	—	—	—	—	"	throughout pit

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:
 sand is damp throughout pit, yet there were no hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chico Roadway Embankment City/County: Huntington Beach / Orange Sampling Date: 6/16/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP6
 Investigator(s): K. Yee, R. Steers Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LARC (Medit Calif) Lat: 33.708038 Long: 118.059522 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>pit is located in a populated area of <i>Suaeda taxifolia</i> (FACW+)</u></p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: _____)				Total % Cover of: _____ Multiply by: _____
1. <u>None</u>				OBL species _____ x 1 = _____
2. _____				FACW species _____ x 2 = _____
3. _____				FAC species _____ x 3 = _____
4. _____				FACU species _____ x 4 = _____
5. _____				UPL species _____ x 5 = _____
_____ = Total Cover				Column Totals: _____ (A) _____ (B)
Herb Stratum (Plot size: _____)				Prevalence Index = B/A = _____
1. <u><i>Pistichlis spicata</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Cakile maritima</i></u>	<u>4</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. <u><i>Mesabryanthemum crystallinum</i></u>	<u>1</u>		<u>UPL</u>	
4. <u><i>Abronia umbellatum</i></u>	<u>1</u>		<u>UPL</u>	
5. <u><i>Camissonia cheiranthifolia</i></u>	<u>1</u>		<u>UPL</u>	
6. <u><i>Suaeda taxifolia</i></u>	<u>2</u>		<u>FACW+</u>	
7. _____				
8. _____				
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15 ¹	2.5Y 3/2	75	—	—	—	—	sand	No redox; slightly
	2.5Y 6/2	25	—	—	—	—	"	damp sand below surface

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Vernal Pools (F9)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:
 100% sand
 sand is slightly damp below surface; sand caves in, sides unstable

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? (Includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP7
 Investigator(s): A. Windy, K. Yee, E. Deik, A. Preite Section, Township, Range: S29 T5S, R11W
 Landform (hillslope, terrace, etc.): DUNE Local relief (concave, convex, none): NONE Slope (%): 0
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.707427 Long: 118.058965 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: <u>Pit was dug approximately 10' from road shoulder</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
Herb Stratum (Plot size: <u>10' x 10'</u>)				
1. <u>Salicornia maritima</u>	<u>15</u>		<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Salsola tragus</u>	<u>1</u>		<u>FACU</u>	
3. <u>Distichlis spicata</u>	<u>55</u>	<u>X</u>	<u>FACW</u>	
4. <u>Cynodon dactylon</u>	<u>10</u>		<u>FAC</u>	
5. <u>Comissonia cheiranthifolia</u>	<u><1</u>			
6. <u>Atriplex semibaccata</u>	<u>3</u>		<u>FAC</u>	
7. <u>Malephora crocea</u>	<u>8</u>		<u>NI</u>	
8. _____				
<u>93</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP8
 Investigator(s): A. Roundy, K Yee, E. Deik, A. Aette Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): 15
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.707405 Long: 118.058762 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <u>Pit is located at the transition between Corps and Coastal Commission jurisdiction.</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
= Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10' x 5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Salicornia virginica</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Suaeda taxifolia</u>	<u>2</u>		<u>FACW+</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Limonium californicum</u>	<u>2</u>		<u>OBL</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Batis maritima</u>	<u>10</u>		<u>OBL</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Cuscuta salina</u>	<u>5</u>		<u>NI</u>	
6. <u>Frankonia salina</u>	<u>70</u>	<input checked="" type="checkbox"/>	<u>FACW+</u>	
7. _____				
8. _____				
<u>150</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. <u>None</u>				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust _____		

Remarks:
Cover = 100%

SOIL

Sampling Point: SP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-0.5"	10YR 3/1						Muck	
0.5-5"	2.5Y 4/2	100%	-				Loamy Sand	
5-24	2.5Y 4/2		-				Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
Soil is damp throughout pit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
- shells are abundant up to OHWM
- both dead and living aquatic invertebrates were observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Paddway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: CHTRANS State: CA Sampling Point: SP9
 Investigator(s): A. Roundy, K. Yee, E. Deik, A. Preite Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR): LRRC (Medit (all) Lat: 33.707378 Long: 118.058754 Datum: GCS NAD 83
 Soil Map Unit Name: Bpaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>- Approx. 2' higher in elevation than SP8.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>10' x 5'</u>)				
1. <u>Salicornia virginica</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Suaeda taxifolia</u>	<u>3</u>		<u>FACW+</u>	
3. <u>Limonium californicum</u>	<u>2</u>		<u>OBL</u>	
4. <u>Batis maritima</u>	<u>10</u>		<u>OBL</u>	
5. <u>Cuscuta salina</u>	<u>5</u>			
6. <u>Frankonia salina</u>	<u>70</u>	<input checked="" type="checkbox"/>	<u>FACW+</u>	
7. _____				
8. _____				
<u>150</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks:
Cover = 100%

SOIL

Sampling Point: SP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1"	10YR 2/1							Full of organic matter soil
1"-20"	2.5Y 4/3							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
 - No muck is present
 - No hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Pit is located 10' outside of utwm.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP10
 Investigator(s): A Roundy K. Yee, E. Delf, A. Priele Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary Bank Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medif Calif) Lat: 33.706619 Long: 118.057989 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <p style="font-size: 1.2em; margin: 0;">Pit is 6' from edge from edge of bank/aquatic area.</p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Limonium californicum</u>	<u>5</u>		<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Salicornia virginica</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	____ Prevalence Index is ≤3.0 ¹
3. <u>Frankenia salina</u>	<u>80</u>	<u>X</u>	<u>FACW+</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Batis maritima</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Distichlis spirata</u>	<u>5</u>		<u>FACW</u>	
6. _____				
7. _____				
8. _____				
<u>170</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. <u>None</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks:
 Based on the Dominance Test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"							muck	
5"-3"	2.5Y 3/3	100%					silty clay loam	Mucky undisturbed
3"-15"	2.5Y 5/3	-					sand	sandy soil

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
Hydric soils present based on observation of S1.

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 1"	
Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 11"	

(Includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP11
 Investigator(s): A Roundy, Kyle E Deik, A. Preite Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medit (all)) Lat: 33.7066002 Long: 118.058002 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: <u>pit is located right above OTHM, approx. 8' above SP10.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
= Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10' x 10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Salicornia virginica</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Frankenia salina</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	____ Prevalence Index is ≤3.0 ¹
3. <u>Batis maritima</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Distichlis spicata</u>	<u>5</u>		<u>FACW</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
<u>165</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. <u>None</u>				Yes <input checked="" type="checkbox"/> No _____
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2.5	10YR 2/1	100%	-				mucky mineral	high organic
2.5-3.5	10YR 3/2	100%	-				sand	
3.5-20+	2.5Y 4/3	50%	-				sand	
3.5-20+	2.5Y 3/3	50%	-				sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

No indicators of hydric soils were observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Thin layer of mucky mineral soil does not qualify as muck, therefore indicator C7 is not met. No wetland hydrology indicators were observed. ONWMI is approximately 2' lower along bank from the pit.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/5/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP12
 Investigator(s): A. Roundy, K. Yee, E. Deik, A. Preite Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medit Calif) Lat: 33 702772 Long: 118 053582 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <p style="font-size: 1.2em;">pt is located on sheet 7 in estuarine wetland area.</p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
= Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10'x10'</u>)				Hydrophytic Vegetation Indicators:
1. <u>Sarcocornia virginica</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Batis maritima</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	___ Prevalence Index is ≤3.0 ¹
3. <u>Cucurbita salina</u>	<u>12</u>		<u>-</u>	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Frankenia salina</u>	<u>10</u>		<u>FACW+</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Limonium californicum</u>	<u>3</u>		<u>OBL</u>	
6. _____				
7. _____				
8. _____				
<u>135</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>None</u>				
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks:
 Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	2.5Y 3/2	96	5YR 4/6	4	C	PL, M	clgy	PL is prominent
6-16"	2.5Y 4/2							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR C)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR D)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input checked="" type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Vernal Pools (F9)</p>	<p><input type="checkbox"/> 1 cm Muck (A9) (LRR C)</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
Redox vanes 3-52

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input checked="" type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1) (Nonriverine)</p> <p><input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)</p> <p><input type="checkbox"/> Drift Deposits (B3) (Nonriverine)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>		<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Biotic Crust (B12)</p> <p><input checked="" type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 6"

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Algal mat on soil surface was observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chico Roadway Embankment City/County: Huntington Beach / Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP13
 Investigator(s): A. Roundy, K. Yee Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.699906 Long: 118.050841 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>pit is approx. 10' from water and walking path.</u></p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = _____ FACW species <u>2</u> x 2 = <u>4</u> FAC species <u>1</u> x 3 = <u>3</u> FACU species <u>1</u> x 4 = <u>4</u> UPL species <u>2</u> x 5 = <u>10</u> Column Totals: <u>6</u> (A) <u>21</u> (B) Prevalence Index = B/A = <u>3.5</u>
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>10' x 10'</u>)				
1. <u>Heterotheca grandiflora</u>	<u>8</u>		<u>UPL</u>	Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Aristida spicata</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. <u>Isocoma menziesii</u>	<u>5</u>		<u>FACW+</u>	
4. <u>Ambrosia psilostachya</u>	<u>3</u>		<u>FAC</u>	
5. <u>Cakile maritima</u>	<u>3</u>		<u>FACW</u>	
6. <u>Pennisetum clandestinum</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>FACU+</u>	
7. _____				
8. _____				
_____ = Total Cover	<u>129</u>			
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				

Remarks:
Based on the dominance test and prevalence index, the wetland criteria for hydrophytic vegetation is not met.

SOIL

Sampling Point: SP13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	2.5Y 3/2	75	—	—	—	—	sand	No redox; dry sand
	2.5Y 6/2	25	—	—	—	—	"	throughout pit

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water Marks (B1) (Riverine)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Drift Deposits (B3) (Riverine)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP14
 Investigator(s): A Rundy, K. Yee Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): NONE Slope (%): _____
 Subregion (LRR): LRPC (Medit, Calif) Lat: 118.049199 Long: 33.698189 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>Pit is approx 15' from edge of water; 2' outside OHWM</u></p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>NONE</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
_____ = Total Cover				
Shrub/Straw Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>NONE</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Juncus carnosus</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Distichlis spicata</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Frankenia siliqua</u>	<u>15</u>		<u>FACW+</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Cakile maritima</u>	<u>10</u>		<u>FACW</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>NONE</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				

Remarks:
Although this location is dominated by hydrophytic vegetation, no evidence of hydric soils or wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chico Road Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: 1SP15
 Investigator(s): A Roundy, K. Yee Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary Bank Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.697842 Long: 118.048890 Datum: GCS NAD 83
 Soil Map Unit Name: Beachps NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Pit approx 4' outside OTUM.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>NONE</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____					
_____ = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. <u>NONE</u>				Total % Cover of: _____	Multiply by: _____
2. _____				OBL species _____ x 1 = _____	
3. _____				FACW species _____ x 2 = _____	
4. _____				FAC species _____ x 3 = _____	
5. _____				FACU species _____ x 4 = _____	
_____ = Total Cover					
1. <u>DISTICHLIS SPICATA</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
2. <u>JAUMEA CALNOSA</u>	<u>80</u>	<input checked="" type="checkbox"/>	<u>OBL</u>		
3. <u>HETEROTHECA GRANDIFLORA</u>	<u>1</u>		<u>UPL</u>		
4. <u>CAKILE MARITIMA</u>	<u>2</u>		<u>FACW</u>		
5. <u>SONCHUS OLERACEUS</u>	<u>5</u>		<u>UNI*</u>		
6. <u>PLANTAGO ARENIA</u>	<u>5</u>				
_____ = Total Cover					
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. <u>NONE</u>				<input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
2. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
_____ = Total Cover					
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	2.5Y 3/2	75	—				sand	No redox; dry sand throughout pit
"	2.5Y 6/2	25					"	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____ (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Road Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP16
 Investigator(s): A. Roundy, K. Yee Section, Township, Range: S29, T5S, R11W
 Landform (hillslope, terrace, etc.): Estuary bank Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.696251 Long: 118.047391 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>~12' from edge of wetlands (100% ure msh)</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. <u>None</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
= Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10' x 10'</u>)				Hydrophytic Vegetation Indicators:
1. <u>Heterotheca grandiflora</u>	<u>2</u>		<u>UPL</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Distichlis spicata</u>	<u>70</u>	<u>X</u>	<u>FACW</u>	____ Prevalence Index is ≤3.0 ¹
3. <u>Cakile maritima</u>	<u>15</u>		<u>FACW</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____				____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
<u>87</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>None</u>				
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks:
Based on the Dominance Test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20 ^A	2.5Y 3/2	75					sand	No redox, dry sand throughout pit
"	2.5Y 6/2	25					"	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators were observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators were observed

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Bolsa Chico Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: CHTRANS State: CA Sampling Point: SPI7
 Investigator(s): A. Roundy, K. Yee Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): NONE Slope (%): _____
 Subregion (LRR): LRRC (Medit Calif) Lat: 33.696060 Long: 118.047208 Datum: GCS NAD 83
 Soil Map Unit Name: BEACHS NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>Pit was chosen from adjacent cattails right outside project area</u></p>	

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>NONE</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Schinus terebinthifolius</u>	<u>15</u>		<u>NO</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
= Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Juncus roemerianus</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FACW*</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Typha sp.</u>	<u>8</u>		<u>OBL</u>	____ Prevalence Index is ≤3.0 ¹
3. <u>Ambrosia psilostachya</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Melilotus indicus</u>	<u>10</u>		<u>FAC</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Baccharis douglasii</u>	<u>8</u>		<u>OBL</u>	
6. _____				
7. _____				
8. _____				
= Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. <u>NONE</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

Remarks:
Based on the Dominance Test, the wetland criteria for hydrophytic vegetation is met.

SOIL

Sampling Point: SP17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12+	25Y 3/2	75	—				sand	No redox; dry sand
	25Y 6/2	25	—				"	throughout pit

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	--

Remarks:
Pit contains 100% dry sand throughout. Some organic material (rocks) were observed, but no hydric soil indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water Marks (B1) (Riverine)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Drift Deposits (B3) (Riverine)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:	Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____	
Water Table Present? Yes _____ No <u>Y</u> Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u> Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bolsa Chica Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 6/11/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP18
 Investigator(s): A. Roundy, K Yee Section, Township, Range: S29, T55, R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): NONE Slope (%): _____
 Subregion (LRR): LARC (Medit Calif) Lat: 33.696041 Long: 118.047225 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p align="center"><u>It was chosen due to Juncus acutus adjacent to walking path.</u></p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____					
_____ = Total Cover				Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: _____)				Total % Cover of:	Multiply by:
1. <u>None</u>				OBL species _____ x 1 = _____	
2. _____				FACW species _____ x 2 = _____	
3. _____				FAC species _____ x 3 = _____	
4. _____				FACU species _____ x 4 = _____	
5. _____				UPL species _____ x 5 = _____	
_____ = Total Cover				Column Totals: _____ (A) _____ (B)	
Herb Stratum (Plot size: <u>10'x10'</u>)				Prevalence Index = B/A = _____	
1. <u>Juncus acutus</u>	<u>15</u>		<u>FACW*</u>	Hydrophytic Vegetation Indicators:	
2. <u>Ambrosia psilostachya</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<input checked="" type="checkbox"/> Dominance Test is >50%	
3. <u>Juncus acutus</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	_____ Prevalence Index is ≤3.0 ¹	
4. <u>Cakile maritima</u>	<u>1</u>		<u>FACW</u>	_____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. <u>Melilotus indicus</u>	<u>1</u>		<u>FAC</u>	_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
6. <u>Apium graveolens</u>	<u>1</u>		<u>FACW*</u>		
7. _____					
8. _____					
<u>88</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
1. <u>None</u>					
2. _____					
_____ = Total Cover					
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____			

Remarks:
Based on the dominance test, the wetland criteria for hydrophytic vegetation is met

SOIL

Sampling Point: SP18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	2.5Y 3/2	75					sand	No redox; dry sand throughout pit
"	2.5Y 6/2	25					"	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
---	--	---

Field Observations:

Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____	
Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Boysa Chico Roadway Embankment City/County: Huntington Beach/Orange Sampling Date: 4/2/09
 Applicant/Owner: Caltrans State: CA Sampling Point: SP 19
 Investigator(s): A. Roundy, K. Yee Section, Township, Range: S29-T5S-R11W
 Landform (hillslope, terrace, etc.): ESTUARY BANK Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR): LRRC (Medit calif) Lat: 33.695706 Long: 118.046983 Datum: GCS NAD 83
 Soil Map Unit Name: Beaches NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Pit is located within an area dominated by mulefat near parking area for buses.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10'x10'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Baccharis salicifolia</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
<u>20</u> = Total Cover				UPL species _____ x 5 = _____
				Column Totals: _____ (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Heterotheca grandiflora</u>	<u>10</u>		<u>UPL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Isocoma mespilifolia</u>	<u>3</u>		<u>FACW*</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Bromus sp.</u>	<u>3</u>		<u>-</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Crassula cohnata</u>	<u>45</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <u>Baccharis pilularis</u>	<u>5</u>		<u>UPL</u>	
6. <u>Melilotus indicus</u>	<u>5</u>		<u>FAC</u>	
7. <u>Carpobrotus edulis</u>	<u>8</u>		<u>UPL</u>	
8. _____				
= Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. <u>None</u>				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
= Total Cover				
% Bare Ground in Herb Stratum <u>40</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 Although this location is dominated by hydrophytic vegetation, no evidence of hydric soils or wetland hydrology were observed.

SOIL

Sampling Point: SP19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	2.5Y 6/3	100	—	—	—	—	sand	Rocky layer at 20"

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: <u>Rock</u> Depth (inches): <u>20</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Remarks:
 Rocky layer at 20 in, but no sign of anaerobic soil. Area is well drained.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No hydrology indicators were observed

Appendix I USFWS Species List

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-OR-09B0048-09SL0192

DEC 18 2008

Arianne Preite
District Biologist
California Department of Transportation
District 12
3337 Michelson Drive, Suite CN380
Irvine, California, 92612-0699

Subject: Request for a List of Proposed, Threatened, or Endangered Species Potentially Occurring in the vicinity of the roadway embankment repair project between Golden West Street and Warner Avenue in the City of Huntington Beach in Orange County, California

Dear Ms. Preite:

This letter is in response to your request, received by our office on November 26, 2008, for information on federally endangered, threatened, proposed, and candidate species that may occur in the vicinity of the roadway embankment repair project between Golden West Street and Warner Avenue in the City of Huntington Beach in Orange County. To assist you in evaluating the potential occurrence of federally listed endangered, threatened, proposed, and candidate species that may occur in the vicinity of the proposed action, we are providing the enclosed list.

Because we do not have site-specific information for the proposed project, we recommend that you seek assistance from a biologist familiar with the habitat conditions and associated species in and around the project site to assess the actual potential for direct, indirect, and cumulative impacts likely to result from the proposed activity. We also suggest that you contact the California Department of Fish and Game regarding State-listed and sensitive species that may occur within the project area. Please note that State-listed species are protected under the provisions of the California Endangered Species Act.

As a reminder, if a proposed project is authorized, funded, or carried out by a Federal agency and may affect a federally listed species, then section 7 consultation pursuant to the Endangered Species Act of 1973 (Act), as amended, is required. If a proposed project does not involve a Federal agency, but is likely to result in the take of a listed animal species, then the project proponent should apply for an incidental take permit, pursuant to section 10 of the Act.

TAKE PRIDE
IN AMERICA

Arianne Preite (FWS-OR-09B0048-09SL0192)

2

Should you have any questions regarding the species listed or your responsibilities under the Act, please contact Sally Brown of this office at (760) 431-9440, extension 278.

Sincerely,



Karen A. Goebel
Karen A. Goebel
Assistant Field Supervisor

Enclosure

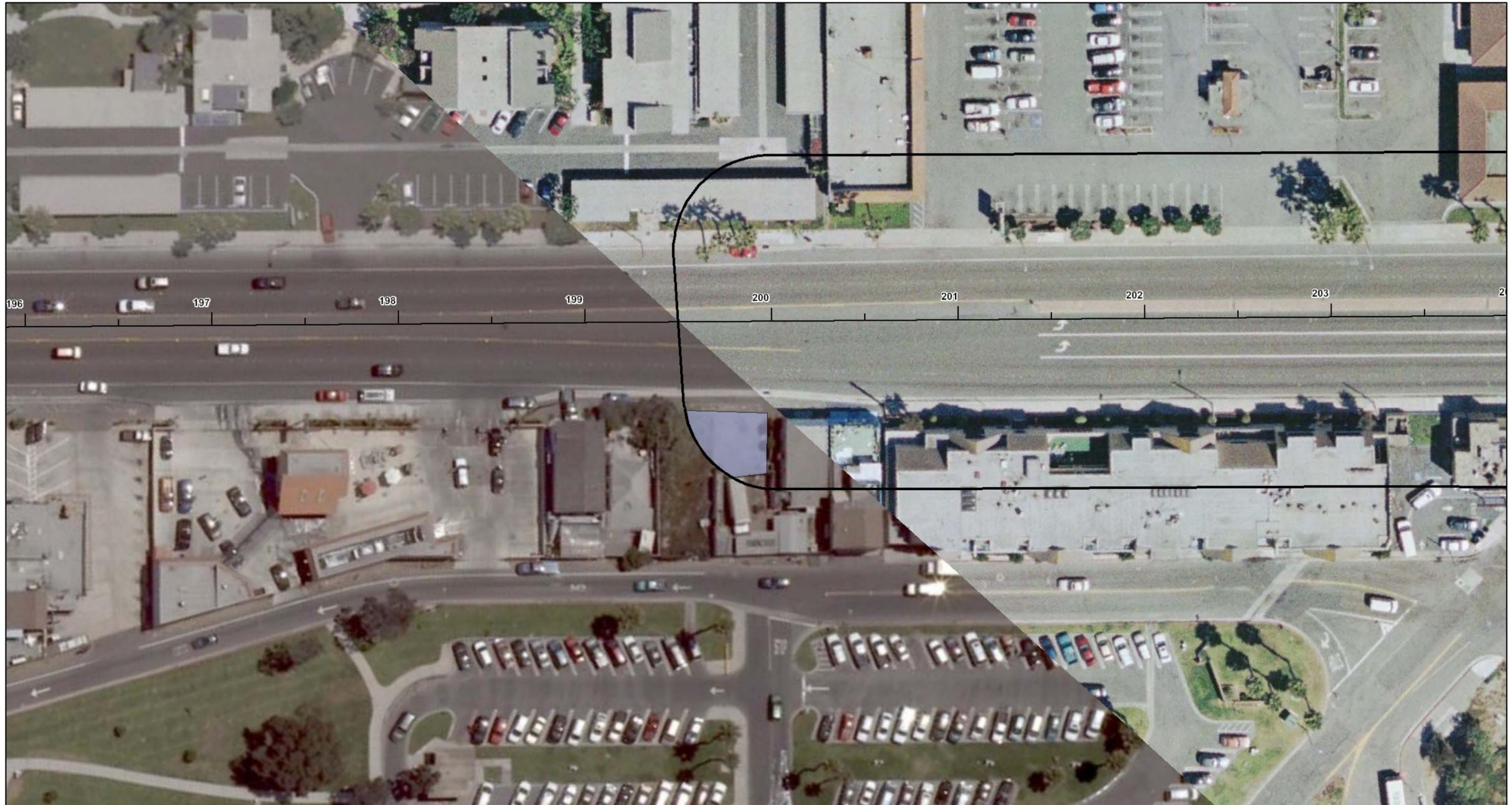
**Federally Endangered, Threatened, Proposed, and Candidate Species and Critical Habitat
that May Occur in the Vicinity of the roadway embankment repair project between Golden
West Street and Warner Avenue in the City of Huntington Beach in Orange County,
California
December 18, 2008**

Common Name	Scientific Name	Federal Status	Critical Habitat in Vicinity
<u>Plants</u>			
salt marsh bird's beak	<i>Cordylanthus maritimus</i> <i>subsp. maritimus</i>	endangered	N/A
Ventura marsh milk-vetch	<i>Astragalus pycnostachyus</i> <i>var. lanosissimus</i>	endangered	none
Brand's phacelia	<i>Phacelia stellaris</i>	candidate	N/A
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	endangered	N/A
<u>Birds</u>			
western snowy plover	<i>Charadrius alexandrinus</i> <i>nivosus</i>	threatened	present
brown pelican	<i>Pelecanus occidentalis</i>	endangered	N/A
light-footed clapper rail	<i>Rallus longirostris levipes</i>	endangered	N/A
California least tern	<i>Sternula antillarum</i> <i>browni</i>	endangered	N/A

* N/A = Not Applicable

Appendix J Vegetation Communities Figures

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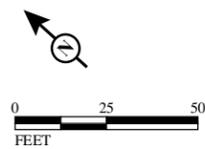
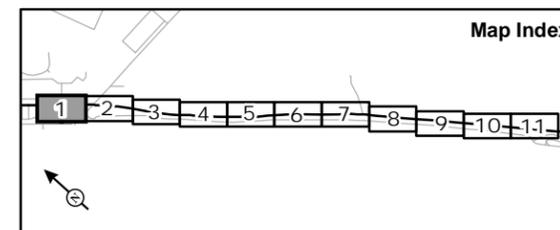


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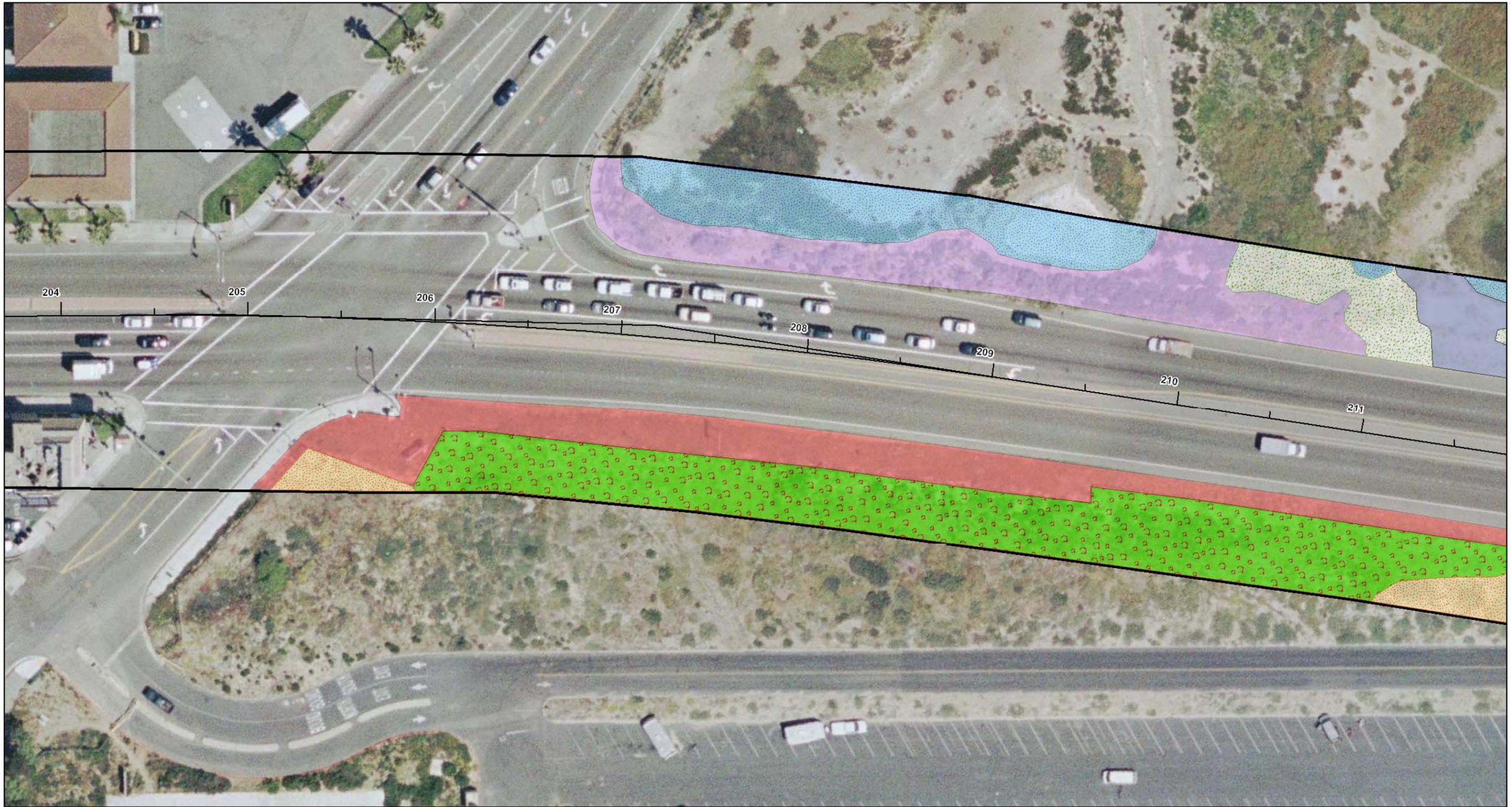
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-  Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B (0.59 ac)
-  Locations of Estuary Seabligh (*Sueada esteroa* var. *denudata*) CNPS 1B (0.67 ac)

Vegetation Communities

- | | |
|--|--|
|  Bare Ground (0.44 ac) |  Estuarine Wetland/Open Water (1.95 ac/1.34 ac) |
|  Coastal Scrub (0.54 ac) |  Exotic Annual Grassland (0.35 ac) |
|  Disturbed (0.44 ac) |  Invaded Dune Mat (0.75 ac) |
|  Dune Scrub (0.61 ac) |  Invaded, Ice Plant Dune Mat (1.56 ac) |
| |  Native Dune Mat (5.28 ac) |



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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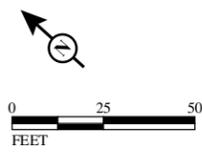
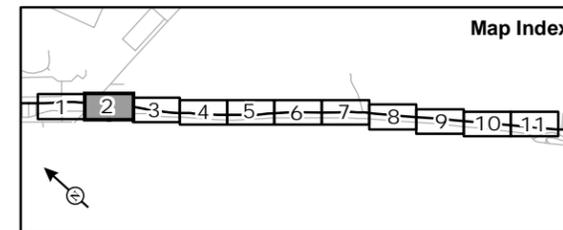


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SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Vegetation Communities Map

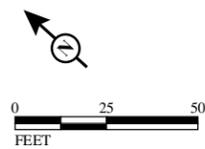
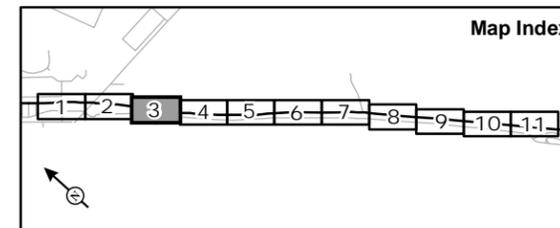


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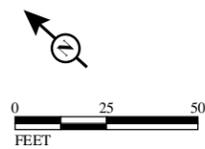
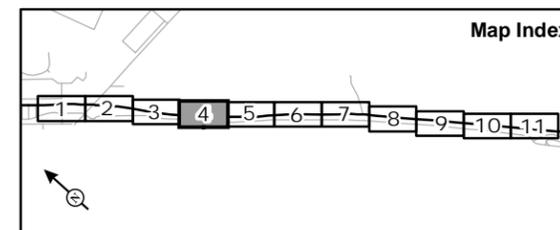


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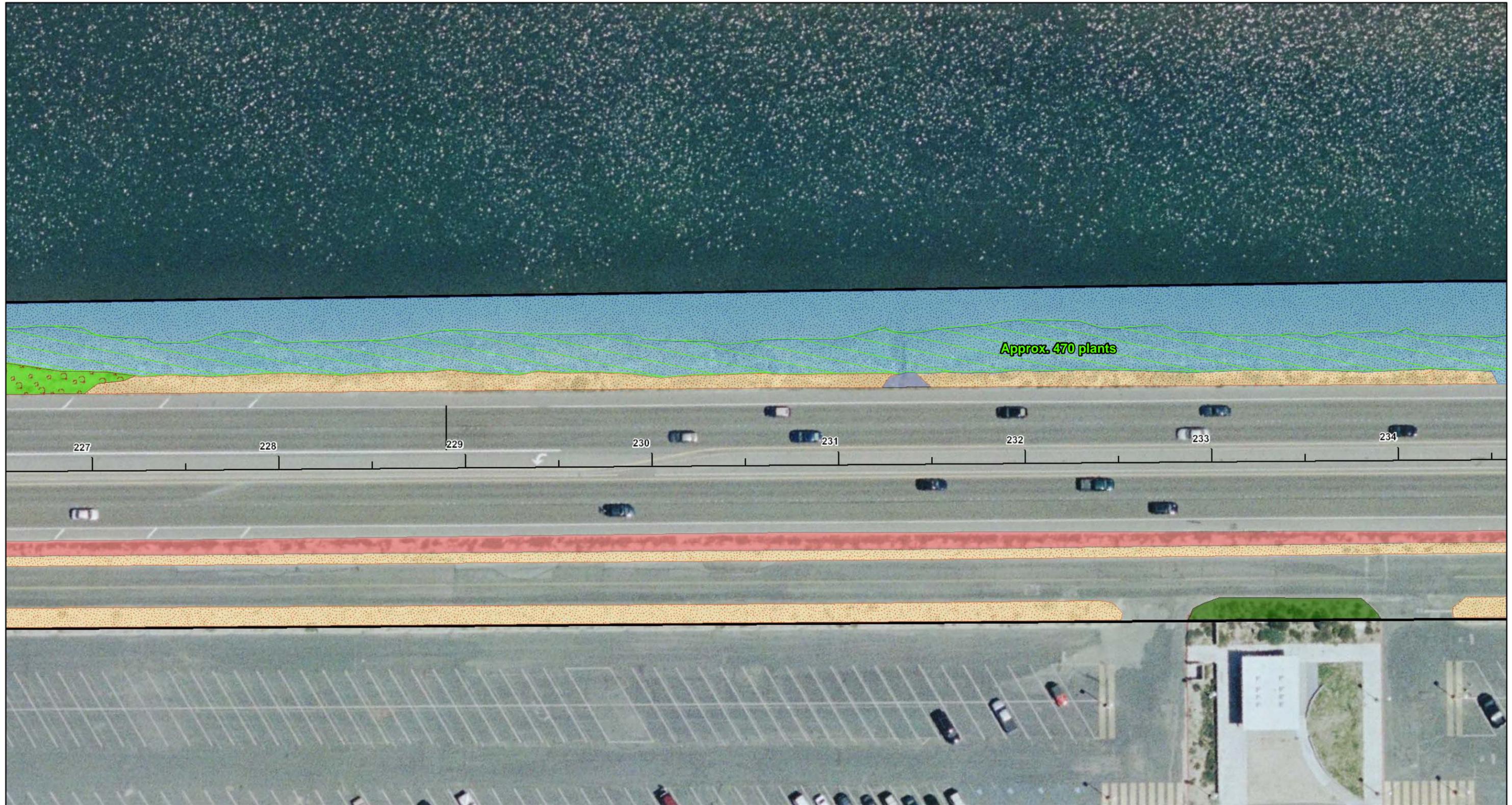
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 Reconstruction Project
 Vegetation Communities Map

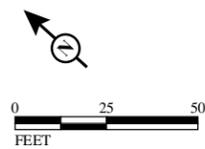
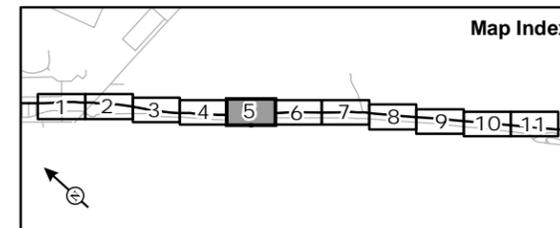


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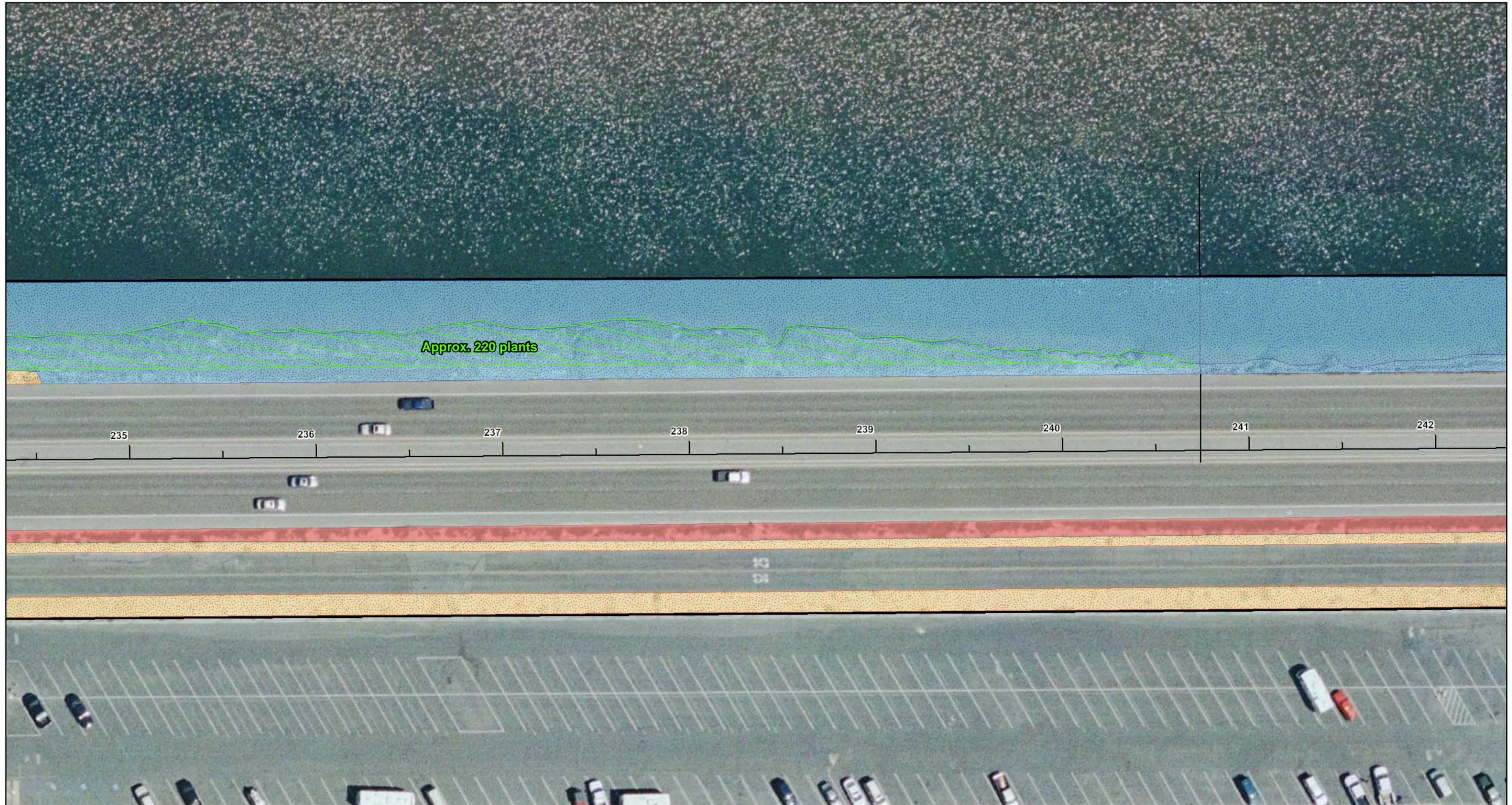
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Approx. 220 plants

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Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B (0.59 ac)

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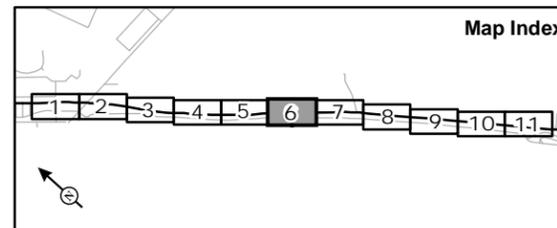
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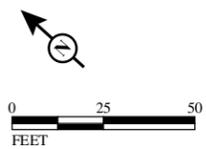
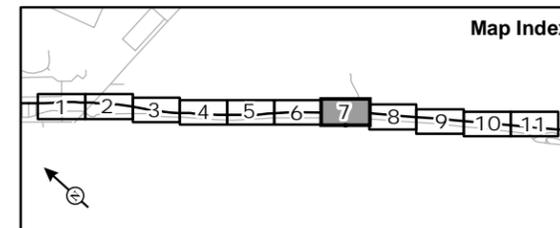


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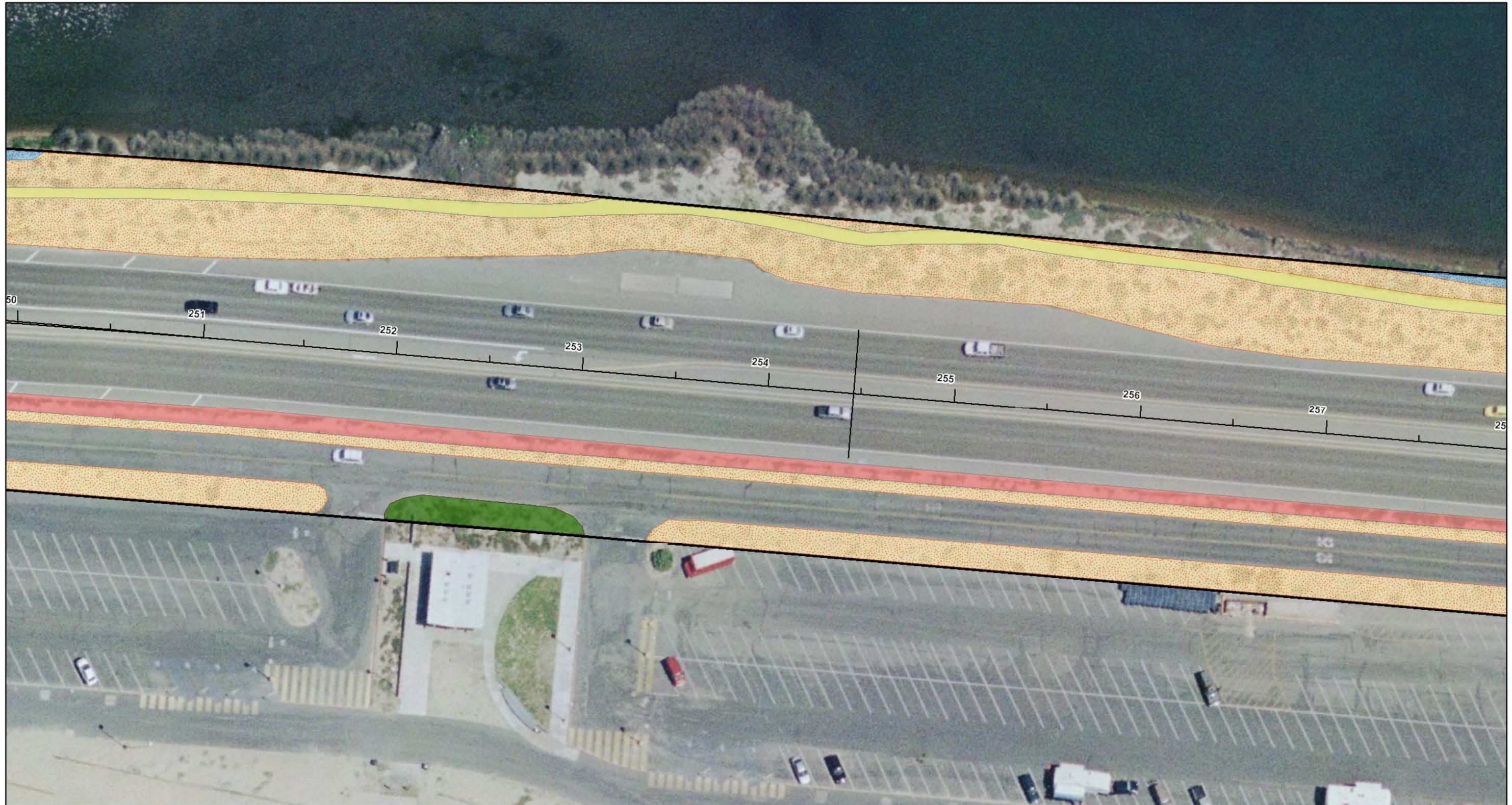
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Communities Map

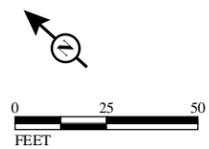
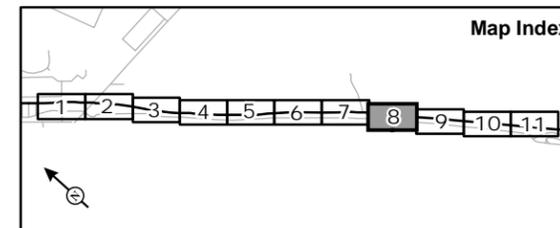


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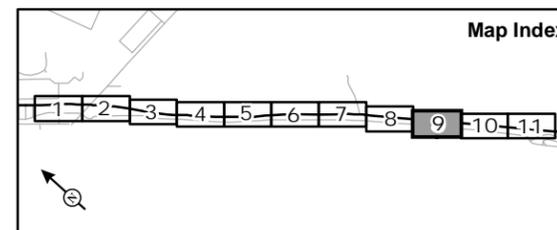


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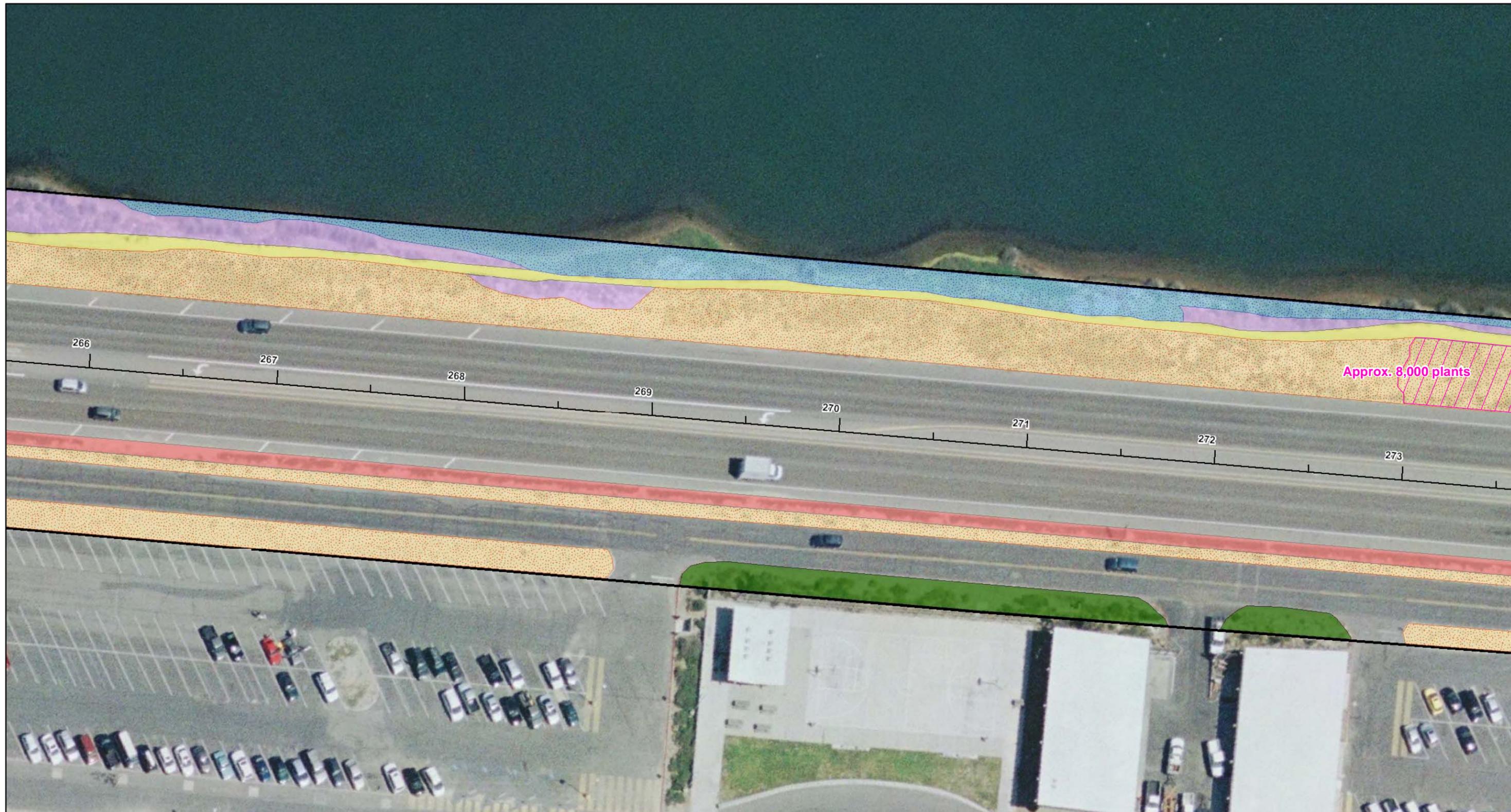
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Communities Map



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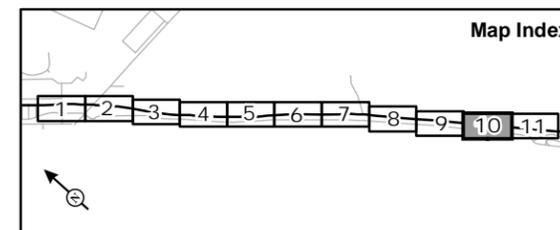
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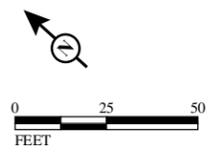
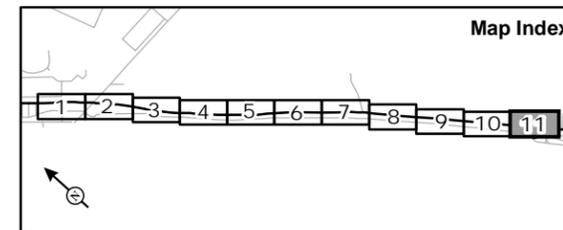


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Appendix K Selected Photographs of the Biological Study Area

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View of planted Coastal Scrub vegetation within the BSA along the Bolsa State Beach frontage road west of SR-1, facing south (5.6.09).



View of trail east of SR-1, facing south. Visible vegetation types include Estuarine Wetland (adjacent to Bolsa Bay), Dune Scrub (left of trail) and Native Dune Mat (right of trail) (5.6.09).



View of upper salt marsh zone in Estuarine Wetland. Vegetation becomes inundated periodically during heavy rainfall events or during exceptionally high tidal events. Photo taken near the northeast corner of the SR-1/Warner Avenue intersection, facing northeast. (6.11.09)



View of Estuarine Wetland vegetation (adjacent to Bolsa Bay) and Native Dune Mat vegetation (adjacent to roadside) within the BSA to the east of SR-1, facing south. (6.5.09)



View of Estuarine Wetland vegetation within the BSA east of SR-1, facing north (5.6.09).



View of Exotic Annual Grassland within the BSA east of SR-1, facing south (5.6.09)



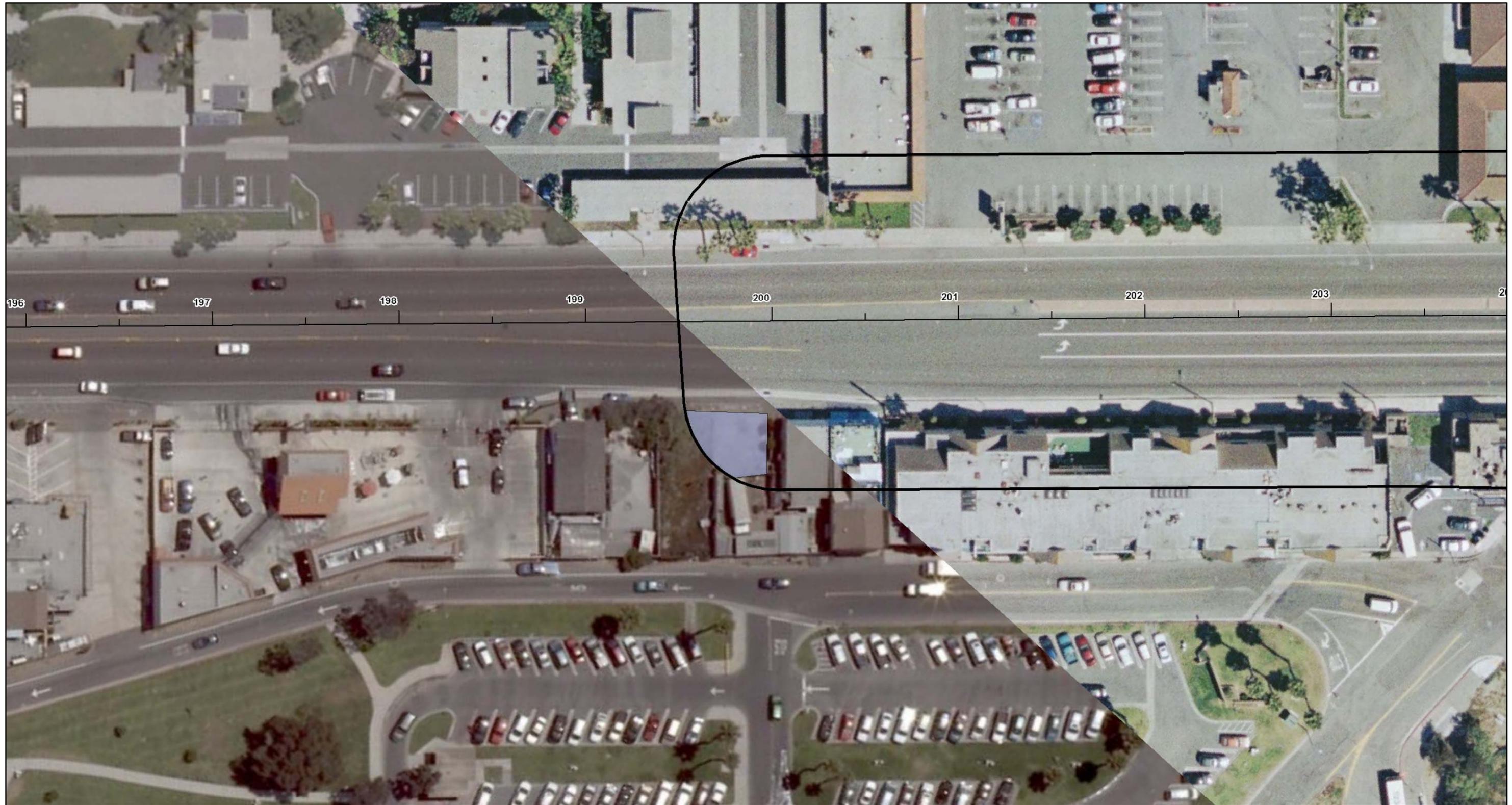
Invaded Dune Mat vegetation within the BSA near the northwest corner of the SR-1/Warner Avenue intersection, facing southeast (4.15.09).



View of Disturbed vegetation within the BSA west of SR-1, facing north (5.6.09)

Appendix L Vegetation Impacts Figures

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LEGEND

Biological Study Area

Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B (0.59 ac)

Locations of Estuary Seablight (*Sueada esteroa* var. *denudata*) CNPS 1B (0.67 ac)

Permanent Impact Areas

Temporary Impact Areas

Vegetation Communities

Bare Ground (0.44 ac)

Coastal Scrub (0.54 ac)

Disturbed (0.44 ac)

Dune Scrub (0.61 ac)

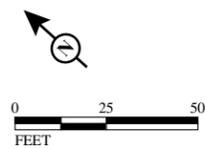
Estuarine Wetland/Open Water (1.95 ac/1.34 ac)

Exotic Annual Grassland (0.35 ac)

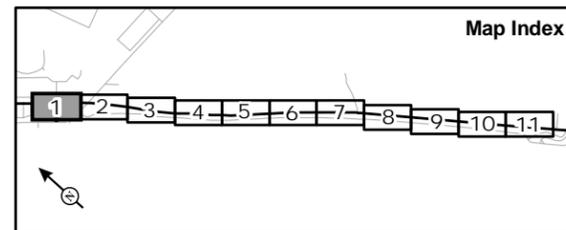
Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

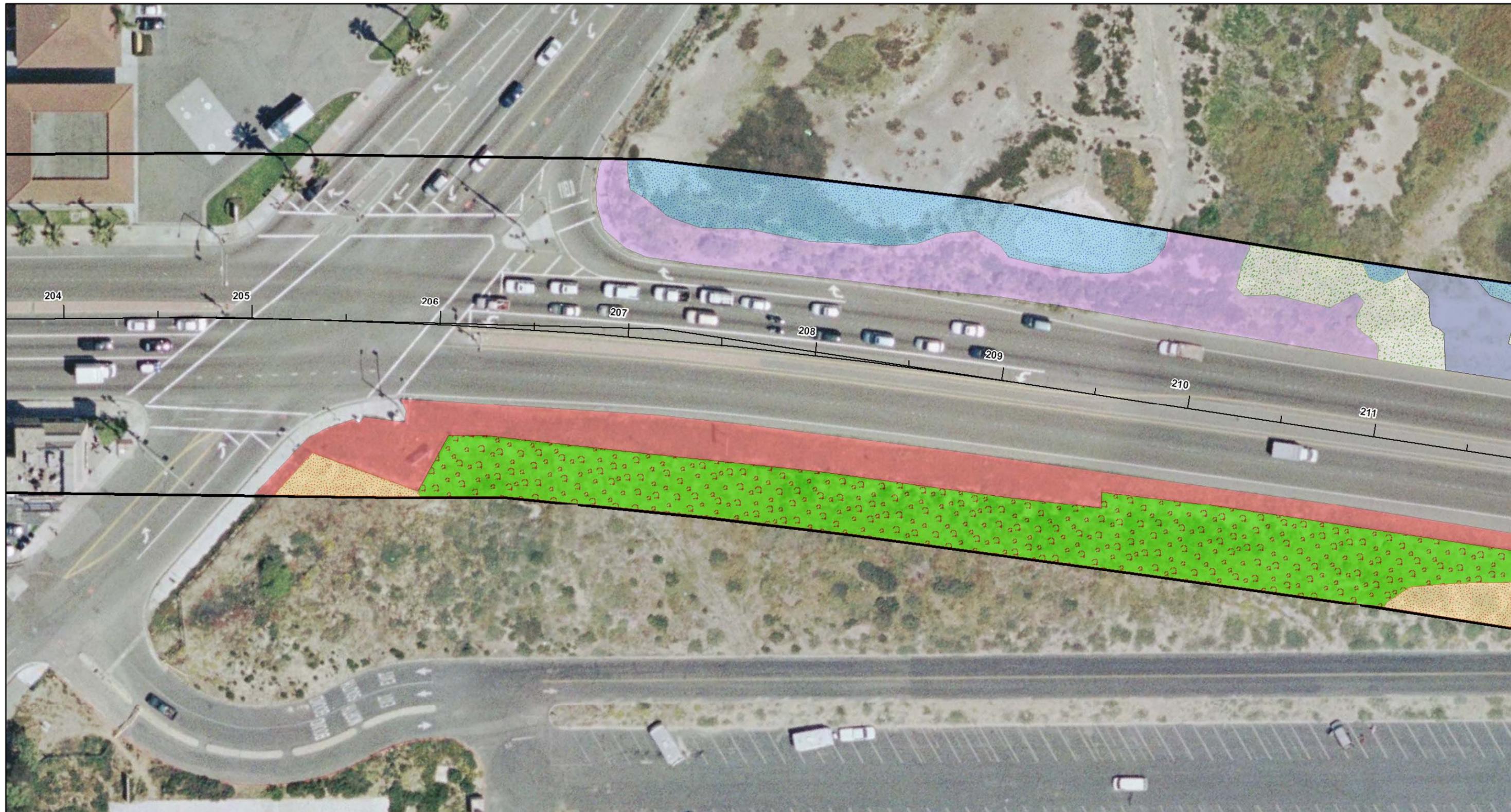
Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Vegetation Community Impacts



LEGEND

Biological Study Area

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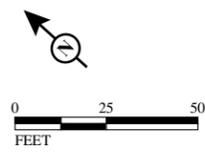
Estuarine Wetland/Open Water (1.95 ac/1.34 ac)

Exotic Annual Grassland (0.35 ac)

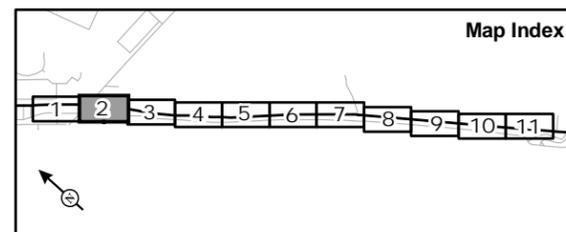
Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Community Impacts



LEGEND

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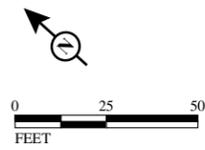
Estuarine Wetland/Open Water (1.95 ac/1.34 ac)

Exotic Annual Grassland (0.35 ac)

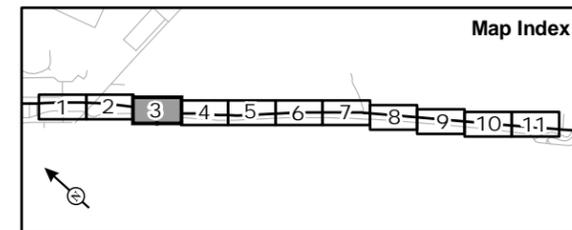
Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Community Impacts



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Vegetation Communities

Bare Ground (0.44 ac)

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Disturbed (0.44 ac)

Dune Scrub (0.61 ac)

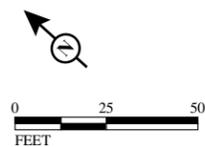
Estuarine Wetland/Open Water (1.95 ac/1.34 ac)

Exotic Annual Grassland (0.35 ac)

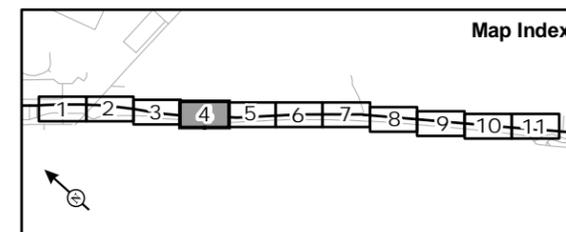
Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

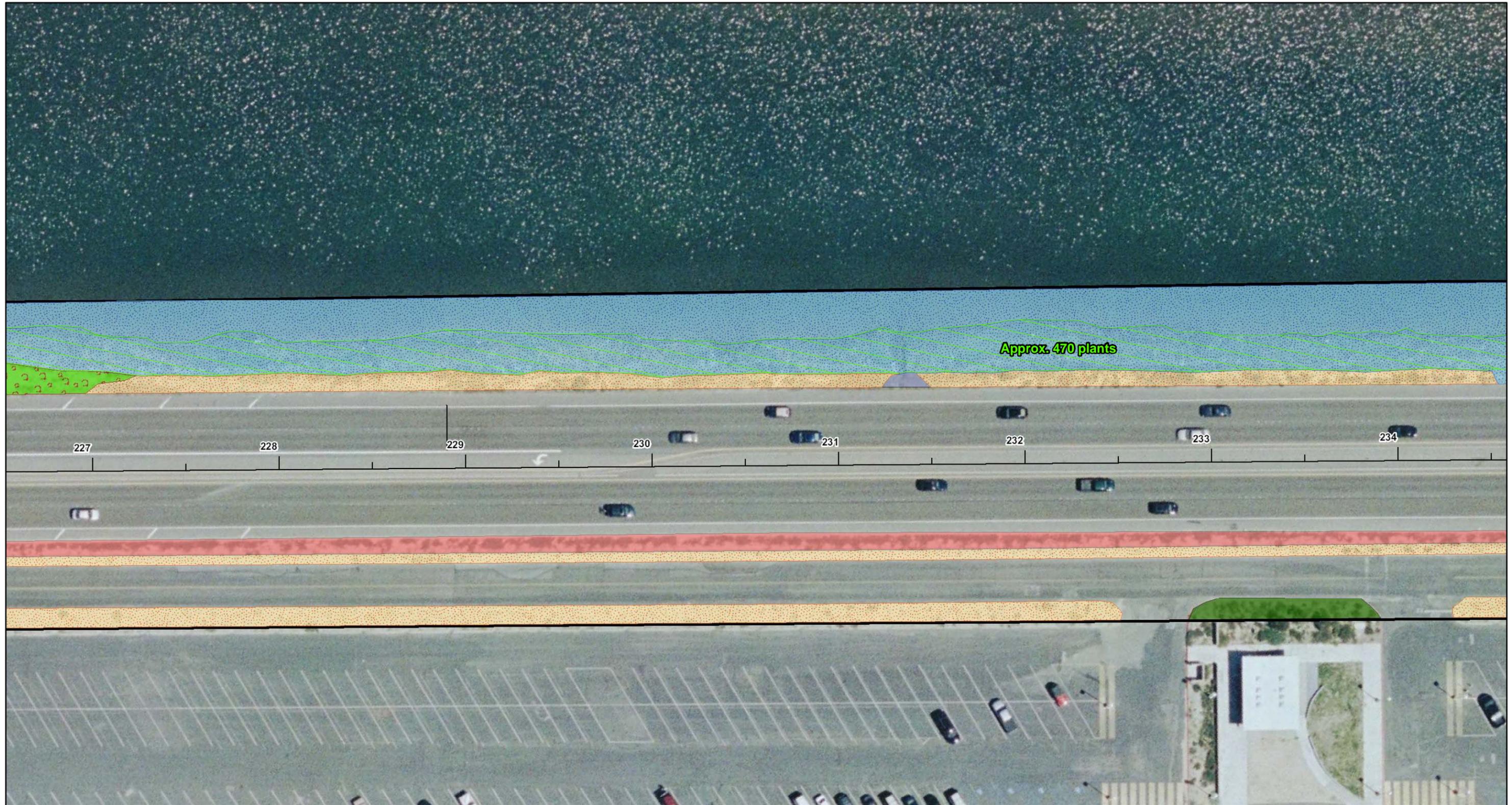
Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Community Impacts



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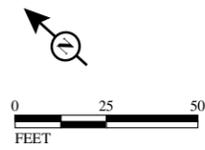
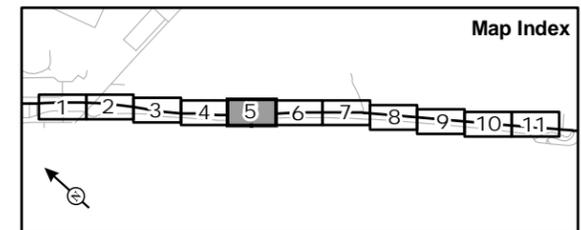
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Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

Native Dune Mat (5.28 ac)



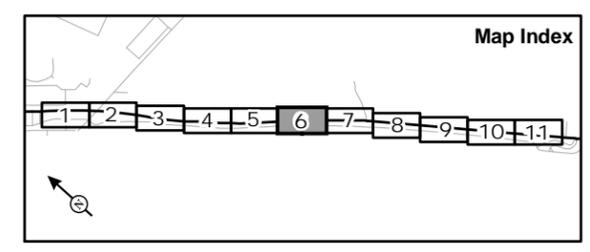
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
Vegetation Community Impacts



LEGEND
 North
 0 25 50 FEET
 Biological Study Area
 Locations of Coast woolly heads (*Nemacaulis denudata*) CNPS 1B (0.59 ac)
 Locations of Estuary Seabligh (*Sueada esteroa* var. *denudata*) CNPS 1B (0.67 ac)

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 Exotic Annual Grassland (0.35 ac)
 Invaded Dune Mat (0.75 ac)
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 Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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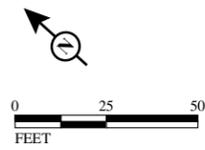
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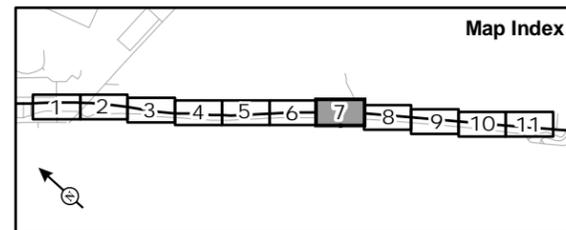
Invaded Dune Mat (0.75 ac)

Invaded, Ice Plant Dune Mat (1.56 ac)

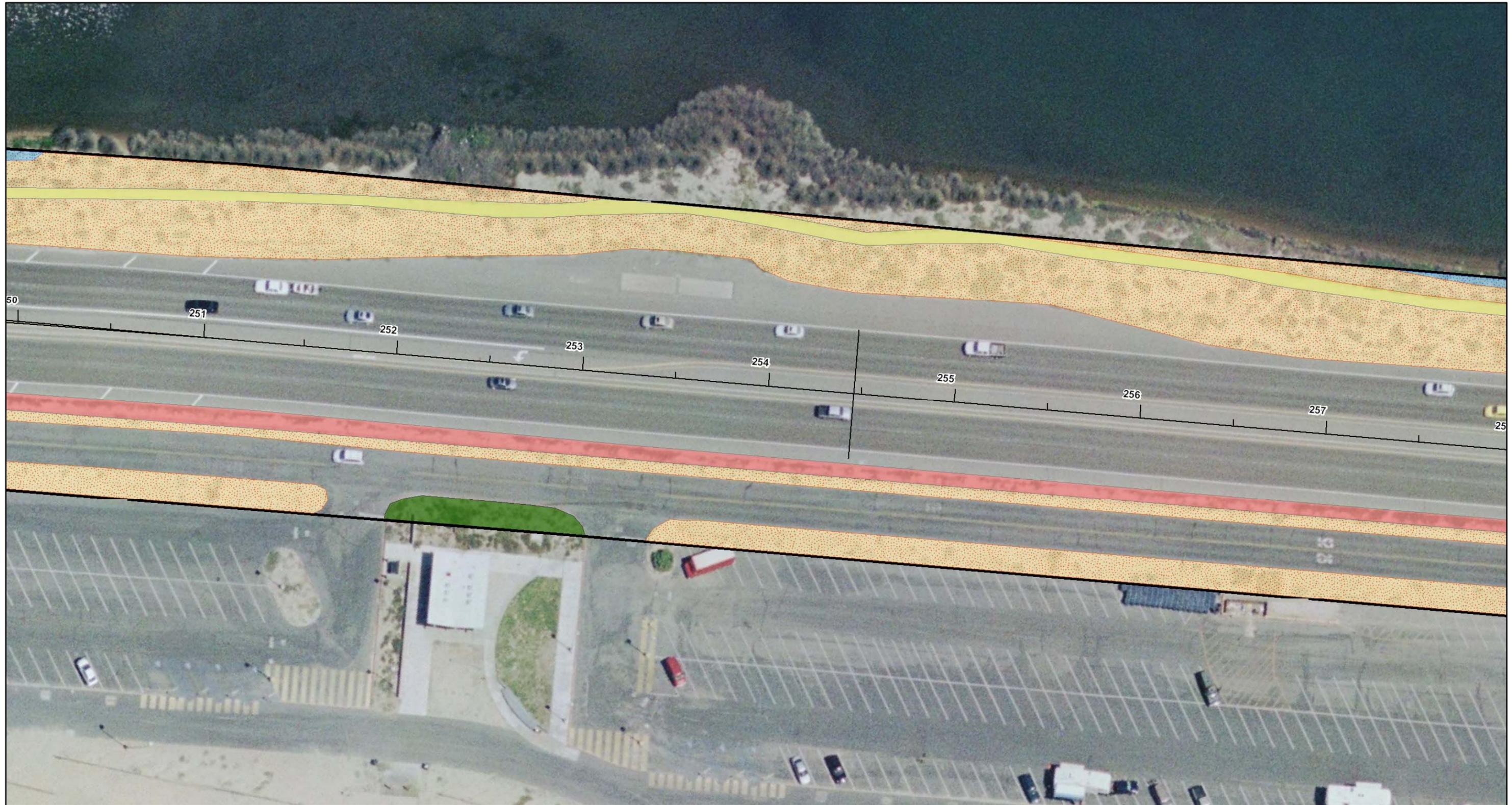
Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project
 Vegetation Community Impacts



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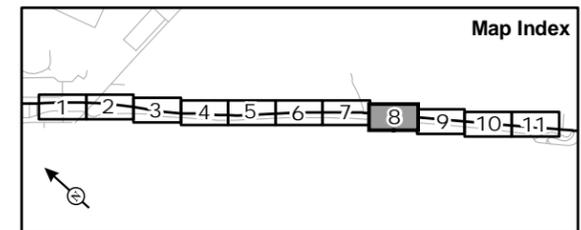
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Vegetation Community Impacts



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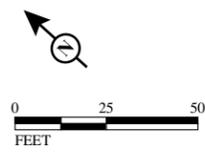
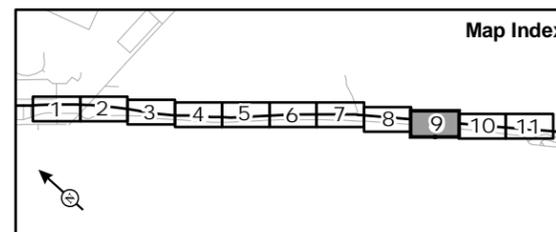
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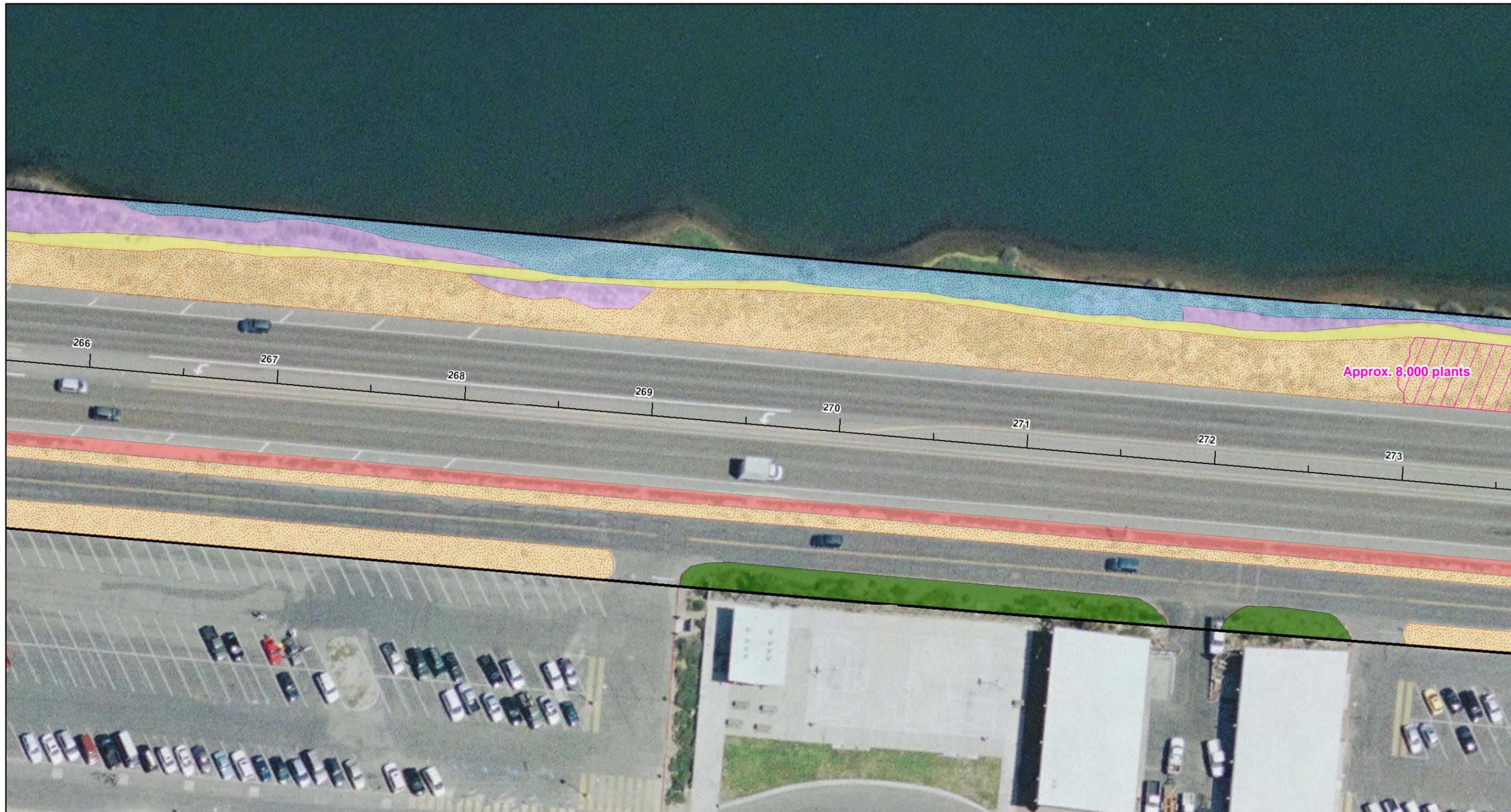
Invaded, Ice Plant Dune Mat (1.56 ac)

Native Dune Mat (5.28 ac)



SOURCE: MSVE (2008); EagleAerial (3/24/08)
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 Reconstruction Project*
Vegetation Community Impacts



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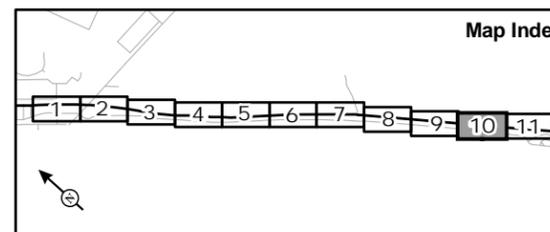
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 Reconstruction Project*
Vegetation Community Impacts



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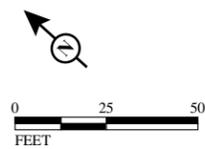
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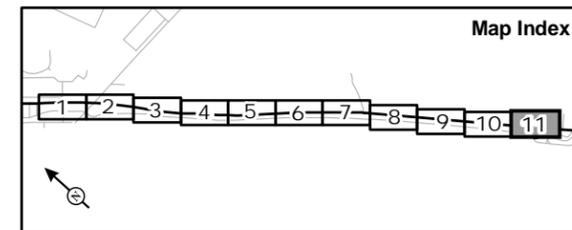
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*SR-1 Bolsa Chica Roadway Embankment
 Reconstruction Project*
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