Attachment A. Supplemental Information

This page is intentionally blank.

Attachment A: Supplemental Information

Critical San Clemente Railroad Protection Project – Area 4 (Mile Post 206.00 to Mile Post 206.67)

Project Location

The Project is located in San Clemente, Orange County, California along the railroad right-of-way (ROW) within the Orange Subdivision of the Los Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor) (Figure 1). The Project includes one area that extends north and south of Calafia State Beach:

- Area 4: between Mile Post (MP) 206.00 and MP 206.67 (north end: 33°24'18.16"N by 117°36'23.39"W; south end: 33°23'48.40"N by 117°36'0.79"W)

The Coastal Rail Resiliency Study Initial Assessment Technical Memorandum developed by Orange County Transportation Authority (OCTA) for rail facilities in the cities of Dana Point and San Clemente identifies Area 4 that is addressed in this application (Appendix E: Coastal Rail Resiliency Study Initial Assessment Technical Memorandum).

Block 19 – Description of Proposed Nationwide Permit Activity

Recent coastal erosion has been observed between MP 206.00 and MP 206.67 where little to no riprap exists. OCTA proposes engineered revetments and sand nourishment in Area 4 to stabilize the existing facilities and avoid another emergency action. The Project will provide significantly greater shore protection performance in the longer term compared to rocks placed in riprap slope protection because the rocks placed in a properly engineered revetment section are sized and placed strategically to avoid rock loss and erosion, thereby providing more protection from wave-induced beach erosion and associated wave overtopping. The key features of an engineered revetment include:

- Founding the toe of revetment in a keyway excavation, preferably established in shallow bedrock to minimize erosional undermining.
- Placement of geotextile filter fabric within the temporary back-cut behind the revetment to reduce loss of finer embankment material by piping.
- Employment of specialized revetment stone design to promote added hydraulic stability, including revetment-perpendicular long-axis placement and careful nesting and armor stone size placement.

Materials will be brought in by railcar and placed from the top of the railroad. An excavator and bulldozer will be brought onsite via railroad to clear rock from the rail and move materials into place as needed. This equipment will primarily utilize the east side of the tracks and railroad ROW for

staging whenever feasible. Additionally, construction vehicles will require temporary construction access along the sandy beach west of the railroad ROW to build the engineered revetment and to place sand and distribute sand nourishment throughout the area. Engineered revetment limits will be within the railroad ROW. Typical construction best management practices will be implemented including standard conditions, general conditions, and construction conditions related to spill response.

Quantities of rock revetment and sand nourishment required to implement the Project are still being determined.

Temporary construction access for sand nourishment is proposed both within and outside of the railroad ROW. Given the volume of sand nourishment that is anticipated, the most feasible method of sand delivery is anticipated to be an offshore dredge pipeline. However, this could change as OCTA progresses further into the design process. Redistribution of sand and/or pipeline management by equipment such as bulldozers and excavators are also anticipated.

The Project will be implemented in accordance with NWP 13 conditions a-l, as identified in NWP Final Notice, 86FR 73522.

Block 20 – Description of Proposed Mitigation Measures

Biological and cultural resource evaluations for Area 4 did not identify the presence of state or federally regulated special status species or cultural resources (Attachment C: Biological Resources Memorandum and Attachment D: Cultural Resource Technical Memorandum). Mitigation for these resources is not required. However, minimization measures are proposed as part of the Project to reduce the potential for unanticipated impacts. Project minimization measures include the following:

Minimization Measure 1: Prior to the start of construction, all Project personnel and contractors who will be on site during construction shall complete mandatory training conducted by the Project environmental lead. Any new Project personnel or contractors that come on board after the initiation of construction shall also be required to complete the mandatory Worker Environmental Awareness Program training prior to work. The training shall advise workers of potential impacts on jurisdictional resources. At a minimum, the training shall include the following topics: (1) occurrences of special status species and special status vegetation communities within the Project limits (including vegetation communities subject to USACE, CDFW, and RWQCB jurisdiction), (2) the purpose for resource protection; (3) protective measures to be implemented in the field, including strictly limiting activities, vehicles, equipment, and construction materials to the fenced Project limits to avoid jurisdictional resource areas in the field (i.e., avoid areas delineated on maps or on the Project site by fencing); (5) environmentally responsible construction practices; and (6) the protocol to resolve conflicts that may arise at any time during the construction process.

Minimization Measure 2: No work activities, materials or equipment storage or access shall be permitted outside the Project limits without permission from the Project environmental lead. All

parking and equipment storage by the contractor related to the Project shall be confined to the Project limits. Undisturbed areas and special status vegetation communities outside and adjacent to the Project limits shall not be used for parking or equipment storage. Project-related vehicle traffic shall be restricted to the Project limits and established roads and construction access points.

Minimization Measure 3: If construction activities occur between January 15 and September 15, a preconstruction nesting bird survey will be conducted (within 7 days prior to construction activities) by a qualified biologist to determine if active nests are present within the area proposed for disturbance and a minimum 100foot buffer to avoid the nesting activities of breeding birds/raptors. The nest buffer will remain in place until a qualified biologist determines that the nest is no longer active.

Block 21 – Purpose of Nationwide Permit Activity

The purpose of the Project is to reinforce the eroding and exposed slopes below the rail corridor to avoid rail service disruptions and infrastructure damage that can lead to unsafe conditions for rail passengers and freight alike.

The portion of the LOSSAN Corridor where the Project is located is utilized by several entities including Metrolink and Amtrak Pacific Surfliner for passenger service, as well as by the BNSF Railway for freight service. The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal rail line corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore have resulted in significant interruptions to railroad operations. The area located between MP 206.00 and MP 206.67 (Area 1) is subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical rail corridor. As a result, OCTA proposes engineered revetments and sand nourishment in Area 4 to stabilize the existing facilities and avoid another emergency action.

Block 22 – Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed Nationwide Activity

A preliminary aquatic resources survey within the aquatic resources survey area for Area 4 was conducted on March 25, 2024. An additional field verification of Area 4 was conducted by HDR biologists on June 26, 2024 with USACE staff to investigate physical indicators of jurisdictional boundaries, and confirm the limits of the ordinary high water mark (OHWM) for Section 404 and Section 10 tidal Waters of the United States (WOUS) using a Global Positioning System (GPS) unit. Notes describing aquatic resource type, substrate type, flow regime, presence or absence of vegetation, and any other pertinent details regarding observed hydrology were taken at each feature. All potential aquatic resources were later digitized using geographic information system software.

As confirmed during the field verification conducted with USACE staff, the area west of the railroad ROW associated with the Pacific Ocean does support jurisdictional WOUS/waters of the State (WOS) regulated by United States Army Corps of Engineers (USACE) and Regional Water Quality Board (RWQCB). Within the railroad ROW, however, no potential aquatic resources are anticipated to occur. In general, the aquatic resources survey area consists of well-drained intertidal sandy beach. The soils east (landward) of the rail embankment are mapped as Myford sandy loam. A dense patch of giant reed occurs at the culvert inlet on the north of the railroad tracks at MP 206.50 (Attachment B: USACE Jurisdictional Resources Map). The culvert diverts stormwater runoff from the bluff top residences under the railroad berm and onto the beach. Standing water was present at the culvert inlet and would likely meet the USACE's three criteria for wetland WOUS/WOS; however, this potential aquatic resource is outside of proposed work areas.

The rock revetment is above the 7.01-foot highest astronomical tide line (NAVD88) and outside of WOUS/WOS, based on the NOAA La Jolla Station Tidal Datum highest astronomical tide elevation. The toe of the rock revetment is above the 4.41-foot mean high tide elevation (NAVD88) and outside the Section 10 navigable waters (Attachment B: USACE Jurisdictional Resources Map).

Sand nourishment would be located below the 7.01-foot highest astronomical tide line (NAVD88) and within the WOUS/WOS, based on the NOAA La Jolla Station Tidal Datum highest astronomical tide elevation. The toe of sand nourishment would be located below the 4.41-foot mean high tide elevation (NAVD88) and within the Section 10 navigable waters (Attachment B: USACE Jurisdictional Resources Map).

Table 1 and Attachment B present potential aquatic resources observed during the preliminary aquatic resources survey and the limits of the OHWM for Section 404 and Section 10 WOUS that were field verified with USACE staff. A formal jurisdictional delineation will be prepared. Temporary and permanent impacts to any resource will be determined once design and preliminary engineering progress.

Table 1. Potential Aquatic Resources within the Aquatic Resources Survey Area – Area 4

Aquatic Feature	Acres (Aquatic Resources Survey Area)	Potential USACE Jurisdiction
Section 404 Tidal WOUS	16.14	X
Section 404 & 10 Tidal WOUS	12.39	X
FWM-2	0.054	X
Road Rut 4	0.037	n/a

FWM = freshwater marsh; n/a = not applicable; USACE = United States Army Corps of Engineers; WOUS = waters of the United States

Block 26 – Endangered or Threatened Species

Vegetation mapping and habitat assessment for federally and/or state-listed plant and wildlife species was conducted on March 25, 2024. Also, the United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) search indicates that no designated critical habitat for listed species occurs within the project study area for Area 4. Based on the results of the literature review, 24 special-status wildlife species were evaluated for potential to occur within the Project study area (Attachment C: Biological Resources Technical Memorandum).

Areas adjacent to the project study area support suitable habitat for the federally and/or state-listed wildlife species. However, the Project is not expected to impact state or federally listed species upon implementation of the proposed minimization measures.

Based on a National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) query, it was determined that the Project study area includes a small amount of intertidal beach habitat that has potential to support EFH for groundfish, coastal pelagic, and four highly migratory species. The highly migratory species EFH is offshore and would not be affected by the Project. For groundfish EFH, the potential adverse effects from Project implementation include loss and alteration of habitat, altered hydrology and geomorphology, and release of contaminants.

Block 27 – Historic Properties

In March 2024, HDR requested a review of the Sacred Lands File held by the Native American Heritage Commission (NAHC) for the Project. The results were positive and provided a list of twelve Native American tribal representatives who may have knowledge of cultural resources in the vicinity of the Project. Further, a record search was carried out at the South Central Coastal Information Center to identify known cultural resources within 0.25 miles of the Project (Appendix D: Cultural Resource Technical Memorandum).

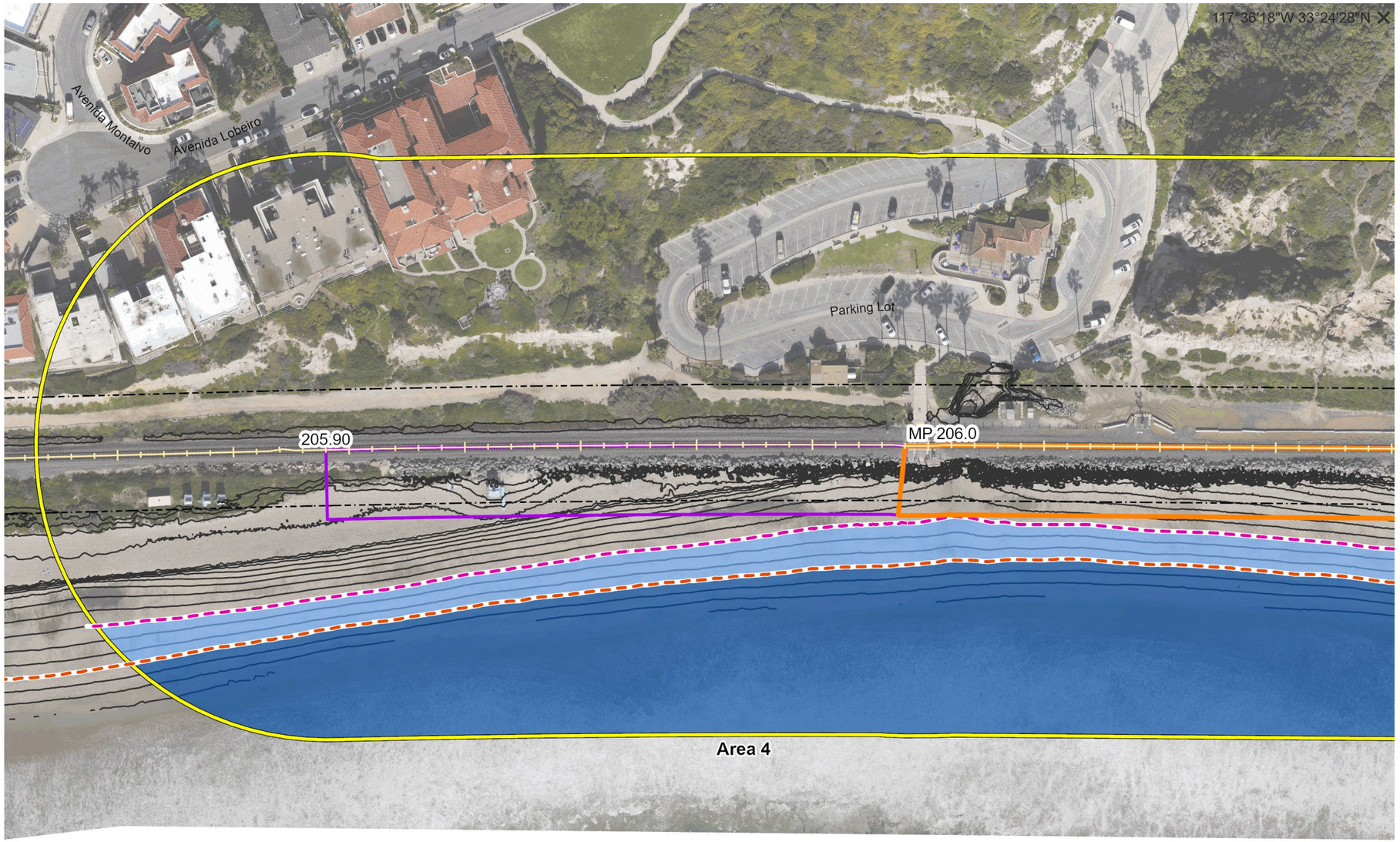
While several resources were identified, including historic districts, historic-age buildings, one historic-age railroad, and two pre-contact archaeological sites, the Project would not result in a significant impact to cultural resources.

Drawings and Illustrations

Figure 1 Project Vicinity Map

Attachment B. Preliminary USACE Jurisdictional Resources Map

This page is intentionally blank.



USACE Jurisdictional Resources (Preliminary) Area 4 Map 1

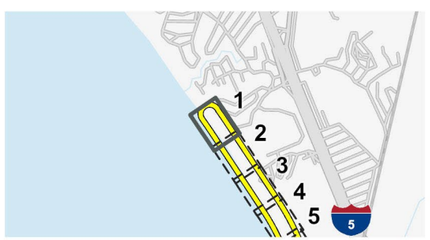
- Rail Alignment
- Preliminary Footprint
- Preliminary TCE
- Aquatic Resources Survey Area
- 4.06 ft MHW Contour
- 7.01 ft HAT Contour

Aquatic Resources (field verified with USACE)

- Section 404 Tidal Waters of the U.S
- Section 404 & 10 Tidal Waters of the U.S
- Contour 1ft
- Rail Right-of-way

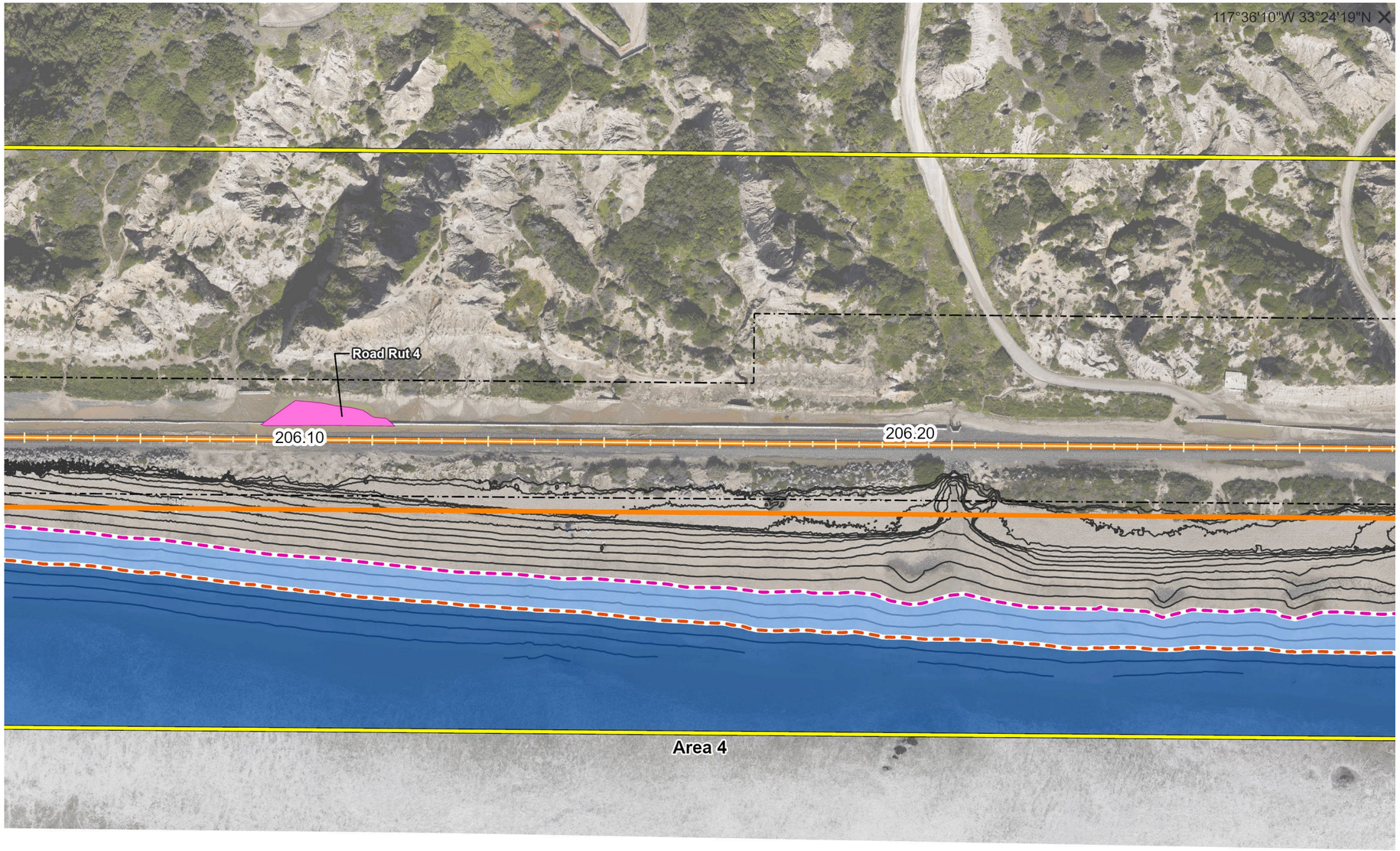
Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery 2024
Created on: 6/28/2024
Revised on: 7/24/2024
Delineation: A. Engleson and A. Keller, 6/26/2024
Mapping: A. Burvall 6/27/2024

Map 1 of 5



0 200 Feet

USACE Jurisdictional Resources (Preliminary) Area 4 Map 2



- Rail Alignment
- Preliminary Footprint
- Aquatic Resources Survey Area
- 4.06 ft MHW Contour
- 7.01 ft HAT Contour

Aquatic Resources (field verified with USACE)

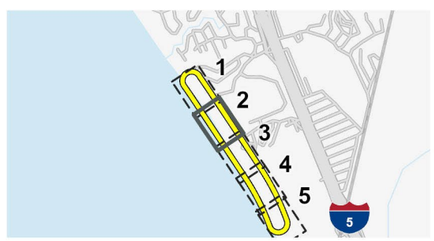
- Section 404 Tidal Waters of the U.S
- Section 404 & 10 Tidal Waters of the U.S

Aquatic Resources (Unverified)

- Poential Aquatic Resource
- Contour 1ft
- Rail Right-of-way

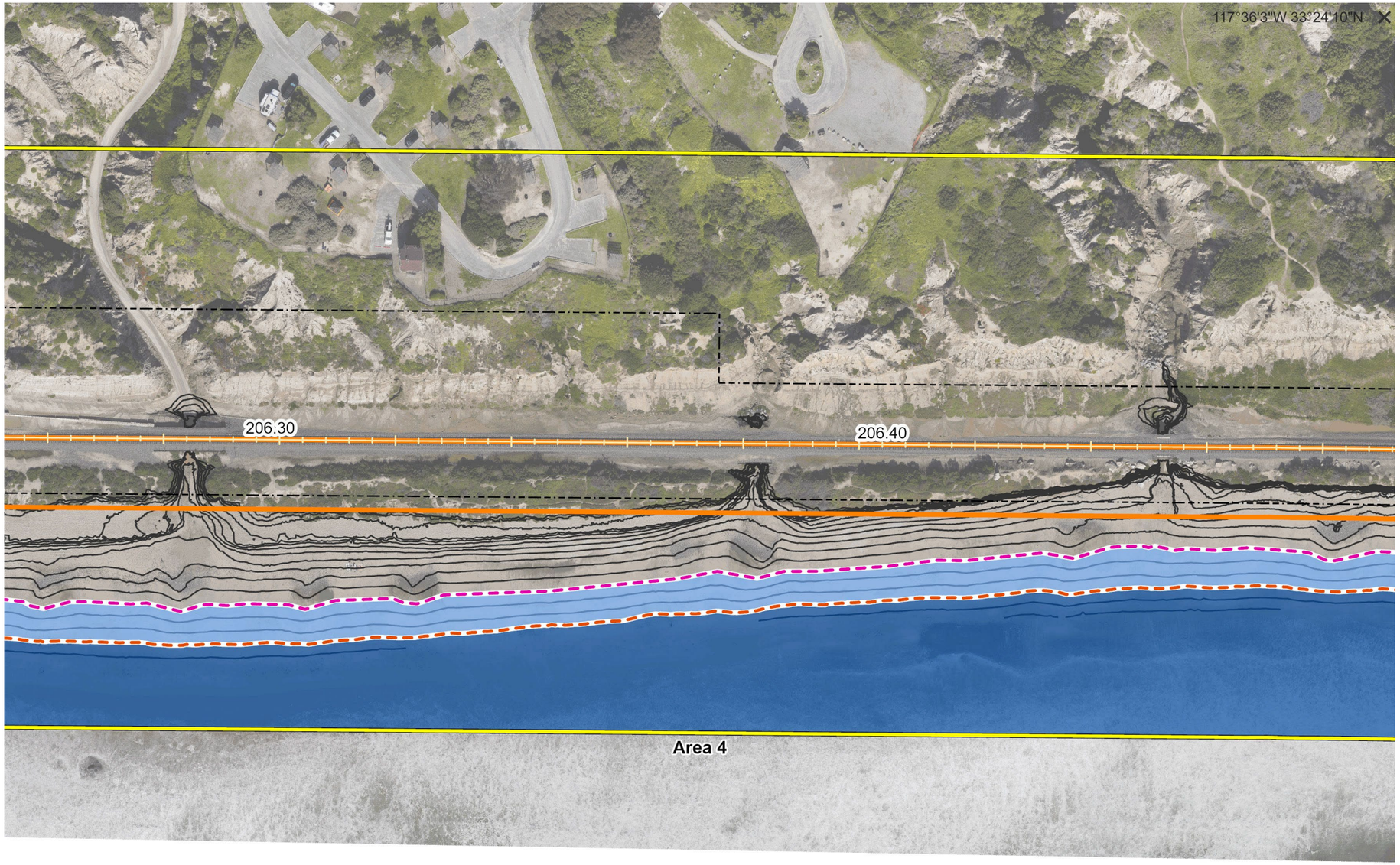
Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery 2024
Created on: 6/28/2024
Revised on: 7/24/2024
Delineation: A. Engleson and A. Keller, 6/26/2024
Mapping: A. Burvall 6/27/2024

Map 2 of 5



0 200 Feet

117°36'26"W 33°24'4"N



USACE Jurisdictional Resources (Preliminary) Area 4 Map 3

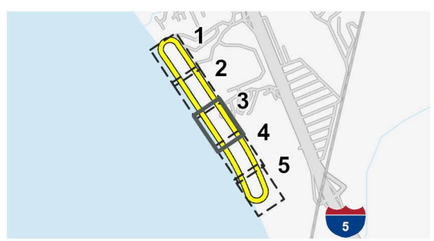
- Rail Alignment
- Preliminary Footprint
- Aquatic Resources Survey Area
- 4.06 ft MHW Contour
- 7.01 ft HAT Contour

Aquatic Resources (field verified with USACE)

- Section 404 Tidal Waters of the U.S
- Section 404 & 10 Tidal Waters of the U.S
- Contour 1ft
- Rail Right-of-way

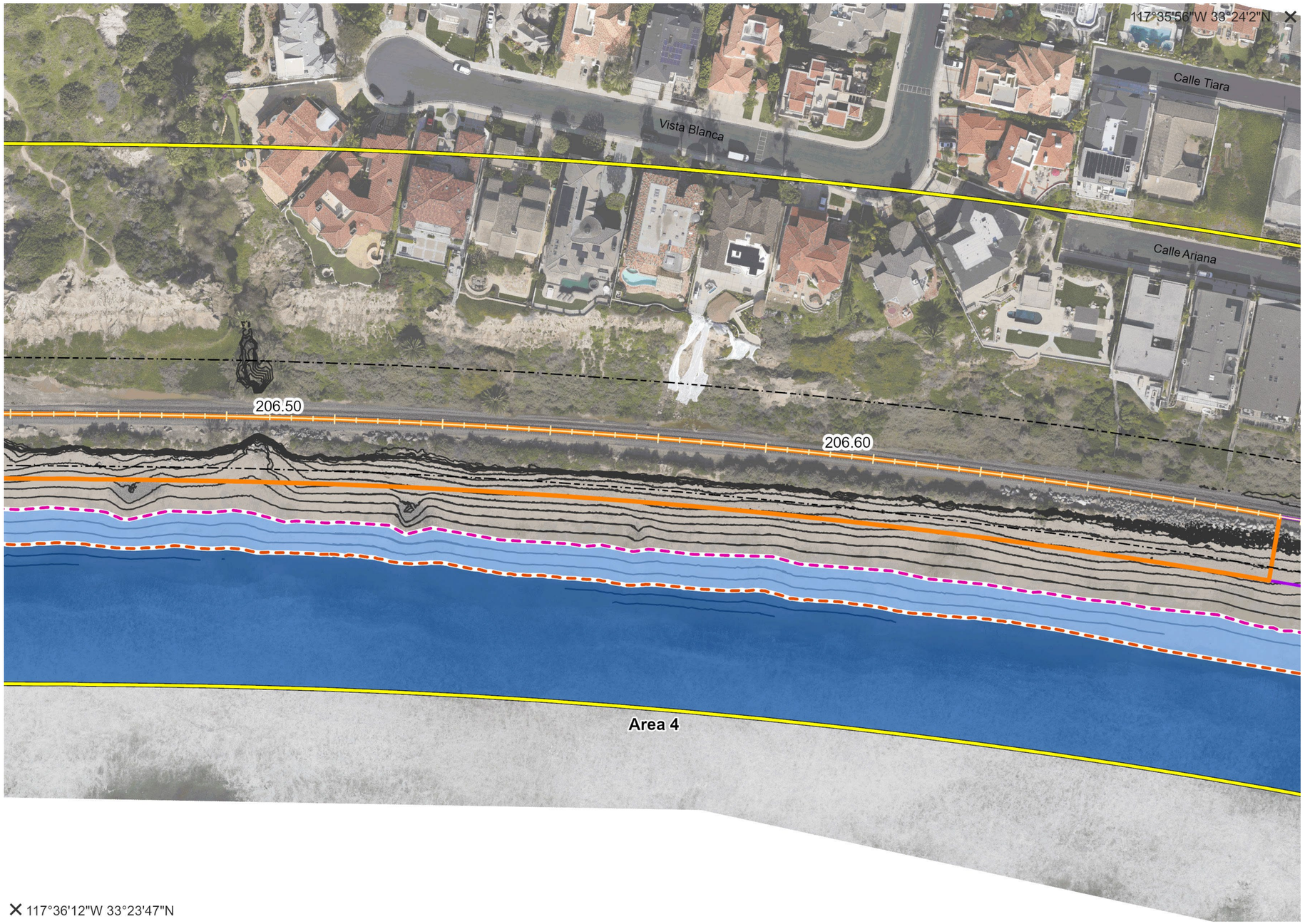
Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery 2024
Created on: 6/28/2024
Revised on: 7/24/2024
Delineation: A. Engleson and A. Keller, 6/26/2024
Mapping: A. Burvall 6/27/2024

Map 3 of 5



0 200 Feet

117°36'19"W 33°23'55"N



USACE Jurisdictional Resources (Preliminary) Area 4 Map 4

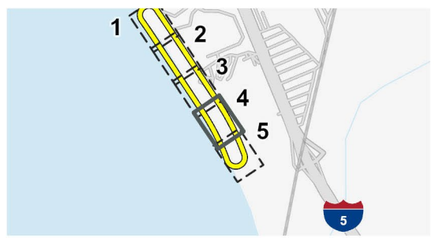
- Rail Alignment
- Preliminary Footprint
- Preliminary TCE
- Aquatic Resources Survey Area
- 4.06 ft MHW Contour
- 7.01 ft HAT Contour

Aquatic Resources (field verified with USACE)

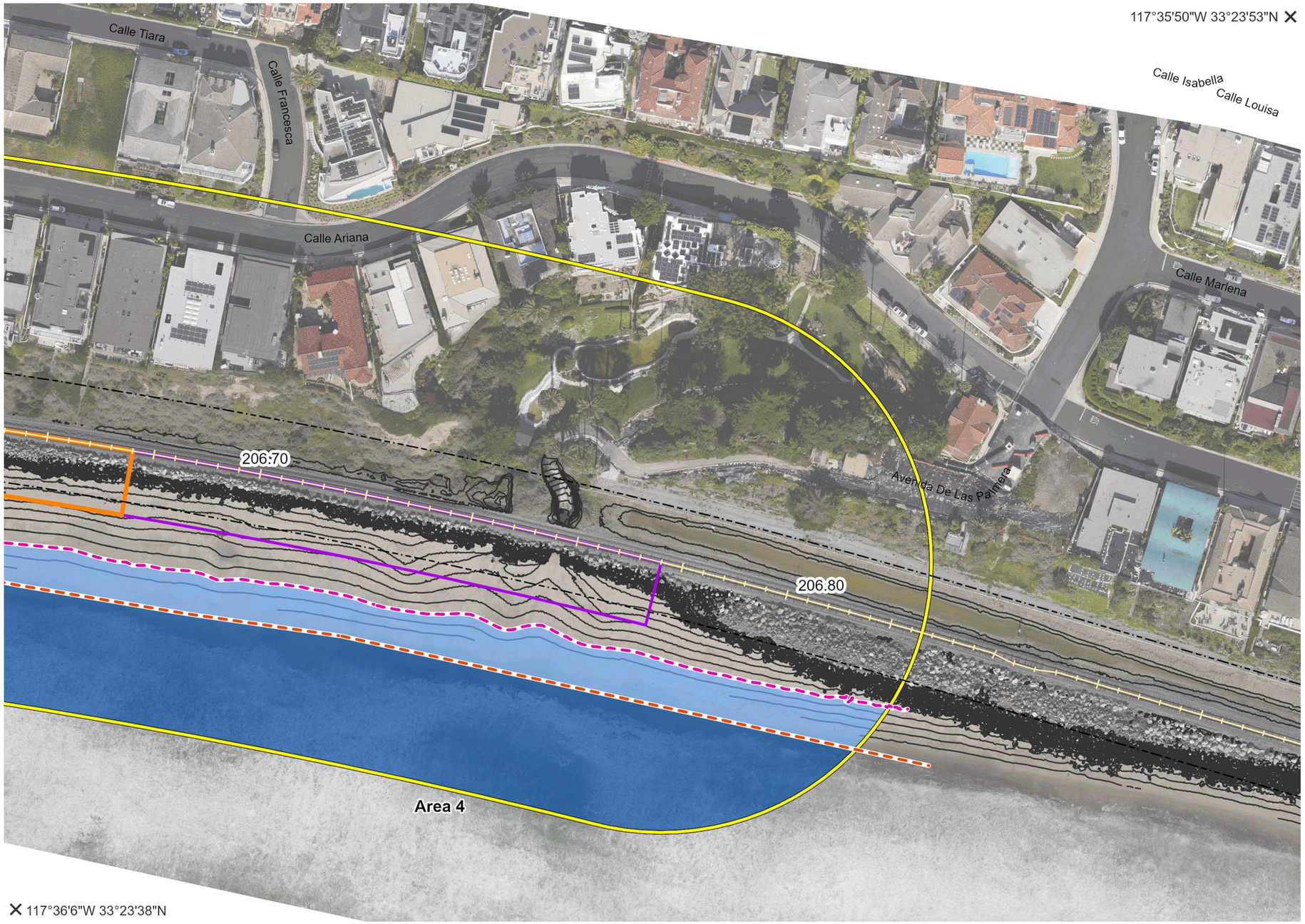
- Section 404 Tidal Waters of the U.S
- Section 404 & 10 Tidal Waters of the U.S
- Contour 1ft
- Rail Right-of-way

Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery 2024
Created on: 6/28/2024
Revised on: 7/24/2024
Delineation: A. Engleson and A. Keller, 6/26/2024
Mapping: A. Burvall 6/27/2024

Map 4 of 5



0 200 Feet



USACE Jurisdictional Resources (Preliminary) Area 4 Map 5

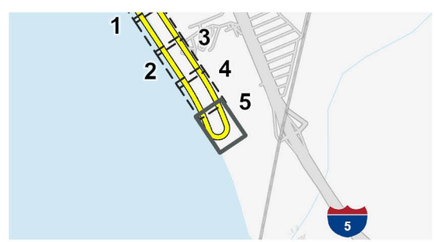
- Rail Alignment
- Preliminary Footprint
- Preliminary TCE
- Aquatic Resources Survey Area
- 4.06 ft MHW Contour
- 7.01 ft HAT Contour

Aquatic Resources (field verified with USACE)

- Section 404 Tidal Waters of the U.S
- Section 404 & 10 Tidal Waters of the U.S
- Contour 1ft
- Rail Right-of-way

Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery 2024
Created on: 6/28/2024
Revised on: 7/24/2024
Delineation: A. Engleson and A. Keller, 6/26/2024
Mapping: A. Burvall 6/27/2024

Map 5 of 5



0 200 Feet

Attachment C. Biological Resources Memorandum

This page is intentionally blank.

Biological Resources Memorandum

Introduction

This biological resource memorandum addresses the Critical Coastal Projects located in San Clemente, Orange County, California (Figure 1, Regional Map). The Critical Coastal Projects include three areas at mile post (MP) 203.80 – 203.90 (Area #1), MP 204.00 – 204.40 (Area #2), and MP 206.00 – 206.67 (Area #4) along the railroad right-of-way (ROW) within the Orange Subdivision of the Los Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor). Biological resources, including vegetation communities, habitat, and preliminary boundaries of potential aquatic resources were recorded within the Project study area for each of the three areas, which includes the area within a 50-foot buffer from the railroad ROW.

Background and Project Description

The coastal rail line corridor in southern Orange County is owned by Orange County Transportation Authority (OCTA) and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink) and Amtrak Pacific Surfliner for passenger service and by the BNSF Railway for freight service. This segment of railroad is part of the greater 351-mile LOSSAN Corridor. The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal rail line corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore have resulted in significant interruptions to railroad operations. The coastal portion of the rail line corridor where Areas 1, 2, and 4 are located are subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical rail corridor.

The Coastal Rail Resiliency Study Initial Assessment Technical Memorandum developed by OCTA for rail facilities in the cities of Dana Point and San Clemente identify three areas for potential reinforcement to further solidify the stability of the railroad corridor. These potential reinforcement areas are described below:

- Area #1 – MP 203.80 – MP 203.90 – Riprap Restoration
    - Place new rock and/or rework existing rock that has fallen out of section to restore the structure slope and crest elevation, thereby providing beach erosion protection and reduction in wave overtopping. Where possible, place new, larger rock and/or rework existing rock in a way that reduces the slope, thereby improving the stability of the rocks.
- Area #2 – MP 204.00 – MP 204.40 – Riprap Restoration
    - The reinforcement approach for this location is the same as described above for Area 1.
- Area #4 – MP 206.00 – MP 206.67 – Engineered Revetment

- Installation of an engineered revetment with filter fabric, bedding stone, and armor to minimize piping (movement of fine-grained sediment through voids in the rocks) and a layered-stone placement design with keyway founded on bedrock or to a toe elevation of +2 ft or lower is recommended. Dual purpose of revetment is to arrest continued landward retreat of soils into the rail corridor and minimize continued displacement of stones onto the beach following storms.

Figure 1. Regional Map

This page is intentionally blank.

Methods

Literature Review

A list of special-status species that have the potential to occur within the Project study area for each of the three areas, was prepared using information provided by the USFWS species list from the online Information for Planning and Conservation Environmental Conservation Online System (USFWS 2024), the CDFW's California Natural Diversity Database (CNDDB) RareFind program (CDFW 2024), National Marine Fisheries Service (NMFS 2024), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2024). Attachment A provides the literature review results, as well as special-status species plant and wildlife tables containing assessments of each species' potential to occur and the supporting rationale.

In addition to a review of special-status species databases, aerial photographs and topographic mapping (1-foot contours) of the Project study areas at a scale of 1:2,400 were reviewed prior to and following the field surveys (USGS 2019). Sensitive vegetation communities and Environmentally Sensitive Habitat Areas were identified using the NatureServe Heritage Program Status Ranking system (Faber-Langendoen et al. 2012), and the City of San Clemente Local Coastal Program Land Use Plan (City of San Clemente 2018) respectively.

General Biological Field Surveys and Vegetation Mapping

HDR conducted vegetation mapping and habitat assessments for federally and/or state-listed plant and wildlife species within the Project study area on March 25, 2024. Vegetation was classified using A Manual of California Vegetation (Sawyer et al. 2009) or if not described by in Sawyer et al. 2009, Oberbauer (2008) was used for classification. This classification system was used to provide consistency with the National Vegetation Classification System and is currently the statewide standard for vegetation mapping (Section 1900 of the California Fish and Game Code).

Aquatic Resources Survey

A preliminary aquatic resources survey was conducted on foot on March 25, 2024 to identify potential aquatic resources within accessible areas of the Project study area for each of the three areas. Potential aquatic resources boundaries were mapped by hand on printed 1:2,400-scale 2019 aerial maps, with the widths of each feature recorded (in feet) with locational data using the Esri Collector for ArcGIS application on an iPhone 15 connected to a Global Positioning System. Notes describing aquatic resource type, substrate type, flow regime, presence or absence of vegetation, and any other pertinent details regarding observed hydrology were taken at each feature. All potential aquatic resources were later digitized using geographic information system software.

For the purposes of this memo, potential aquatic resources were mapped using United States Army Corps of Engineers (USACE) methods and surface indicators of hydrology and hydrophytic vegetation to establish preliminary boundaries. Methods to determine the limits of potential aquatic resources are outlined in USACE's *Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008c), and *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2008b).

When potential aquatic resources were encountered in linear features, the length of the drainage feature was walked, and the outer jurisdictional limits within the Project study areas were recorded. The ordinary high water mark (OHWM) was measured at locations where indicators were apparent. Other data recorded included bank-to-bank width, bank height and morphology, substrate type, and all vegetation within and adjacent to the feature. Constructed ephemeral features that were created in uplands and clearly intended only to convey roadway or urban runoff were mapped as ditches constructed in uplands and were not considered jurisdictional.

Regional Water Quality Control Board (RWQCB) regulated waters would generally be identical to USACE jurisdictional areas, however, additional isolated features that may exhibit wetland features as defined by the RWQCB's *State Wetland Definition and Procedures for the Discharge of Dredged or Fill Material to Waters of the State* (2019) would need to be evaluated. California Department of Fish and Wildlife (CDFW) regulated habitat, defined by California Fish and Game Code Section 1602, would generally include ephemeral, intermittent, and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated, or to the limit of the adjacent riparian habitat located contiguous to the watercourse if the stream or lake is vegetated. California Coastal Commission coastal wetlands would generally be identical to CDFW regulated habitat using a "one-parameter definition" that only requires evidence of a single parameter to establish wetland conditions.

Results

Existing Environmental Conditions and Project Effects

Climate

San Clemente has a Mediterranean climate, characterized by warm, dry summers and cool, moist winters. Average annual precipitation for San Clemente is 15.2 inches and most of the annual rainfall occurs November through March (U.S. Climate Data 2020).

Soils

The online NRCS Web Soil Survey was referenced to identify potential hydric soils occurring within each of the Project study areas (USDA NRCS 2024). The following soils are mapped within the Project study areas (see Attachment B):

- **Beaches**: The Beach Series comprises very shallow and shallow, well drained, moderately permeable soils that formed in residuum from hard, very fine grained, metamorphic sandstone. These sloping to steep soils commonly occur on sandstone hills and in valleys. Slopes range from 1 to about 70 percent.
    - This soil is listed hydric (Criterion 4) where it occurs on beaches.
- **Myford Sandy Loam**: The soils of the Myford Series are deep, moderately well drained soils formed on terraces. Myford soils occur on terraces at elevations of less than 1,500 feet. The climate is dry subhumid mesothermal with dry summers and cool moist winters.
- **Xeralfic Arents**: The soils of the Xeralfic Series are moderately well-drained or well-drained soils with characteristics that are most likely altered by mechanical mixing or, if undisturbed, are former argillic horizons remnants. Generally sandy clay loam in texture after reshaping and found at elevations of 50 to 1,500 feet.

Vegetation Communities and Other Land Cover Types

The descriptions of the vegetation community alliances below are taken directly from A Manual of California Vegetation (Sawyer et al. 2009). Eleven different vegetation communities and other land cover types were mapped within the Project study area for each of the three areas and are described below (Table 1). Figure 2 identifies the locations of the vegetation communities and other land cover types within the Project study area for each of the three areas. Attachment C shows photographs of the Project study area.

Table 1. Vegetation Communities and Other Land Cover Types within the Project Study Areas

Vegetation Community	Area #1	Area #2	Area #4	Total Acres
Tree-Dominated Habitats				
Myoporum Groves	0.167	1.488	0.216	1.870
Shrub-Dominated Habitats				
Big Saltbush Scrub	0.495	1.736	2.767	4.997
California Brittlebush Scrub	0.057		3.732	3.789
Herb-Dominated Habitats				
Giant Reed Marsh			0.054	0.054
Iceplant Mats	0.252	0.401	0.383	1.035
Cattail Marsh		0.006		0.006
Other Land Cover Types				
Beach	0.248		3.941	4.189
Coastal Bluffs			2.140	2.140
Disturbed	0.314	1.032	1.676	3.021
Open Water	0.552	2.680		3.232
Ornamental	0.161	0.201	0.080	0.442
Unvegetated Channel		0.010		0.010
Unvegetated Channel – Concrete Lined		0.012		0.012
Urban/Developed	0.386	1.347	2.997	4.731
Urban/Developed – Riprap	0.203	1.692	0.170	2.066
Grand Total	***2.835***	***10.605***	***18.155***	***31.595***

TREE-DOMINATED HABITATS

Myoporum Groves (*Myoporum laetum* Forest & Woodland Semi-Natural Alliance)

Within this alliance, myoporum (*Myoporum laetum*) is dominant in the tree canopy. Trees are less than 59 feet (18 meters) tall with an open to continuous canopy, shrubs are common to infrequent, and the herbaceous layer is simple to diverse. Myoporum accounts for at least 50 percent cover in the tree layer. Myoporum groves occur in coastal canyons, washes, slopes, riparian areas, and along roadsides (Sawyer et al. 2009). Within the Project study areas, Myoporum groves cover 1.870 acres and covers areas near the coastal bluffs and areas with ornamental vegetation.

SHRUB-DOMINATED HABITATS

Big Saltbush Scrub (*Atriplex Lentiformis* Shrubland Alliance)

Big saltbush (*Atriplex lentiformis*) is dominant in the shrub canopy and emergent trees may be present in low cover. Shrubs are less than 16 feet (5 meters) tall and the canopy is open to intermittent with a variable herbaceous layer. Within this alliance, big saltbush accounts for greater than 50 percent relative cover in the shrub canopy. Big saltbush scrub occurs on gentle to steep southeast and southwest-facing slopes in clay soils (Sawyer et al. 2009). Within the Project study areas, big saltbush scrub covers 4.997 acres and occurs as dense patches adjacent to the railroad ROW on the coastal bluffs.

California Brittlebush Scrub (*Encelia californica* Shrubland Alliance)

California brittle bush (*Encelia californica*) is dominant or co-dominant in the shrub canopy with California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), bladderpod (*Cleomella arborea*) and a variety of other shrub species. Emergent trees may be present, including southern California black walnut (*Juglans californica*) or coast live oak (*Quercus agrifolia*). Shrubs are less than 7 feet (2 meters) tall with an intermittent to continuous canopy and a variable herbaceous layer. California brittle bush accounts for at least 30 percent relative cover in the shrub layer. California brittle bush scrub occurs on sunny, steep slopes that are often rocky or eroded and on soils that formed from sandstone, shale, or volcanic substrates (Sawyer et al. 2009). California brittle bush scrub covers 3.789 acre with the Area #1 and Area #4 study areas.

HERB-DOMINATED HABITATS

Giant Reed Marsh (*Arundo donax* Herbaceous Semi-Natural Alliance)

Giant reed marsh is dominated by giant reed (*Arundo donax*), with at least 60 percent relative cover in the herbaceous layer. Giant reeds are rhizomatous and grow in dense colonies that form uniform stands. This alliance usually occurs in riparian areas along low-gradient streams and ditches and in semi-permanently flooded and slightly brackish marshes. Herbaceous plants are typically less than 8 meters in height, with continuous cover (Sawyer et al. 2009). Giant reed marsh occurs as a patch in the Area #4 study area and covers 0.054 acre.

Iceplant Mats (*Mesembryanthemum* spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance)

This community is dominated by various ice plant species, such as crystalline iceplant (*Mesembryanthemum crystallinum*), freeway iceplant (*Carpobrotus edulis*), sea fig (*Carpobrotus chilensis*), and slenderleaf iceplant (*Mesembryanthemum nodiflorum*). Within this community, iceplant provides dense (>80 percent) cover, which precludes other plant species from establishing (Sawyer et al. 2009). Within the Project study areas, this community covers 1.035 acre along the coastal bluffs.

Cattail Marsh (*Typha* sp. Herbaceous Alliance)

Cattail marsh is dominated by one or more species of cattail (*Typha* spp.), with at least 50 percent relative cover in the herbaceous layer. Cattails are rhizomatous and grow in dense colonies forming uniform stands that are not closly associated with other plants except generally as wetland affliates. This alliance usually occurs in semi-permanently flooded freshwater or brackish marshes. Herbaceous plants are typically less than 5 feet (1.5 meters) in height, with intermittent-to-continuous cover (Sawyer et al. 2009). Cattail marsh covers 0.006 acre associated with a patch at the toe of slope of

the coastal bluffs within the Area #2 study area. Water was observed seeping from the seep and flowing towards this patch, however, the patch looks to have been regularly disturbed and maintained.

OTHER LAND COVER TYPES

Beach

This community consists of unvegetated sandy beach and covers 4.189 acres, mostly associated with the beach areas within the Area #1 and Area #4 study areas.

Coastal Bluffs (unvegetated)

This community consists of unvegetated coastal bluffs and covers 2.140 acres within the Area #4 study area.

Disturbed

Areas labeled disturbed are areas where natural communities have been impacted to the extent that they no longer function naturally. These areas have been previously physically disturbed but continue to retain a soil substrate. Disturbed areas consist of predominantly non-native weedy and ruderal species. This is not a natural community and generally does not provide habitat for wildlife or special-status species, although exceptions occur. Examples of disturbed areas include areas that have been graded for development or cleared for fuel management, staging areas, off-road vehicle trails, and abandoned home or business lots. Disturbed areas cover 3.021 acre associated with areas adjacent to the railroad ROW.

Ornamental (Planted)

Areas with ornamental vegetation are typically found near development, along streets, and in parks. This vegetation usually consists of irrigated plants and trees that are not native but may include native species that are intentionally planted. Plant species observed within the Project study areas include agave (*Agave* sp.), aloe (*Aloe* sp.), palm trees (*Washingtonia* sp.), and Canarian sea lavender (*Limonium perezii*). Within the Project study areas, ornamental vegetation is located along the coastal bluffs adjacent to residential development. Ornamental vegetation covers approximately 0.442 acre.

Open Water

Open water occur as the Pacific Ocean and covers 3.232 acres within the Area #1 and Area #2 study areas.

Urban/Developed

Urban/developed land refers to areas that have been manipulated by grading and compacting soils to build infrastructure, such as roads, buildings, parks, fields, etc. These areas have no biological function or value except that they may provide habitat for nesting birds. Within the Project study areas, paved roads, associated landscaping, and portions of the railroad ROW were mapped as urban/developed. Urban/developed habitat occupies approximately 6.796 acres of the Project study areas, of which 2.066 acres consist of riprap on the seaside of the railroad tracks.

Unvegetated Channel

Unvegetated channels are natural or artificial (e.g., concrete lined) beds in which water flows and does not support vegetation. Both concrete lined and unvegetated earthen channels occur within the Area #2 study area. One unvegetated earthen channel occurs in the northern portion of the Area #2 study

area and one concrete lined channel occurs in the southern portion of the Area #2 study area associated with the pedestrian trail and southern parking lot. Unvegetated channels cover approximately 0.022 within the Area #2 study area, of which 0.012 is concrete lined.

This page is intentionally blank.

Figure 2. Vegetation Communities and Land Cover Types (Area #1)

This page is intentionally blank.

Figure 3. Vegetation Communities and Land Cover Types (Area #2, Sheet 1)

This page is intentionally blank.

Figure 4. Vegetation Communities and Land Cover Types (Area #2, Sheet 2)

This page is intentionally blank.

Figure 5. Vegetation Communities and Land Cover Types (Area #4, Sheet 1)

This page is intentionally blank.

Figure 6. Vegetation Communities and Land Cover Types (Area #4, Sheet 2)

This page is intentionally blank.

Figure 7. Vegetation Communities and Land Cover Types (Area #4, Sheet 3)

This page is intentionally blank.

Sensitive Vegetation Communities

RIPARIAN HABITAT AND SPECIAL-STATUS VEGETATION COMMUNITIES

A special-status vegetation community is one that has a state rarity rank of S1, S2, or S3, as determined by the NatureServe Heritage Program Status Ranking system (Faber-Langendoen et al. 2012) or is identified as subject to local, state, or federal regulations (e.g., vegetation communities meeting USACE's three-parameter wetland criteria). Definitions of the state ranks are as follows:

- S1: Critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors.
- S2: Imperiled and at high risk of extinction or elimination due to a very restricted range, very few populations or occurrences, steep declines, or other factors.
- S3: Vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors.

California brittlebush scrub is considered special-status due to its their state rarity ranking (S3).

Riparian vegetation, which includes communities that are associated with streambeds, wetlands, and adjacent riparian areas, are also considered special-status by CDFW regardless of their state rarity ranking and are regulated pursuant to Section 1600, et seq. of the California Fish and Game Code. Riparian communities mapped within the Project study area includes cattail marsh and giant reed.

CALIFORNIA COASTAL COMMISSION – ENVIRONMENTALLY SENSITIVE HABITAT AREAS

According to the City of San Clemente Local Coastal Program Land Use Plan (City of San Clemente 2018), environmentally sensitive habitat areas include monarch butterfly habitat, sand dunes, coastal sage scrub that supports coastal California gnatcatcher or other rare species, California buckwheat scrub, lemonade berry scrub, big saltbush scrub, giant wild rye and other native grassland, maritime succulent scrub, southern mixed chaparral, arroyo willow thickets, ephemeral stream channels, riparian habitat, vernal pools, and wetlands. Within the Project study areas, ESHAs would include big saltbush scrub, cattails, and any potential wetlands.

Federally Listed Plant Species

Based on review of the literature search results (Attachment A), of the 93 special-status vascular plant species evaluated, none have the potential to occur within the Project study areas based on a lack of suitable habitat. Therefore, the Project would not result in an adverse effect to any plant species that are federally listed or proposed for listing.

Special-Status Plant Species

The remaining special-status plant species identified in the literature search are not federally or state listed but are California Rare Plant Rank (CRPR) List[1] 1B, 2B, 3, or 4 plants. Details for these species, including habitat, life form, blooming period, and potential to occur within the Project study area, are

[1] California Rare Plant Rank (CRPR) 1B=Plants rare, threatened, or endangered in California and elsewhere; CRPR 2B=Plants rare, threatened or endangered in California but more common elsewhere; CRPR 3=Plants needing more information; CRPR 4=Plants of limited distribution. Threat ranks: 0.1=Seriously endangered in California. 0.2=Fairly endangered in California.

provided in Attachment A. Of the special-status plant species identified from the literature search, 13 species have potential to occur in the Project study area. Focused plant surveys are recommended to determine the presence or absence of special-status plant species within the Project study area. The remaining special-status plant species are not expected to occur due to a lack of suitable habitat and/or soils or because the Project study area is located outside of the species' known geographic or elevation range.

Federally Listed Wildlife Species

Based on the results of the literature review, 24 special-status wildlife species were evaluated for potential to occur within the Project study areas. Of these, two federally and/or state-listed wildlife species or candidates under consideration for listing are known to occur within the vicinity of the Project study area. These species and their listing status are:

- Invertebrates
    - Crotch's bumble bee (*Bombus crotchii*) – state candidate endangered.
    - San Diego fairy shrimp (*Branchinecta sandiegonensis*) – federally endangered.

The Project study area contains suitable habitat to support the federally and/or state-listed wildlife species listed above. The USFWS Information for Planning and Consultation search indicates that no designated critical habitat for federally listed species occurs within the Project study areas.

Descriptions of these species, their habitat requirements, and their potential habitat within the Project study areas are provided below. Attachment A identifies all special-status wildlife species known to occur in the vicinity of the Project and their potential to occur within the Project study areas.

CROTCH'S BUMBLE BEE

Crotch's bumble bee is found between San Diego and Redding in a variety of habitats including open grasslands, shrublands, chaparral, desert margins including Joshua tree and creosote scrub, and semi-urban settings. It is near endemic to California, with only a few records from Nevada and Mexico (CDFW 2019). Like most other species of bumble bees, Crotch's bumble bees primarily nests underground (Williams et al. 2014). They are generalist foragers and have been reported visiting a wide variety of flowering plants. This species has a short tongue and is best suited to forage at open flowers with short corollas (CDFW 2019). Williams et al. (2014) report plants in the genera *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia*, and *Salvia* as example food plants.

The Project study areas support approximately 10.264 acres of suitable nesting foraging and overwintering habitat primarily along the vegetated coastal bluff slopes.

SAN DIEGO FAIRY SHRIMP

San Diego fairy shrimp are generally restricted to vernal pools in southern California and northwestern Baja California, Mexico. (USFWS 2021). The Project study area supports approximately 0.029 acre of potentially suitable habitat within the isolated road ruts located along the pedestrian trail. Protocol branchiopod surveys would be required to determine presence or absence of any fairy shrimp within the Area #2 and Area #4 study areas.

WESTERN SNOWY PLOVER

Western snowy plover is considered sensitive when nesting. This species nests on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Less commonly used nesting sites include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. During the winter, the species is known to nest on beaches, including beaches where the species does not normally nest, such as man-made salt ponds and estuarine sand and mud flats (USFWS 2007).

The Area #1 and Area #4 study areas supports 4.189 acres of beach habitat located along the western boundary of the railroad ROW. However, the beaches are subject to daily use by beachgoers and are not expected or known to support nesting western snowy plover. The nearest western snowy plover nesting location was documented in 2013 approximately 18 miles north of the Area #1 study area at Newport Beach.

Special-Status Wildlife Species

Based on the results of the literature review, 28 wildlife species that are not listed under FESA or CESA or candidates for listing but are considered SSCs or are fully protected have potential to occur within the Project vicinity. Of these, the following four have potential to occur in the Project study areas:

- Reptiles
    - Southern California legless lizard (*Anniella stebbinsi*) – SSC
    - Blainville's horned lizard (*Phrynosoma blainvilli*) – SSC
- Mammals
    - Pallid bat (*Antrozous pallidus*) – SSC
    - Western red bat (*Lasiurus blossevillii*) – SSC

The remaining special-status wildlife species are not expected to occur due to a lack of suitable habitat or because the Project study areas are located outside of the species' known geographic ranges. Attachment A provides details for these species, including habitat and potential to occur within the Project study areas. No non-listed special-status wildlife were observed within the Project study areas during the field survey.

Nesting Birds

Suitable habitat to support nesting birds protected under the Migratory Bird Treaty Act and California Fish and Game Code Section 3500 et seq., occurs within the Project study area and includes mature trees and shrubs. Bridge- and crevice-nesting birds could nest on the coastal bluff slopes within the Project study area. There is potential for ground-nesting birds, such as killdeer (*Charadrius vociferus*), to nest within portions of the Project study areas, however, the areas are highly disturbed by humans utilizing the beach or pedestrian trails, as well, as trains utilizing the railroads.

Aquatic Resources Potentially Subject to Local, State, and Federal Regulation

There are seven distinct aquatic features mapped within the Project study areas that have potential to be locally, state, or federally regulated. The features include freshwater marsh, the Pacific Ocean, road ruts, and unvegetated channels. Descriptions of these features are provided below and depicted

on Figures 8 and 12. Table 2 summarizes these potential aquatic resources within the Project study areas. Photographs of aquatic features are included in Attachment C.

FRESHWATER MARSH

FWM-1 consists of a small patch of cattails surrounded by saturated, bare ground. Water was observed flowing into FWM-1 from a seep located approximately 20 feet northwest on the adjacent coastal bluff. The feature is isolated and does not have a direct connection (i.e., channel) or outlet to another aquatic resource or to the Pacific Ocean. FWM-1 is located north of the pedestrian trail and has been disturbed by heavy machinery (observed tire tracks) and placement of sandbags within the feature.

A soil sample pit was not conducted within this feature, however, FWM-1 exhibits surface indicators of hydrology and a dominance of hydrophytic vegetation. The feature potentially meets the USACE three-parameter criteria for wetlands.

Within the Area #2 study area, FWM-1 is 0.006 acre and would be potentially regulated by RWQCB, CCC, and CDFW.

FWM-2 consists of a dense patch of giant reed located north of the railroad tracks at the southern end of the of the Area #4 study area. Water pools before flowing through a 24-inch concrete culvert under the railroad tracks, creating the feature, and ultimately flowing into the Pacific Ocean. A soil sample pit was not conducted within this feature, however, FWM-2 exhibits surface indicators of hydrology and a dominance of hydrophytic vegetation. The feature potentially meets the USACE three-parameter criteria for wetlands.

Within the Area #4 study area, FWM-2 is 0.054 acre and would be potentially regulated by USACE, RWQCB, CCC, and CDFW.

PACIFIC OCEAN/TIDAL WATERS

Subtidal marine waters occur within the Area #1 and Area #2 study areas and consist entirely of waters associated with the Pacific Ocean. These waters do not support kelp beds or other marine vegetation such as eel grass. The limits of the Pacific Ocean/Tidal Waters boundaries extend generally to the toe-of-slope of the riprap berm separating the railroad tracks from the Pacific Ocean/beaches. Subsequent surveys are required to determine the Section 10 and Section 404 limits for the Pacific Ocean.

Within the Area #1 study area, Pacific Ocean/tidal waters encompass 0.552 acre and within the Area #2 study area, Pacific Ocean/tidal waters encompass 2.680 acres. Pacific Ocean/tidal waters would be potentially regulated by USACE, RWQCB, CCC, and CDFW.

ROAD RUT (1 THROUGH 4)

Road Rut 1 and 2 consists of unvegetated road ruts and located within the northern portion of the Project study area, along the pedestrian trail. The two features are located east of the railroad tracks and at the base of the adjacent bluff. Road Rut 1 is approximately 32 feet in length and 10 feet wide and Road Rut 2 is approximately 155 feet in length and averages 8 feet wide. Standing water was observed within each road rut. Tire tracks from heavy machinery were observed throughout the area and may have created the road ruts as the ground was soft due to water seeping from the adjacent bluffs.

Road Rut 3 is located south of the temporary wall built to protect the railroad tracks below the Mariposa Bridge at the base of the bluff. Water was observed flowing from the southern terminus of the temporary wall towards Road Rut 3. Road Rut 3 is approximately 33 feet long and 4 feet wide. Historically, stormwater/overland flows would flow unimpeded across Road Rut 3 and discharge into a culvert and ultimately into the Pacific Ocean. However, the culvert is blocked by sediment build-up which has caused flows to back up between the railroad tracks and coastal bluff to create this feature.

Road Rut 4 is an unvegetated road rut located at the base of the coastal bluffs along the pedestrian trail within the northern portion of the Area #4 study area. Road Rut 4 is approximately 115 feet long and 15 feet wide. Water was observed within the road rut with some observations of flow from the coastal bluff immediately northeast of the feature. The feature abuts railroad barriers.

Within the Area #2 study area, Road Rut 1 is 0.006 acre, Road Rut 2 is 0.023 acre, and Road Rut 3 is 0.003 acre. Within the Area #4 study area, Road Rut 4 is 0.037 acre. Road Ruts 1, 2, and 4 would be potentially regulated by RWQCB, CCC, and CDFW. Road Rut 3 would also be potentially regulated by USACE.

UNVEGETATED CHANNEL (UVC-1 AND UVC-2)

UVC-1 consists of an unvegetated earthen channel located at the northern end of the Project study area. The channel also serves as a pedestrian pathway to access the Pacific Ocean under the railroad tracks. A concrete culvert was observed under the pedestrian pathway and a low flow channel, approximately 6-inches deep, was observed flowing the culvert through UVC-1, west towards the Pacific Ocean. UVC-1 exhibits an OHWM ranging from 10 feet near the concrete culvert to 18 feet near the railroad tracks. The channel consists of compact sand with larger boulders throughout the middle of the channel.

Within the Area #2 study area, UVC-1 is 0.010 acre and would be potentially regulated by USACE, RWQCB, CCC, and CDFW.

UVC-2 is concrete lined channels that bisect the pedestrian trail and railroad tracks within the Area #2 study area. UVC-2 originates at the outlet of a 48-inch concrete culvert and is located along the West Mariposa Road entrance to Mariposa Bridge, north of the pedestrian trail. The channel is approximately 10 feet wide and constructed with grouted riprap. UVC-2 flows west and under the railroad berm through two 26-inch concrete culverts and ultimately discharges into the Pacific Ocean. UVC-2 does not support hydrophytic vegetation and would not meet the USACE three-parameter criteria for a wetland. However, it may be regulated by USACE as a non-wetland water of the U.S., RWQCB as a non-wetland water of the State, CCC wetland, and CDFW unvegetated streambed. Within the Area #2 study area, UVC-2 is 0.012 acre.

Table 2. Potential Aquatic Resources within the Project Study Areas

Aquatic Feature	Acres	Potential Regulatory Authority			
		USACE (WOUS)	RWQCB (WOS)	CCC Wetland	CDFW Wetland/Streambed
Area #1					
Pacific Ocean	0.552	X	X	X	
Area #2					
FWM-1	0.006		X	X	X
Pacific Ocean	2.680	X	X	X	
Road Rut 1	0.006		X	X	X[1]
Road Rut 2	0.023		X	X	X[1]
Road Rut 3	0.003	X	X	X	X[1]
UVC-1	0.010	X	X	X	X
UVC-2	0.012	X	X	X	X
Area #4					
FWM-2	0.054	X	X	X	X
Road Rut 4	0.037		X	X	X[1]
Total	***3.383***				

[1] Should the feature support habitat for a sensitive species, such as listed branchiopods, CDFW may take jurisdiction.

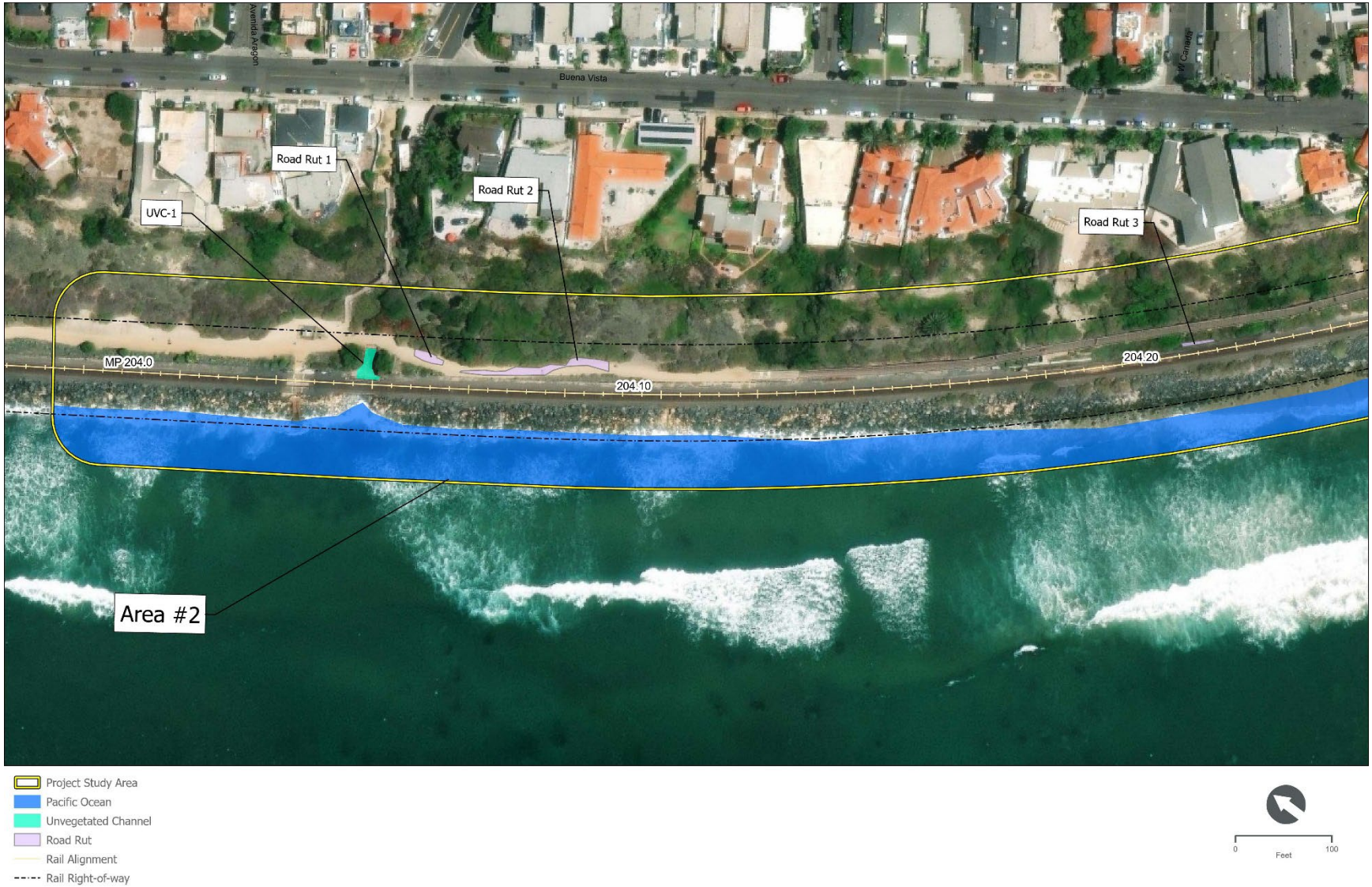
Recommendations

The potentially regulated aquatic features described above would need to be verified through a formal delineation survey that assess their boundaries based on the criteria of each agency (USACE, RWQCB, CDFW, and CCC). Formal delineation surveys would include soil sampling points that use USACE's three-parameter criteria to determine the presence of a wetland and assessment of their connectivity to a traditionally navigable water. Formal delineation surveys would also refine the preliminary boundaries of the aquatic features described, resulting in more accurate acreages of each aquatic feature based on each agency standard.

Figure 8. Potential Aquatic Resources (Area #1)

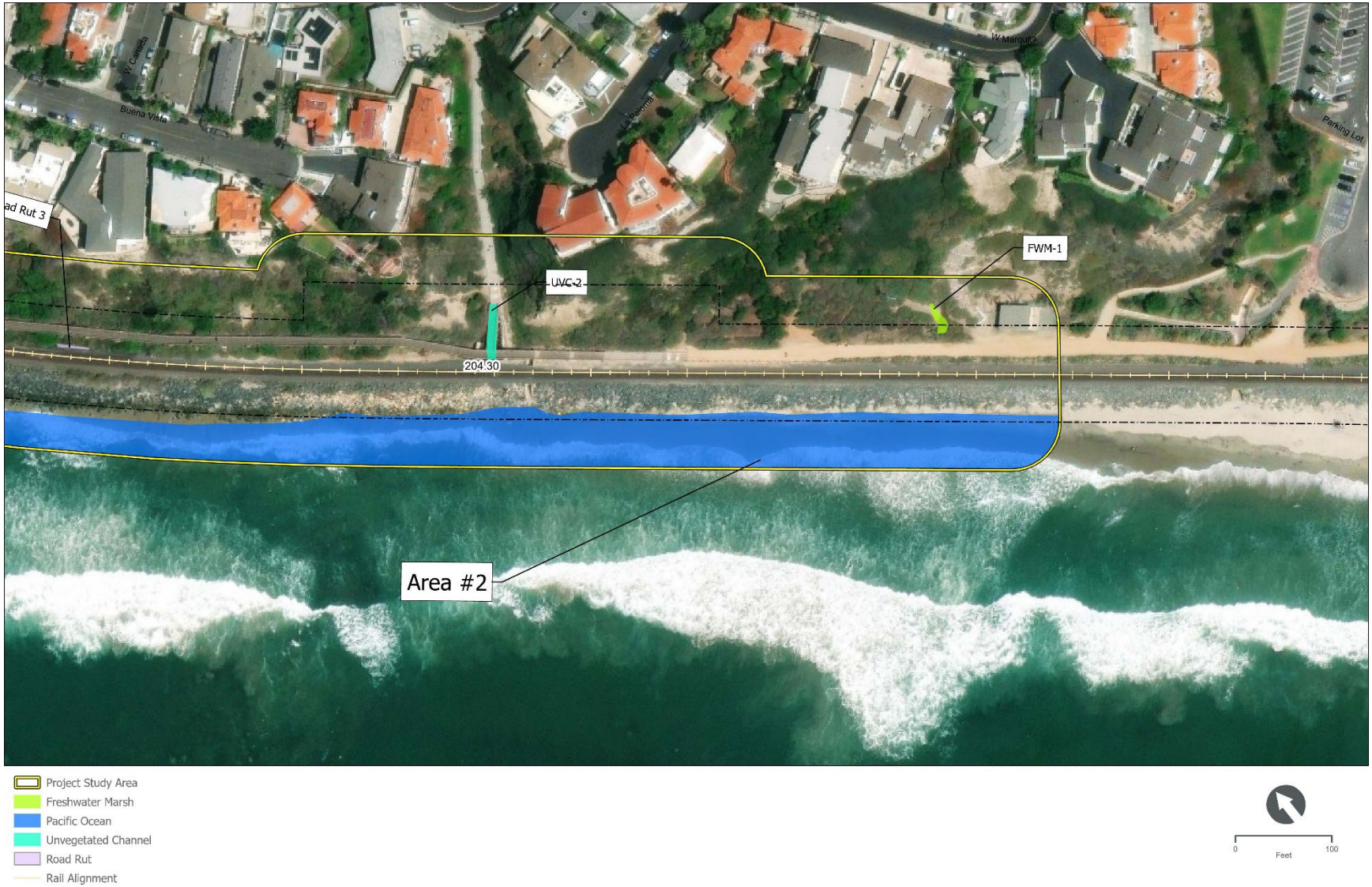
This page is intentionally blank.

Figure 9. Potential Aquatic Resources (Area #2, Sheet 1)



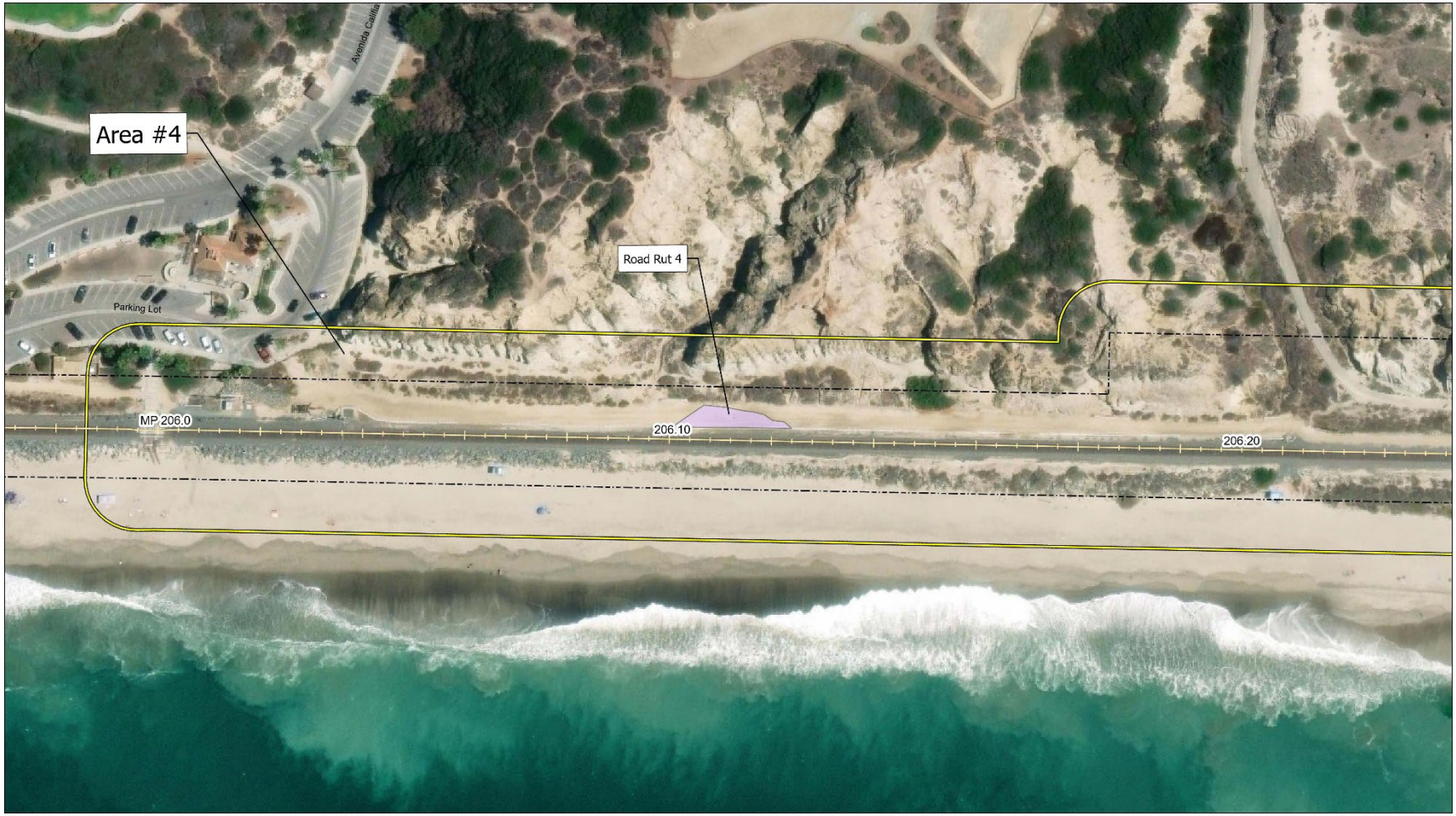
This page is intentionally blank.

Figure 10. Potential Aquatic Resources (Area #2, Sheet 2)



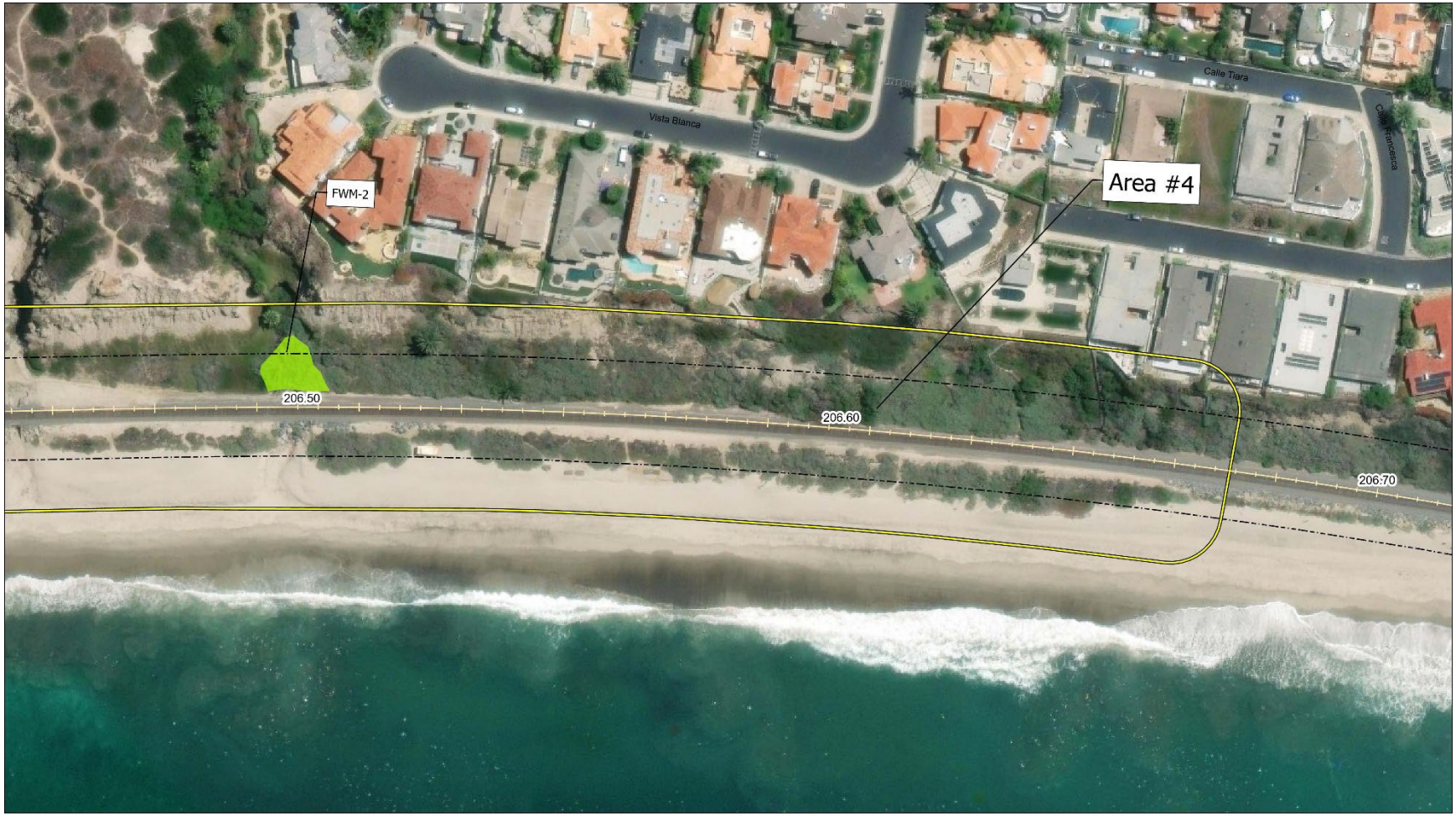
This page is intentionally blank.

Figure 11. Potential Aquatic Resources (Area #4, Sheet 1)



This page is intentionally blank.

Figure 12. Potential Aquatic Resources (Area #4, Sheet 2)



This page is intentionally blank.

References

Calflora. 2023. Online database. Berkeley, California. https://www.calflora.org/.

——— 2009. Protocols for Surveying and Evaluation Impacts to Special Status Native Plant Populations and Natural Communities.

California Department of Fish and Wildlife (CDFW). 2024. RareFind 5 – California Natural Diversity Database Online Search. Accessed March 2024. https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data.

California Department of Fish and Wildlife (CDFW). 2019. Report to the Fish and Game Commission. Evaluation of the Petition from the Xerces Society, Defenders of Wildlife and the Center for Food Safety to List Four Species of Bumble Bees as Endangered Under the California Endangered Species Act.

California Native Plant Society (CNPS), Rare Plant Program. 2024. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.45). Website http://www.rareplants.cnps.org [accessed March 2024].

City of San Clemente, 2018. City of San Clemente Local Coastal Program Land Use Plan,

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. United States Army Engineer Waterways Experiment Station, Vicksburg, MS. https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf.

Jepson Flora Project (eds.). 2023. Jepson eFlora. http://ucjeps.berkeley.edu/eflora/.

Faber-Langendoen, D., J. Nichols, L. Master, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, A. Teucher, and B. Young. 2012. NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. NatureServe, Arlington, VA

National Marine Fisheries Service (NMFS), National ESA Critical Habitat Mapper, March 2024. https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=68d8df16b39c48fe9f60640692d0e318

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. Draft Vegetation Communities of San Diego County. Based on “Preliminary Descriptions of the Terrestrial Natural Communities of California”, Robert F. Holland, Ph.D., October 1986.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento. 1300 pp.

United States Army Corps of Engineers (USACE). 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).

https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/.

——— 2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. Hanover, NH:Cold Regions Research and Engineering Laboratory. https://cawaterlibrary.net/wp-content/uploads/2018/03/FinalOHWMManual_2008.pdf.

United State Geological Survey (USGS) Topographic Maps 2019. Https://www.usgs.gov/programs/national-geospatial-program/topographic-maps

United States Climate Data. 2020. Rancho Cucamonga. https://www.usclimatedata.com/. Accessed October 14, 2021.

United States Fish and Wildlife Service (USFWS). 2021. 5-Year Review for San Diego Fairy Shrimp

United States Fish and Wildlife Service (USFWS). 2024. Information for Planning and Consultation. Carlsbad Fish and Wildlife office. Accessed March 2024. https://ecos.fws.gov/ipac/.

Williams, P. H., R. W. Thorp, L. L. Richardson, and S. R. Colla. 2014. Bumble Bees of North America: An Identification Guide. Princeton University Press.

This page is intentionally blank.

Attachment A. Literature Review Results and Special Status Species Tables

This page intentionally left blank.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Clemente (3311745) OR San Onofre Bluff (3311735) OR Canada Gobernadora (3311755) OR Dana Point (3311746) OR San Juan Capistrano (3311756) OR Laguna Beach (3311757))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S4	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2	SSC
Anniella stebbinsi Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aphanisma blitoides aphanisma	PDCHE02010	None	None	G3G4	S2	1B.2
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio otus long-eared owl	ABNSB13010	None	None	G5	S3?	SSC
Aspidoscelis hyperythra orange-throated whiptail	ARACJ02060	None	None	G5	S2S3	WL
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta sandiegonensis San Diego fairy shrimp	ICBRA03060	Endangered	None	G2	S1	
Brodiaea filifolia thread-leaved brodiaea	PMLIL0C050	Threatened	Endangered	G2	S2	1B.1
Calochortus weedii var. intermedius intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T3	S3	1B.2
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	ABPBG02095	None	None	G5T3Q	S2	SSC
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	PDAST20095	None	None	G5T1	S1	1B.1
Chaetodipus californicus femoralis Dulzura pocket mouse	AMAFD05021	None	None	G5T3	S3	
Chaetodipus fallax fallax northwestern San Diego pocket mouse	AMAFD05031	None	None	G5T3T4	S3S4	
Choeronycteris mexicana Mexican long-tongued bat	AMACB02010	None	None	G3G4	S1	SSC
Chorizanthe polygonoides var. longispina long-spined spineflower	PDPGN040K1	None	None	G5T3	S3	1B.2
Clinopodium chandleri San Miguel savory	PDLAM08030	None	None	G2G3	S2	1B.2
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Comarostaphylis diversifolia ssp. diversifolia summer holly	PDERI0B011	None	None	G3T2	S2	1B.2
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S2	SSC
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T1T2Q	S2	
Dipodomys stephensi Stephens' kangaroo rat	AMAFD03100	Threatened	Threatened	G2	S3	
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Dudleya stolonifera Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dudleya viscida sticky dudleya	PDCRA040T0	None	None	G2	S2	1B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S3	
Emys marmorata western pond turtle	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium pendletonense Pendleton button-celery	PDAPI0Z120	None	None	G1	S1	1B.1
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphorbia misera cliff spurge	PDEUP0Q1B0	None	None	G5	S2	2B.2
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S4	SSC
Imperata brevifolia California satintail	PMPOA3D020	None	None	G3	S3	2B.1
Isocoma menziesii var. decumbens decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
Lasiurus frantzii western red bat	AMACC05080	None	None	G4	S3	SSC
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
Lycium brevipes var. hassei Santa Catalina Island desert-thorn	PDSOL0G0N0	None	None	G5T1Q	S1	3.1
Monardella hypoleuca ssp. intermedia intermediate monardella	PDLAM180A4	None	None	G4T2?	S2?	1B.3
Myosurus minimus ssp. apus little mousetail	PDRAN0H031	None	None	G5T2Q	S2	3.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nolina cismontana chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G5	S3	SSC
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	Candidate Endangered	G5T1Q	S1	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Pentachaeta aurea ssp. allenii Allen's pentachaeta	PDAST6X021	None	None	G4T1	S1	1B.1
Perognathus longimembris pacificus Pacific pocket mouse	AMAFD01042	Endangered	None	G5T2	S2	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Plestiodon skiltonianus interparietalis Coronado skink	ARACH01114	None	None	G5T5	S2S3	WL
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3	SSC
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Cottonwood Willow Riparian Forest						
Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Dune Scrub						
Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
Southern Foredunes						
Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
Southern Mixed Riparian Forest						
Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Sycamore Alder Riparian Woodland						
Spea hammondii	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
western spadefoot						
Sternula antillarum browni	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California least tern						
Streptocephalus woottoni	ICBRA07010	Endangered	None	G1G2	S2	
Riverside fairy shrimp						
Suaeda esteroa	PDCHE0P0D0	None	None	G3	S2	1B.2
estuary seablite						
Taricha torosa	AAAAF02032	None	None	G4	S4	SSC
Coast Range newt						
Taxidea taxus	AMAJF04010	None	None	G5	S3	SSC
American badger						
Thamnophis hammondii	ARADB36160	None	None	G4	S3S4	SSC
two-striped gartersnake						
Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Needlegrass Grassland						
Verbesina dissita	PDAST9R050	Threatened	Threatened	G1G2	S1	1B.1
big-leaved crownbeard						
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S3	
least Bell's vireo						

Record Count: 97

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

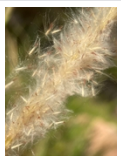
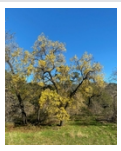
52 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**3311757:3311745:3311735:3311755:3311746:3311756**], **0** feet between Plant low elevation and high elevation, **200** feet between Plant low elevation and high elevation

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	GENERAL HABITATS	LOWEST ELEVATION (FT)	HIGHEST ELEVATION (FT)	PHOTO
Aphanisma blitoides	aphanisma	Chenopodiaceae	annual herb	Feb-Jun	None	None	G3G4	S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub	5	1000	 © 2010 Larry Sward
Artemisia palmeri	San Diego sagewort	Asteraceae	perennial deciduous shrub	(Feb)May-Sep	None	None	G3?	S3?	4.2		Chaparral, Coastal scrub, Riparian forest, Riparian scrub, Riparian woodland	15	3000	No Photo Available
Atriplex coulteri	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	None	None	G3	S1S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland	10	1510	No Photo Available
Atriplex pacifica	south coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4	S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas	0	460	No Photo Available
Atriplex parishii	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G1G2	S1	1B.1		Chenopod scrub, Playas, Vernal pools	80	6235	No Photo Available
Atriplex serenana var. *davidsonii*	Davidson's saltscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G5T1	S1	1B.2		Coastal bluff scrub, Coastal scrub	35	655	No Photo Available
Bahiopsis laciniata	San Diego County viguiera	Asteraceae	perennial shrub	Feb-Jun(Aug)	None	None	G4	S4	4.3		Chaparral, Coastal scrub	195	2460	No Photo Available

Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	perennial bulbiferous herb	Mar-Jun	FT	CE	G2	S2	1B.1	Yes	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools	80	3675	 © 2016 Keir Morse
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	None	None	G3G4	S3S4	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	50	2295	No Photo Available
Centromadia parryi ssp. *australis*	southern tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.1		Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools	0	1575	No Photo Available
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	Asteraceae	annual herb	Jan-Aug	None	None	G5T1	S1	1B.1		Coastal bluff scrub (sandy), Coastal dunes	0	330	No Photo Available
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	Polygonaceae	annual herb	Apr-Jul	None	None	G5T3	S3	1B.2		Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	100	5020	No Photo Available
Cistanthe maritima	seaside cistanthe	Montiaceae	annual herb	(Feb)Mar-Jun(Aug)	None	None	G3G4	S3	4.2		Coastal bluff scrub, Coastal scrub, Valley and foothill grassland	15	985	No Photo Available
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	Ericaceae	perennial evergreen shrub	Apr-Jun	None	None	G3T2	S2	1B.2		Chaparral, Cismontane woodland	100	2590	No Photo Available
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		Chaparral (openings), Coastal scrub, Valley and foothill grassland	100	2430	No Photo Available
Deinandra paniculata	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov	None	None	G4	S4	4.2		Coastal scrub, Valley and foothill grassland, Vernal pools	80	3085	No Photo Available

Dichondra occidentalis	western dichondra	Convolvulaceae	perennial rhizomatous herb	(Jan)Mar-Jul	None	None	G3G4	S3S4	4.2		Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	165	1640	No Photo Available
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	Crassulaceae	perennial herb	Apr-Jun	None	None	G3T2	S2	1B.1		Chaparral, Coastal bluff scrub, Coastal scrub, Valley and foothill grassland	15	1475	 © 2011 Aaron E. Sims
Dudleya multicaulis	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	Chaparral, Coastal scrub, Valley and foothill grassland	50	2590	No Photo Available
Dudleya stolonifera	Laguna Beach dudleya	Crassulaceae	perennial stoloniferous herb	May-Jul	FT	CT	G1	S1	1B.1	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	35	855	No Photo Available
Dudleya viscida	sticky dudleya	Crassulaceae	perennial herb	May-Jun	None	None	G2	S2	1B.2	Yes	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub	35	1805	No Photo Available
Eryngium pendletonense	Pendleton button-celery	Apiaceae	perennial herb	Apr-Jun(Jul)	None	None	G1	S1	1B.1	Yes	Coastal bluff scrub, Valley and foothill grassland, Vernal pools	50	360	 © 2009 Vince Scheidt
Euphorbia misera	cliff spurge	Euphorbiaceae	perennial shrub	(Oct)Dec-Aug	None	None	G5	S2	2B.2		Coastal bluff scrub, Coastal scrub, Mojavean desert scrub	35	1640	No Photo Available
Harpagonella palmeri	Palmer's grapplinghook	Boraginaceae	annual herb	Mar-May	None	None	G4	S3	4.2		Chaparral, Coastal scrub, Valley and foothill grassland	65	3135	 © 2015 Keir Morse
Holocarpha virgata ssp. *elongata*	graceful tarplant	Asteraceae	annual herb	May-Nov	None	None	G5T3	S3	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	195	3610	 © 2013 Anna Bennett

Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	None	None	G3G4	S3S4	3.2		Coastal dunes, Coastal scrub, Valley and foothill grassland (depressions, saline flats), Vernal pools	15	3280	No Photo Available
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	2B.1		Chaparral, Coastal scrub, Meadows and seeps (often alkali), Mojavean desert scrub, Riparian scrub	0	3985	 © 2020 Matt C. Berger
Isocoma menziesii var. *decumbens*	decumbent goldenbush	Asteraceae	perennial shrub	Apr-Nov	None	None	G3G5T2T3	S2	1B.2		Chaparral, Coastal scrub (often disturbed areas, sandy)	35	820	No Photo Available
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	165	2955	 © 2020 Zoya Akulova
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	Juncaceae	perennial rhizomatous herb	(Mar)May-Jun	None	None	G5T5	S4	4.2		Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt), Meadows and seeps (alkaline seeps)	10	2955	 © 2019 Belinda Lo
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1		Marshes and swamps (coastal salt), Playas, Vernal pools	5	4005	 © 2013 Keir Morse
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	None	None	G5T3	S3	4.3		Chaparral, Coastal scrub	5	2905	 © 2015 Keir Morse
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	Yes	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	50	1000	 © 2015 Aaron Schusteff

Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar-Jul(Aug)	None	None	G4T4?	S4?	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland	100	5905	 © 2008 Thomas Stoughton
Lycium californicum	California box-thorn	Solanaceae	perennial shrub	Mar-Aug(Dec)	None	None	G4	S4	4.2		Coastal bluff scrub, Coastal scrub	15	490	No Photo Available
Malacothrix saxatilis var. *saxatilis*	cliff malacothrix	Asteraceae	perennial rhizomatous herb	Mar-Sep	None	None	G5T4	S4	4.2	Yes	Coastal bluff scrub, Coastal scrub	10	655	No Photo Available
Microseris douglasii ssp. *platycarpha*	small-flowered microseris	Asteraceae	annual herb	Mar-May	None	None	G4T4	S4	4.2		Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools	50	3510	 © 2015 Richard Spellenberg
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		Valley and foothill grassland, Vernal pools (alkaline)	65	2100	No Photo Available
Nama stenocarpa	mud nama	Namaceae	annual/perennial herb	Jan-Jul	None	None	G4G5	S1S2	2B.2		Marshes and swamps (lake margins, riverbanks)	15	1640	No Photo Available
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools	10	3970	No Photo Available
Orcuttia californica	California Orcutt grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1		Vernal pools	50	2165	No Photo Available
Phacelia ramosissima var. *austrolitoralis*	south coast branching phacelia	Hydrophyllaceae	perennial herb	Mar-Aug	None	None	G5?T3Q	S3	3.2		Chaparral, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt)	15	985	No Photo Available
Piperia cooperi	chaparral rein orchid	Orchidaceae	perennial herb	Mar-Jun	None	None	G3	S3S4	4.2		Chaparral, Cismontane woodland, Valley and foothill grassland	50	5200	No Photo Available

Pseudognaphalium leucocephalum	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	None	None	G4	S2	2B.2		Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	0	6890	No Photo Available
Quercus dumosa	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr(May-Aug)	None	None	G3	S3	1B.1		Chaparral, Closed-cone coniferous forest, Coastal scrub	50	1310	No Photo Available
Romneya coulteri	Coulter's matilija poppy	Papaveraceae	perennial rhizomatous herb	Mar-Jul(Aug)	None	None	G4	S4	4.2		Chaparral, Coastal scrub	65	3935	No Photo Available
Selaginella cinerascens	ashy spike-moss	Selaginellaceae	perennial rhizomatous herb		None	None	G3G4	S3	4.1		Chaparral, Coastal scrub	65	2100	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2		Chaparral, Cismontane woodland, Coastal scrub	50	2625	No Photo Available
Sidalcea neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	None	None	G4	S2	2B.2		Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas	50	5020	No Photo Available
Suaeda esteroa	estuary seablite	Chenopodiaceae	perennial herb	(Jan-May)Jul-Oct	None	None	G3	S2	1B.2		Marshes and swamps (coastal salt)	0	15	No Photo Available
Suaeda taxifolia	woolly seablite	Chenopodiaceae	perennial evergreen shrub	Jan-Dec	None	None	G4	S4	4.2		Coastal bluff scrub, Coastal dunes, Marshes and swamps (coastal margins)	0	165	No Photo Available
Verbesina dissita	big-leaved crownbeard	Asteraceae	perennial herb	(Mar)Apr-Jul	FT	CT	G1G2	S1	1B.1		Chaparral (maritime), Coastal scrub	150	675	No Photo Available

Showing 1 to 52 of 52 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 21 March 2024].

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To: 03/21/2024 19:25:30 UTC
Project Code: 2024-0066421
Project Name: OCTA Coastal Rail Resiliency Study Site 1 MP 203.80-203.90

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2024-0066421

Project Name: OCTA Coastal Rail Resiliency Study Site 1 MP 203.80-203.90

Project Type: Railroad - Maintenance/Modification

Project Description: The coastal Rail Corridor in southern Orange County is owned by OCTA and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink) and Amtrak Pacific Surfliner for passenger service and by the Burlington Northern-Santa Fe Railroad (BNSF) for freight service. This segment of railroad is part of the greater 351-mile Los-Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor). The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal Rail Corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa
Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore have resulted in significant
interruptions to railroad operations. The coastal Rail Corridor is subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical Rail Corridor.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.42936625,-117.6300698211223,14z

Counties: Orange County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Pocket Mouse *Perognathus longimembris pacificus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered

BIRDS

NAME	STATUS
California Least Tern *Sternula antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered

REPTILES

NAME	STATUS
Southwestern Pond Turtle *Actinemys pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4768	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad *Anaxyrus californicus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3762	Endangered
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

FISHES

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat.	Endangered

NAME	STATUS

Species profile: https://ecos.fws.gov/ecp/species/57

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	HDR Engineering
Name:	Aaron Newton
Address:	591 Camino de la Reina Suite 300
Address Line 2:	Suite 300
City:	San Diego
State:	CA
Zip:	92108
Email	aaron.newton@hdrinc.com
Phone:	8057980563

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 33º 25' 45" N, Longitude = 118º 22' 12" W
Decimal Degrees: Latitude = 33.429, Longitude = -117.630

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

Link	Data Caveats	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Coastal Pelagic Species	ALL	Pacific	
		Finfish	ALL	Pacific	
		Groundfish	ALL	Pacific	Groundfish
		Krill - Euphausia Pacifica	ALL	Pacific	
		Krill - Thysanoessa Spinifera	ALL	Pacific	
		Other Krill Species	ALL	Pacific	

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

Pacific Coastal Pelagic Species,
Jack Mackerel,
Pacific (Chub) Mackerel,
Pacific Sardine,
Northern Anchovy - Central Subpopulation,
Northern Anchovy - Northern Subpopulation,
Pacific Highly Migratory Species,
Bigeye Thresher Shark - North Pacific,
Bluefin Tuna - Pacific,
Dolphinfish (Dorado or Mahimahi) - Pacific,
Pelagic Thresher Shark - North Pacific,
Swordfish - North Pacific

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To: 03/21/2024 19:40:08 UTC
Project Code: 2024-0066432
Project Name: OCTA Coastal Rail Resiliency Study Site 2 MP 204.0-204.40

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2024-0066432

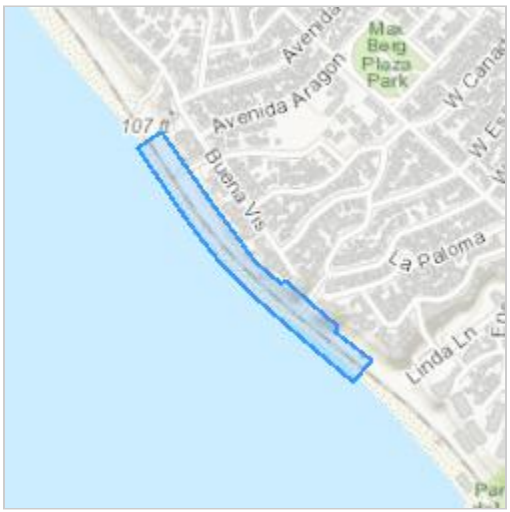
Project Name: OCTA Coastal Rail Resiliency Study Site 2 MP 204.0-204.40

Project Type: Railroad - Maintenance/Modification

Project Description: The coastal Rail Corridor in southern Orange County is owned by OCTA and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink) and Amtrak Pacific Surfliner for passenger service and by the Burlington Northern-Santa Fe Railroad (BNSF) for freight service. This segment of railroad is part of the greater 351-mile Los-Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor). The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal Rail Corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa
Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore have resulted in significant
interruptions to railroad operations. The coastal Rail Corridor is subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical Rail Corridor.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.425439850000004,-117.62670773374893,14z



Counties: Orange County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 18 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Pocket Mouse *Perognathus longimembris pacificus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered
Stephens' Kangaroo Rat *Dipodomys stephensi (incl. D. cascus)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3495	Threatened

BIRDS

NAME	STATUS
California Least Tern *Sternula antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Ridgway"s Rail *Rallus obsoletus levipes* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered

REPTILES

NAME	STATUS
Southwestern Pond Turtle *Actinemys pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4768	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad *Anaxyrus californicus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3762	Endangered
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species.	Proposed Threatened

NAME STATUS

Species profile: https://ecos.fws.gov/ecp/species/5425

FISHES

NAME STATUS

Tidewater Goby *Eucyclogobius newberryi* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/57

INSECTS

NAME STATUS

Monarch Butterfly *Danaus plexippus* Candidate
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRUSTACEANS

NAME STATUS

Riverside Fairy Shrimp *Streptocephalus woottoni* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8148

San Diego Fairy Shrimp *Branchinecta sandiegonensis* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6945

FLOWERING PLANTS

NAME STATUS

San Diego Ambrosia *Ambrosia pumila* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8287

San Diego Button-celery *Eryngium aristulatum var. parishii* Endangered
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5937

San Diego Thornmint *Acanthomintha ilicifolia* Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/351

Thread-leaved Brodiaea *Brodiaea filifolia* Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6087

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	HDR Engineering
Name:	Aaron Newton
Address:	591 Camino de la Reina Suite 300
Address Line 2:	Suite 300
City:	San Diego
State:	CA
Zip:	92108
Email	aaron.newton@hdrinc.com
Phone:	8057980563

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Clemente (3311745) OR San Onofre Bluff (3311735) OR Las Pulgas Canyon (3311734) OR Margarita Peak (3311744) OR Canada Gobernadora (3311755) OR Dana Point (3311746) OR Sitton Peak (3311754) OR San Juan Capistrano (3311756))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S4	WL
Allium marvinii Yucaipa onion	PMLIL02330	None	None	G1	S1	1B.2
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2	SSC
Anniella stebbinsi Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aphanisma blitoides aphanisma	PDCHE02010	None	None	G3G4	S2	1B.2
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos rainbowensis Rainbow manzanita	PDERI042T0	None	None	G2	S2	1B.1
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio otus long-eared owl	ABNSB13010	None	None	G5	S3?	SSC
Aspidoscelis hyperythra orange-throated whiptail	ARACJ02060	None	None	G5	S2S3	WL
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Baccharis vanessae Encinitas baccharis	PDAST0W0P0	Threatened	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta sandiegonensis San Diego fairy shrimp	ICBRA03060	Endangered	None	G2	S1	
Brodiaea filifolia thread-leaved brodiaea	PMLIL0C050	Threatened	Endangered	G2	S2	1B.1
Brodiaea orcuttii Orcutt's brodiaea	PMLIL0C0B0	None	None	G2	S2	1B.1
Brodiaea santarosae Santa Rosa Basalt brodiaea	PMLIL0C0G0	None	None	G1	S1	1B.2
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Calochortus weedii var. intermedius intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T3	S3	1B.2
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	ABPBG02095	None	None	G5T3Q	S2	SSC
Ceanothus pendletonensis Pendleton ceanothus	PDRHA04450	None	None	G1	S1	1B.2
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Centromadia pungens ssp. laevis smooth tarplant	PDAST4R0R4	None	None	G3G4T2	S2	1B.1
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	PDAST20095	None	None	G5T1	S1	1B.1
Chaetodipus californicus femoralis Dulzura pocket mouse	AMAFD05021	None	None	G5T3	S3	
Chaetodipus fallax fallax northwestern San Diego pocket mouse	AMAFD05031	None	None	G5T3T4	S3S4	
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S3	SSC
Choeronycteris mexicana Mexican long-tongued bat	AMACB02010	None	None	G3G4	S1	SSC
Chorizanthe polygonoides var. longispina long-spined spineflower	PDPGN040K1	None	None	G5T3	S3	1B.2
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Clinopodium chandleri San Miguel savory	PDLAM08030	None	None	G2G3	S2	1B.2
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Coleonyx variegatus abbotti San Diego banded gecko	ARACD01031	None	None	G5T5	S1S2	SSC
Comarostaphylis diversifolia ssp. diversifolia summer holly	PDERI0B011	None	None	G3T2	S2	1B.2
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T1T2Q	S2	
Diadophis punctatus similis San Diego ringneck snake	ARADB1001A	None	None	G5T4	S2?	
Dipodomys stephensi Stephens' kangaroo rat	AMAFD03100	Threatened	Threatened	G2	S3	
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Dudleya stolonifera Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1	S1	1B.1
Dudleya viscida sticky dudleya	PDCRA040T0	None	None	G2	S2	1B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S3	
Emys marmorata western pond turtle	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eryngium pendletonense Pendleton button-celery	PDAPI0Z120	None	None	G1	S1	1B.1
Erysimum ammophilum sand-loving wallflower	PDBRA16010	None	None	G2	S2	1B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphorbia misera cliff spurge	PDEUP0Q1B0	None	None	G5	S2	2B.2
Ferocactus viridescens San Diego barrel cactus	PDCAC08060	None	None	G3?	S2S3	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Horkelia truncata Ramona horkelia	PDROS0W0G0	None	None	G3	S3	1B.3
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S4	SSC
Imperata brevifolia California satintail	PMPOA3D020	None	None	G3	S3	2B.1
Isocoma menziesii var. decumbens decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
Lasiurus frantzii western red bat	AMACC05080	None	None	G4	S3	SSC
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
Leptosyne maritima sea dahlia	PDAST2L0L0	None	None	G2	S1S2	2B.2
Lilium parryi lemon lily	PMLIL1A0J0	None	None	G3	S3	1B.2
Lycium brevipes var. hassei Santa Catalina Island desert-thorn	PDSOL0G0N0	None	None	G5T1Q	S1	3.1
Monardella hypoleuca ssp. intermedia intermediate monardella	PDLAM180A4	None	None	G4T2?	S2?	1B.3
Monardella macrantha ssp. hallii Hall's monardella	PDLAM180E1	None	None	G5T3	S3	1B.3
Myosurus minimus ssp. apus little mousetail	PDRAN0H031	None	None	G5T2Q	S2	3.1
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Navarretia fossalis spreading navarretia	PDPLM0C080	Threatened	None	G2	S2	1B.1
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
Nemacaulis denudata var. denudata coast woolly-heads	PDPGN0G011	None	None	G3G4T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nolina cismontana chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	Candidate Endangered	G5T1Q	S1	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Pentachaeta aurea ssp. allenii Allen's pentachaeta	PDAST6X021	None	None	G4T1	S1	1B.1
Perognathus longimembris pacificus Pacific pocket mouse	AMAFD01042	Endangered	None	G5T2	S2	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Plestiodon skiltonianus interparietalis Coronado skink	ARACH01114	None	None	G5T5	S2S3	WL
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Rallus obsoletus levipes light-footed Ridgway's rail	ABNME05014	Endangered	Endangered	G3T1T2	S1	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
San Diego Mesa Hardpan Vernal Pool San Diego Mesa Hardpan Vernal Pool	CTT44321CA	None	None	G2	S2.1	
Scutellaria bolanderi ssp. austromontana southern mountains skullcap	PDLAM1U0A1	None	None	G4T3	S3	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Dune Scrub						
Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
Southern Foredunes						
Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
Southern Mixed Riparian Forest						
Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Sycamore Alder Riparian Woodland						
Spea hammondii	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
western spadefoot						
Sternula antillarum browni	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California least tern						
Streptocephalus woottoni	ICBRA07010	Endangered	None	G1G2	S2	
Riverside fairy shrimp						
Suaeda esteroa	PDCHE0P0D0	None	None	G3	S2	1B.2
estuary seablite						
Taricha torosa	AAAAF02032	None	None	G4	S4	SSC
Coast Range newt						
Taxidea taxus	AMAJF04010	None	None	G5	S3	SSC
American badger						
Tetracoccus dioicus	PDEUP1C010	None	None	G2G3	S2	1B.2
Parry's tetracoccus						
Thamnophis hammondii	ARADB36160	None	None	G4	S3S4	SSC
two-striped gartersnake						
Tortula californica	NBMUS7L090	None	None	G2G3	S2?	1B.2
California screw moss						
Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Needlegrass Grassland						
Verbesina dissita	PDAST9R050	Threatened	Threatened	G1G2	S1	1B.1
big-leaved crownbeard						
Viguiera purisimae	PDAST9T0S0	None	None	G4	S1	2B.3
La Purisima viguiera						
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S3	
least Bell's vireo						

Record Count: 120

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

62 matches found. Click on scientific name for details

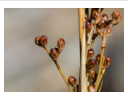
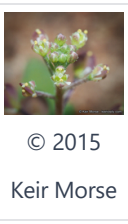
Search Criteria: 9-Quad include [**3311745:3311735:3311734:3311744:3311755:3311746:3311754:3311756**], **0** feet between Plant low elevation and high elevation, **200** feet between Plant low elevation and high elevation

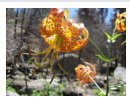
▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	GENERAL HABITATS	HIGHEST ELEVATION (FT)	LOWEST ELEVATION (FT)	PHOTO
Abronia maritima	red sand-verbena	Nyctaginaceae	perennial herb	Feb-Nov	None	None	S3?	4.2		Coastal dunes	330	0	 ©2003 Christopher L. Christie
Aphanisma blitoides	aphanisma	Chenopodiaceae	annual herb	Feb-Jun	None	None	S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub	1000	5	 © 2010 Larry Sward
Artemisia palmeri	San Diego sagewort	Asteraceae	perennial deciduous shrub	(Feb)May-Sep	None	None	S3?	4.2		Chaparral, Coastal scrub, Riparian forest, Riparian scrub, Riparian woodland	3000	15	No Photo Available
Atriplex coulteri	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	None	None	S1S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland	1510	10	No Photo Available
Atriplex pacifica	south coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	S2	1B.2		Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas	460	0	No Photo Available
Baccharis vanessae	Encinitas baccharis	Asteraceae	perennial deciduous shrub	Aug-Nov	FT	CE	S1	1B.1	Yes	Chaparral (maritime), Cismontane woodland	2360	195	No Photo Available
Bahiopsis laciniata	San Diego County viguiera	Asteraceae	perennial shrub	Feb-Jun(Aug)	None	None	S4	4.3		Chaparral, Coastal scrub	2460	195	No Photo Available

Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	perennial bulbiferous herb	Mar-Jun	FT	CE	S2	1B.1	Yes	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools	3675	80	 © 2016 Keir Morse
Brodiaea orcuttii	Orcutt's brodiaea	Themidaceae	perennial bulbiferous herb	May-Jul	None	None	S2	1B.1	Yes	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	5550	100	 © 2001 Ellen Friedman & Ted Dunning
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	None	None	S3S4	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	2295	50	No Photo Available
Centromadia parryi ssp. *australis*	southern tarplant	Asteraceae	annual herb	May-Nov	None	None	S2	1B.1		Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools	1575	0	No Photo Available
Centromadia pungens ssp. *laevis*	smooth tarplant	Asteraceae	annual herb	Apr-Sep	None	None	S2	1B.1	Yes	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland	2100	0	No Photo Available
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	Asteraceae	annual herb	Jan-Aug	None	None	S1	1B.1		Coastal bluff scrub (sandy), Coastal dunes	330	0	No Photo Available

Chorizanthe polygonoides var. *longispina*	long-spined spineflower	Polygonaceae	annual herb	Apr-Jul	None	None	S3	1B.2		Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	5020	100	No Photo Available
Cistanthe maritima	seaside cistanthe	Montiaceae	annual herb	(Feb)Mar-Jun(Aug)	None	None	S3	4.2		Coastal bluff scrub, Coastal scrub, Valley and foothill grassland	985	15	No Photo Available
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	Ericaceae	perennial evergreen shrub	Apr-Jun	None	None	S2	1B.2		Chaparral, Cismontane woodland	2590	100	No Photo Available
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	S4	4.2		Chaparral (openings), Coastal scrub, Valley and foothill grassland	2430	100	No Photo Available
Deinandra paniculata	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov	None	None	S4	4.2		Coastal scrub, Valley and foothill grassland, Vernal pools	3085	80	No Photo Available
Dichondra occidentalis	western dichondra	Convolvulaceae	perennial rhizomatous herb	(Jan)Mar-Jul	None	None	S3S4	4.2		Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	1640	165	No Photo Available
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	Crassulaceae	perennial herb	Apr-Jun	None	None	S2	1B.1		Chaparral, Coastal bluff scrub, Coastal scrub, Valley and foothill grassland	1475	15	 © 2011 Aaron E. Sims
Dudleya multicaulis	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	None	None	S2	1B.2	Yes	Chaparral, Coastal scrub, Valley and foothill grassland	2590	50	No Photo Available
Dudleya stolonifera	Laguna Beach dudleya	Crassulaceae	perennial stoloniferous herb	May-Jul	FT	CT	S1	1B.1	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	855	35	No Photo Available

Dudleya viscida	sticky dudleya	Crassulaceae	perennial herb	May-Jun	None	None	S2	1B.2	Yes	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub	1805	35	No Photo Available
Eryngium aristulatum var. *parishii*	San Diego button-celery	Apiaceae	annual/perennial herb	Apr-Jun	FE	CE	S1	1B.1		Coastal scrub, Valley and foothill grassland, Vernal pools	2035	65	No Photo Available
Eryngium pendletonense	Pendleton button-celery	Apiaceae	perennial herb	Apr-Jun(Jul)	None	None	S1	1B.1	Yes	Coastal bluff scrub, Valley and foothill grassland, Vernal pools	360	50	 © 2009 Vince Scheidt
Erysimum ammophilum	sand-loving wallflower	Brassicaceae	perennial herb	Feb-Jun(Jul-Aug)	None	None	S2	1B.2	Yes	Chaparral (maritime), Coastal dunes, Coastal scrub	195	0	No Photo Available
Euphorbia misera	cliff spurge	Euphorbiaceae	perennial shrub	(Oct)Dec-Aug	None	None	S2	2B.2		Coastal bluff scrub, Coastal scrub, Mojavean desert scrub	1640	35	No Photo Available
Ferocactus viridescens	San Diego barrel cactus	Cactaceae	perennial stem	May-Jun	None	None	S2S3	2B.1		Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools	1475	10	 © 2009 Robert Steers
Harpagonella palmeri	Palmer's grapplinghook	Boraginaceae	annual herb	Mar-May	None	None	S3	4.2		Chaparral, Coastal scrub, Valley and foothill grassland	3135	65	 © 2015 Keir Morse
Holocarpha virgata ssp. *elongata*	graceful tarplant	Asteraceae	annual herb	May-Nov	None	None	S3	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	3610	195	 © 2013 Anna Bennett
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	None	None	S3S4	3.2		Coastal dunes, Coastal scrub, Valley and foothill grassland (depressions, saline flats), Vernal pools	3280	15	No Photo Available

Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	S3	2B.1		Chaparral, Coastal scrub, Meadows and seeps (often alkali), Mojavean desert scrub, Riparian scrub	3985	0	 © 2020 Matt C. Berger
Isocoma menziesii var. *decumbens*	decumbent goldenbush	Asteraceae	perennial shrub	Apr-Nov	None	None	S2	1B.2		Chaparral, Coastal scrub (often disturbed areas, sandy)	820	35	No Photo Available
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	S4	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	2955	165	 © 2020 Zoya Akulova
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	Juncaceae	perennial rhizomatous herb	(Mar)May-Jun	None	None	S4	4.2		Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt), Meadows and seeps (alkaline seeps)	2955	10	 © 2019 Belinda Lo
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	S2	1B.1		Marshes and swamps (coastal salt), Playas, Vernal pools	4005	5	 © 2013 Keir Morse
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	None	None	S3	4.3		Chaparral, Coastal scrub	2905	5	 © 2015 Keir Morse
Leptosyne maritima	sea dahlia	Asteraceae	perennial herb	Mar-May	None	None	S1S2	2B.2		Coastal bluff scrub, Coastal scrub	490	15	No Photo Available
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	S2S3	3	Yes	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	1000	50	 © 2015 Aaron Schusteff

Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar-Jul(Aug)	None	None	S4?	4.2	Yes	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland	5905	100	 © 2008 Thomas Stoughton
Lycium californicum	California box-thorn	Solanaceae	perennial shrub	Mar-Aug(Dec)	None	None	S4	4.2		Coastal bluff scrub, Coastal scrub	490	15	No Photo Available
Malacothrix saxatilis var. *saxatilis*	cliff malacothrix	Asteraceae	perennial rhizomatous herb	Mar-Sep	None	None	S4	4.2	Yes	Coastal bluff scrub, Coastal scrub	655	10	No Photo Available
Microseris douglasii ssp. *platycarpha*	small-flowered microseris	Asteraceae	annual herb	Mar-May	None	None	S4	4.2		Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools	3510	50	 © 2015 Richard Spellenberg
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	S2	3.1		Valley and foothill grassland, Vernal pools (alkaline)	2100	65	No Photo Available
Nama stenocarpa	mud nama	Namaceae	annual/perennial herb	Jan-Jul	None	None	S1S2	2B.2		Marshes and swamps (lake margins, riverbanks)	1640	15	No Photo Available
Navarretia fossalis	spreading navarretia	Polemoniaceae	annual herb	Apr-Jun	FT	None	S2	1B.1		Chenopod scrub, Marshes and swamps (shallow freshwater), Playas, Vernal pools	2150	100	No Photo Available
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	S2	1B.2	Yes	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools	3970	10	No Photo Available
Nemacaulis denudata var. *denudata*	coast woolly-heads	Polygonaceae	annual herb	Apr-Sep	None	None	S2	1B.2		Coastal dunes	330	0	No Photo Available
Orcuttia californica	California Orcutt grass	Poaceae	annual herb	Apr-Aug	FE	CE	S1	1B.1		Vernal pools	2165	50	No Photo Available

Phacelia ramosissima var. *austrolitoralis*	south coast branching phacelia	Hydrophyllaceae	perennial herb	Mar-Aug	None	None	S3	3.2		Chaparral, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt)	985	15	No Photo Available
Piperia cooperi	chaparral rein orchid	Orchidaceae	perennial herb	Mar-Jun	None	None	S3S4	4.2		Chaparral, Cismontane woodland, Valley and foothill grassland	5200	50	No Photo Available
Pseudognaphalium leucocephalum	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	None	None	S2	2B.2		Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	6890	0	No Photo Available
Quercus dumosa	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr(May-Aug)	None	None	S3	1B.1		Chaparral, Closed-cone coniferous forest, Coastal scrub	1310	50	No Photo Available
Quercus engelmannii	Engelmann oak	Fagaceae	perennial deciduous tree	Mar-Jun	None	None	S3	4.2		Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland	4265	165	No Photo Available
Romneya coulteri	Coulter's matilija poppy	Papaveraceae	perennial rhizomatous herb	Mar-Jul(Aug)	None	None	S4	4.2		Chaparral, Coastal scrub	3935	65	No Photo Available
Selaginella cinerascens	ashy spike-moss	Selaginellaceae	perennial rhizomatous herb		None	None	S3	4.1		Chaparral, Coastal scrub	2100	65	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	S2	2B.2		Chaparral, Cismontane woodland, Coastal scrub	2625	50	No Photo Available
Sidalcea neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	None	None	S2	2B.2		Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas	5020	50	No Photo Available
Suaeda esteroa	estuary seablite	Chenopodiaceae	perennial herb	(Jan-May)Jul-Oct	None	None	S2	1B.2		Marshes and swamps (coastal salt)	15	0	No Photo Available

Suaeda taxifolia	woolly seablite	Chenopodiaceae	perennial evergreen shrub	Jan-Dec	None	None	S4	4.2		Coastal bluff scrub, Coastal dunes, Marshes and swamps (coastal margins)	165	0	No Photo Available
Tortula californica	California screw moss	Pottiaceae	moss		None	None	S2?	1B.2	Yes	Chenopod scrub, Valley and foothill grassland	4790	35	No Photo Available
Verbesina dissita	big-leaved crownbeard	Asteraceae	perennial herb	(Mar)Apr-Jul	FT	CT	S1	1B.1		Chaparral (maritime), Coastal scrub	675	150	No Photo Available

Showing 1 to 62 of 62 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 21 March 2024].

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office

EFH

Link	Data Caveats	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
		Coastal Pelagic Species	ALL	Pacific	
		Finfish	ALL	Pacific	
		Groundfish	ALL	Pacific	Groundfish
		Krill - Euphausia Pacifica	ALL	Pacific	
		Krill - Thysanoessa Spinifera	ALL	Pacific	
		Other Krill Species	ALL	Pacific	

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

Pacific Coastal Pelagic Species,
Jack Mackerel,
Pacific (Chub) Mackerel,
Pacific Sardine,
Northern Anchovy - Central Subpopulation,
Northern Anchovy - Northern Subpopulation,
Pacific Highly Migratory Species,
Bigeye Thresher Shark - North Pacific,
Bluefin Tuna - Pacific,
Dolphinfish (Dorado or Mahimahi) - Pacific,

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. **For links to all EFH text descriptions see the complete data inventory: open data inventory -->
Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To: 03/21/2024 19:47:47 UTC
Project Code: 2024-0066446
Project Name: OCTA Coastal Rail Resiliency Study Site 3 MP 204.00-204.50

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2024-0066446

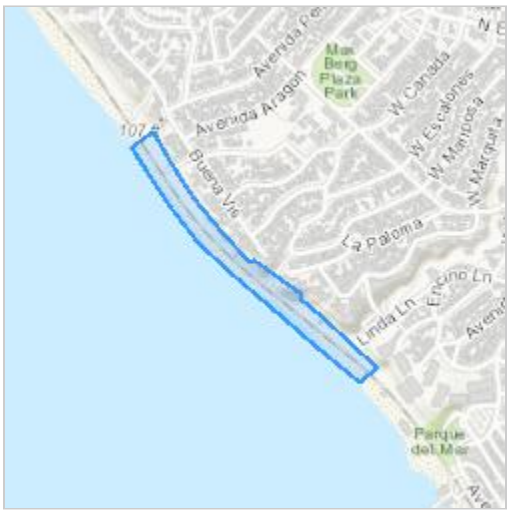
Project Name: OCTA Coastal Rail Resiliency Study Site 3 MP 204.00-204.50

Project Type: Railroad - Maintenance/Modification

Project Description: The coastal Rail Corridor in southern Orange County is owned by OCTA and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink) and Amtrak Pacific Surfliner for passenger service and by the Burlington Northern-Santa Fe Railroad (BNSF) for freight service. This segment of railroad is part of the greater 351-mile Los-Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor). The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal Rail Corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa
Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore have resulted in significant
interruptions to railroad operations. The coastal Rail Corridor is subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical Rail Corridor.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.425036899999995,-117.62625403557122,14z



Counties: Orange County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 18 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Pocket Mouse *Perognathus longimembris pacificus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered
Stephens' Kangaroo Rat *Dipodomys stephensi (incl. D. cascus)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3495	Threatened

BIRDS

NAME	STATUS
California Least Tern *Sternula antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Ridgway"s Rail *Rallus obsoletus levipes* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered

REPTILES

NAME	STATUS
Southwestern Pond Turtle *Actinemys pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4768	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad *Anaxyrus californicus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3762	Endangered
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species.	Proposed Threatened

NAME STATUS

Species profile: https://ecos.fws.gov/ecp/species/5425

FISHES

NAME STATUS

Tidewater Goby *Eucyclogobius newberryi* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/57

INSECTS

NAME STATUS

Monarch Butterfly *Danaus plexippus* Candidate
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRUSTACEANS

NAME STATUS

Riverside Fairy Shrimp *Streptocephalus woottoni* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8148

San Diego Fairy Shrimp *Branchinecta sandiegonensis* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6945

FLOWERING PLANTS

NAME STATUS

San Diego Ambrosia *Ambrosia pumila* Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8287

San Diego Button-celery *Eryngium aristulatum var. parishii* Endangered
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5937

San Diego Thornmint *Acanthomintha ilicifolia* Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/351

Thread-leaved Brodiaea *Brodiaea filifolia* Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6087

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	HDR Engineering
Name:	Aaron Newton
Address:	591 Camino de la Reina Suite 300
Address Line 2:	Suite 300
City:	San Diego
State:	CA
Zip:	92108
Email	aaron.newton@hdrinc.com
Phone:	8057980563

Special-Status Plant Species Evaluated for Potential to Occur within the Study Area

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Red sand-verbena *Abronia maritima*	USFWS: None CDFW: None CRPR: 4.2	Coastal dunes. Elevation: 0–328 feet. Blooming period: February–November	No	Coastal dunes absent.
San Diego thornmint *Acanthomintha illicifolia*	USFWS: FT CDFW: SE CRPR: 1B.1	Vernal pools; freshwater wetlands, coast sage scrub, chaparral, valley grassland, and wetland riparian. Elevation 165-2,920 feet. Blooming period: April-June	No	Project location is outside of elevation range.
La Purisima viguiera *Aldama purisimae*	USFWS: None CDFW: None CRPR: 2B.3	Coastal bluff scrub and chaparral. Elevation: 1,197–1,394 feet. Blooming period: April–September	No	Project location is outside of elevation range.
Yucaipa onion *Allium marvinii*	USFWS: None CDFW: None CRPR: 1B.2	Openings in chaparral in clay soils. Elevation: 2,493–3,444 feet. Blooming period: April–May	No	Project location is outside of elevation range.
San Diego ambrosia *Ambrosia pumila*	USFWS: FE CDFW: None CRPR: 1B.1	Vernal pools, disturbed; freshwater wetlands, coastal sage scrub, chaparral, valley grassland. Elevation: 245-7,480 feet. Blooming period: April-October	No	Project location is outside of elevation range.
Aphanisma *Aphanisma blitoides*	USFWS: None CDFW: None CRPR: 1B.2	Sandy soils in coastal bluff scrub, coastal dunes, and coastal scrub. Elevation: 3–1,000 feet. Blooming period: March–June	No	Potentially suitable sandy soils within coastal bluff scrub present landward of the railroad tracks, however, nearest record is located 3 miles south of study area and dated 1937.
Rainbow manzanita *Arctostaphylos rainbowensis*	USFWS: None CDFW: None CRPR: 1B.1	Chaparral. Elevation: 672–2,198 feet. Blooming period: December–March	No	Project location is outside of elevation range.
San Diego sagewort *Artemisia palmeri*	USFWS: None CDFW: None CRPR: 4.2	Sandy soils in mesic areas in chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland. Elevation: 49–3,002 feet. Blooming period: February–September	No	Suitable soils absent.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Western spleenwort *Asplenium vespertinum*	USFWS: None CDFW: None CRPR: 4.2	Rocky areas in chaparral, cismontane woodland, and coastal scrub. Elevation: 590–3,281 feet. Blooming period: February–June	No	Project location is outside of elevation range.
Coulter's saltbush *Atriplex coulteri*	USFWS: None CDFW: None CRPR: 1B.2	Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and grassland. Elevation: 9–1,509 feet. Blooming period: March–October	No	Suitable soils and habitat absent.
South Coast saltscale *Atriplex pacifica*	USFWS: None CDFW: None CRPR: 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, playas. Elevation: 0–459 feet. Blooming period: March–October	Yes	Suitable habitat present, however, not observed during field survey.
Parish's brittlescale *Atriplex parishii*	USFWS: None CDFW: None CRPR: 1B.1	Alkaline soils in chenopod scrub, playas, and vernal pools. Elevation: 82–6,232 feet. Blooming period: June–October	Yes	Suitable habitat is present, however, not observed during field survey.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	USFWS: None CDFW: None CRPR: 1B.2	Alkaline conditions in coastal bluff scrub and coastal scrub. Elevation: 32–656 feet. Blooming period: April–October	Yes	Suitable habitat is present, however, not observed during field survey.
Encinitas baccharis *Baccharis vanessae*	USFWS: FT CDFW: SE CRPR: 1B.1	Sandstone in Maritime chaparral and Cismontane woodland. Elevation: 196–2,362 feet. Blooming period: August–November	No	Project location is outside of elevation range.
San Diego County viguiera *Bahiopsis laciniata*	USFWS: None CDFW: None CRPR: 4.3	Coastal sage scrub and chaparral. Elevation: 245-7480 feet. Blooming period: February-June	No	Project location is outside of elevation range.
Thread-leaved brodiaea *Brodiaea filifolia*	USFWS: FT CDFW: SE CRPR: 1B.1	Mesic or clay soils in chaparral, cismontane woodland, closed-cone coniferous forest, coastal scrub, meadows and seeps, grassland, and vernal pools. Elevation: 82–3,673 feet. Blooming period: March–June	No	Suitable clay substrates are absent.
Orcutt's brodiaea *Brodiaea orcutti*	USFWS: None CDFW: None CRPR: 1B.1	Found on mesic, clay, sometimes serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, grassland, and vernal pools. Elevation: 98–5,550 feet. Blooming period: May–July	No	Project location is outside of elevation range.
Santa Rosa Basalt brodiaea *Brodiaea santarosae*	USFWS: None CDFW: None CRPR: 1B.2	Basaltic grassland. Elevation: 1,902–3,427 feet. Blooming period: May–June	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Catalina mariposa lily *Calochortus catalinae*	USFWS: None CDFW: None CRPR: 4.2	Coastal sage scrub, foothill woodland, chaparral, and valley grassland. Elevation: 0-6265 feet. Blooming period: March-June	No	Suitable habitat is absent.
Intermediate mariposa lily *Calochortus weedii* var. *intermedius*	USFWS: None CDFW: None CRPR: 1B.2	Rocky and calcareous areas in chaparral, coastal scrub, and grassland. Elevation: 345–2,804 feet. Blooming period: May–July	No	Project location is outside of elevation range.
Payson's jewel-flower *Caulanthus simulans*	USFWS: None CDFW: None CRPR: 4.2	Sandy and granitic soils in chaparral and coastal scrub. Elevation: 295–7,218 feet. Blooming period: February–June	No	Project location is outside of elevation range.
Pendleton ceanothus *Ceanothus pendletonensis*	USFWS: None CDFW: None CRPR: 1B.2	Granitic soils in chaparral and cismontane woodland. Elevation: 360–2,850 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Southern tarplant *Centromadia parryi ssp. australis*	USFWS: None CDFW: None CRPR: 1B.1	Found within the margin of marshes and swamps, vernally mesic soils in grassland, and vernal pools. Elevation: 0–1,574 feet. Blooming period: May–November	No	Suitable habitat is absent.
Smooth tarplant *Centromadia pungens ssp. laevis*	USFWS: None CDFW: None CRPR: 1B.1	Alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, and grassland. Elevation: 0-100 feet. Blooming period: April–September	No	Suitable habitat is absent.
Orcutt's pincushion *Chaenactis glabriuscula var. orcuttiana*	USFWS: None CDFW: None CRPR: 1B.1	Sandy soils in coastal bluff scrub and coastal dunes. Elevation: 0–328 feet. Blooming period: January–August	Yes	Suitable habitat is present, however, not observed during field survey.
Southern mountain misery *Chamaebatia australis*	USFWS: None CDFW: None CRPR: 4.2	Gabbroic or metavolcanic chaparral. Elevation: 984–3,345 feet. Blooming period: November–May	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Peninsular spineflower *Chorizanthe leptotheca*	USFWS: None CDFW: None CRPR: 4.2	Alluvial fans or granitic areas in chaparral, coastal scrub, and lower montane coniferous forest. Elevation: 984–6,232 feet. Blooming period: May–August	No	Project location is outside of elevation range.
Long-spined spineflower *Chorizanthe polygonoides var. longispina*	USFWS: None CDFW: None CRPR: 1B.2	Clay lenses, largely devoid of shrubs in chaparral, coastal scrub, meadows and seeps, grassland, and vernal pools. Elevation: 98–5,018 feet. Blooming period: April–July	No	Project location is outside of elevation range.
Seaside cistanthe *Cistanthe maritima*	USFWS: None CDFW: None CRPR: 4.2	Sandy soils in coastal bluff scrub, coastal scrub, and grassland. Elevation: 16–984 feet. Blooming period: February–August	Yes	Suitable vegetation is present, however, not observed during field survey.
San Miguel savory *Clinopodium chandleri*	USFWS: None CDFW: None CRPR: 1B.2	Rocky gabbroic, or metavolcanic areas in chaparral, cismontane woodland, coastal scrub, riparian scrub, and grassland. Elevation: 393–3,526 feet. Blooming period: March–July (synonym of Satureja chandleri)	No	Project location is outside of elevation range.
Serpentine collomia *Collomia diversifolia*	USFWS: None CDFW: None CRPR: 4.3	Serpentine, rocky, and gravelly soils in chaparral and cismontane woodland. Elevation: 655–1,970 feet. Blooming period: May–June	No	Project location is outside of elevation range.
Summer holly *Comarostaphylis diversifolia ssp. diversifolia*	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and Cismontane woodland. Elevation: 98–2,591 feet. Blooming period: April–June	No	Project location is outside of elevation range.
Small-flowered morning-glory *Convolvulus simulans*	USFWS: None CDFW: None CRPR: 4.2	Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and grassland. Elevation: 98–2,297 feet. Blooming period: March–July	No	Project location is outside of elevation range.
Paniculate tarplant *Deinandra paniculate*	USFWS: None CDFW: None CRPR: 4.2	Usually found in vernally mesic soils in coastal scrub, grassland, and vernal pools. Elevation: 82–3,084 feet. Blooming period: April–November	No	Project location is outside of elevation range.
Western dichondra *Dichondra occidentalis*	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, grassland. Elevation: 164–1,640 feet. Blooming period: January–July	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Blochman's dudleya *Dudleya blochmaniae ssp. blochmaniae*	USFWS: None CDFW: None CRPR: 1B.1	Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and grassland. Elevation: 16–1,476 feet. Blooming period: April–June	No	Suitable soils absent.
Many-stemmed dudleya *Dudleya multicaulis*	USFWS: None CDFW: None CRPR: 1B.2	Often in clay soils in chaparral, coastal scrub, and grassland. Elevation: 49–2,591 feet. Blooming period: April–July	No	Suitable soils absent.
Laguna Beach dudleya *Dudleya stolonifera*	USFWS: FT CDFW: ST CRPR: 1B.1	Rocky soil in chaparral, coastal scrub, cismontane woodland, and grassland. Elevation: 32–853 feet. Blooming period: May–July	No	Suitable soils absent.
Sticky dudleya *Dudleya viscida*	USFWS: None CDFW: None CRPR: 1B.2	Rocky soils in coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub. Elevation: 32–1,804 feet. Blooming period: May–June	No	Suitable soils absent.
San Diego button-celery *Eryngium aristulatum var. parishii*	USFWS: FE CDFW: SE CRPR: 1B.1	Vernal pools; freshwater wetlands, coastal sage scrub, valley grassland, and wetland-riparian. Elevation: 230-2065 feet. Blooming period: April-June	No	Project location is outside of elevation range.
Pendleton button-celery *Eryngium pendletonense*	USFWS: None CDFW: None CRPR: 1B.1	Clay soils or vernally mesic areas in coastal bluff scrub, grassland, and vernal pools. Elevation: 49–360 feet. Blooming period: April–July	No	Vernally mesic areas absent.
Sand-loving wallflower *Erysimum ammophilum*	USFWS: None CDFW: None CRPR: 1B.2	Sandy, openings in Maritime chaparral, coastal dunes, coastal scrub. Elevation: 0–197 feet. Blooming period: February–June	No	Suitable habitat is absent.
Palomar monkeyflower *Erythranthe diffusa*	USFWS: None CDFW: None CRPR: 4.3	Yellow pine forest and chaparral. Elevation: 1740-7515 feet. Blooming period: April June	No	Project location is outside of elevation range.
Cliff spurge *Euphorbia misera*	USFWS: None CDFW: None CRPR: 2B.2	Rocky areas in coastal bluff scrub, coastal scrub, and Mojavean desert scrub. Elevation: 32–1,640 feet. Blooming period: December–October	No	Suitable soil substrate is absent.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
San Diego barrel cactus *Ferocactus viridescens*	USFWS: None CDFW: None CRPR: 2B.1	Sandy to rocky areas of chaparral, coastal scrub, grassland, and vernal pools. Elevation: 9–1,476 feet. Blooming period: May–June	No	Suitable habitat is absent.
Palmer's grapplinghook *Harpagonella palmeri*	USFWS: None CDFW: None CRPR: 4.2	Clay soils in chaparral, grassland, coastal sage scrub. Elevation: 65–3,132 feet. Blooming period: March–May	No	Project location is outside of elevation range.
Graceful tarplant *Holocarpha virgata ssp. elongata*	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, and grassland. Elevation: 196–3,600 feet. Blooming period: May–November	No	Project location is outside of elevation range.
Vernal barley *Hordeum intercedens*	USFWS: None CDFW: None CRPR: 3.2	Coastal dunes, coastal scrub, saline flats and depressions in grassland, and vernal pools. Elevation: 16–3,280 feet. Blooming period: March–June	No	Suitable habitat is absent.
Mesa horkelia *Horkelia cuneata var. puberla*	USFWS: None CDFW: None CRPR: 1B.1	Sandy and gravelly soils within Maritime chaparral, cismontane woodland, and coastal scrub. Elevation: 229–2,657 feet. Blooming period: February–July (September)	No	Project location is outside of elevation range.
Ramona horkelia *Horkelia truncata*	USFWS: None CDFW: None CRPR: 1B.3	Clay and gabbroic soils in chaparral and Cismontane woodland. Elevation: 1,312–4,265 feet. Blooming period: May–June	No	Project location is outside of elevation range.
California satintail *Imperata brevifolia*	USFWS: None CDFW: None CRPR: 2B.1	Mesic soils in chaparral, coastal scrub, Mojavean desert scrub, riparian scrub, meadows and seeps (often alkali). Elevation: 0–3,985 feet. Blooming period: September–May	No	Suitable soils absent.
Decumbent goldenbush *Isocoma menziesii var. decumbens*	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and in sandy coastal scrub, often in sandy disturbed areas. Elevation: 33–443 feet. Blooming period: April–November	Yes	Suitable habitat and soils are present, however, not observed during field survey
Southern California black walnut *Juglans californica*	USFWS: None CDFW: None CRPR: 4.2	Alluvial areas in chaparral, cismontane woodland, and coastal scrub. Elevation: 164–2,952 feet. Blooming period: March–August	No	Project location is outside of elevation range.
Southwestern spiny rush *Juncus acutus ssp. leopoldii*	USFWS: None CDFW: None CRPR: 4.2	Mesic soils in coastal dunes, alkaline seeps in meadows and seeps, and coastal salt marshes and swamps. Elevation: 9–2,953 feet. Blooming period: (March)May–June	No	Suitable habitat is absent

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	USFWS: None CDFW: None CRPR: 1B.1	Coastal salt marsh, coastal salt swamps, playas, vernal pools. Elevation: 3–4,001 feet. Blooming period: February–June	No	Suitable habitat is absent
Robinson's pepper-grass *Lepidium virginicum var. robinsonii*	USFWS: None CDFW: None CRPR: 4.3	Openings in chaparral and sage scrub. Elevation: below 2,900 feet. Blooming period: January–July	No	Suitable habitat is absent.
Sea dahlia *Leptosyne maritima*	USFWS: None CDFW: None CRPR: 2B.2	Coastal bluff scrub and coastal scrub. Elevation: 16–492 feet. Blooming period: March–May	No	Suitable habitat present, however, not observed during field survey and nearest record is over 10 miles south of study area.
Woolly-headed lessingia *Lessingia hololeuca*	USFWS: None CDFW: None CRPR: 3	Clay or serpentine soils in grassland, coastal scrub, lower montane coniferous and broadleafed upland forests. Elevation: 45–1,000 feet. Blooming period: June–October	No	Suitable soils absent.
Ocellated Humboldt lily *Lilium humboldtii ssp. ocellatum*	USFWS: None CDFW: None CRPR: 4.2	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland. Elevation: 98–5,904 feet. Blooming period: March–August	No	Project location is outside of elevation range.
Lemon lily *Lilium parryi*	USFWS: None CDFW: None CRPR: 1B.2	Mesic areas in upper and lower montane coniferous forest, meadows and seeps, and riparian forest. Elevation: 4,001–9,003 feet. Blooming period: July	No	Project location is outside of elevation range.
Santa Catalina Island desert-thorn *Lycium brevipes var. hassei*	USFWS: None CDFW: None CRPR: 3.1	Coastal bluff scrub and coastal scrub. Elevation: 213–984 feet. Blooming period: June–August	No	Project location is outside of elevation range.
California box-thorn *Lycium californicum*	USFWS: None CDFW: None CRPR: 4.2	Coastal bluff scrub and coastal scrub. Elevation: 16–492 feet. Blooming period: December–August	Yes	Suitable habitat present, however, not observed during field survey.
Cliff malacothrix *Malacothrix saxatilis var. saxatilis*	USFWS: None CDFW: None CRPR: 4.2	Coastal scrub and coastal bluff scrub. Elevation: 9–656 feet. Blooming period: March–September	Yes	Suitable habitat present, however, not observed during field survey.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Small-flowered microseris *Microseris douglasii ssp.platycarpha*	USFWS: None CDFW: None CRPR: 4.2	Clay soils in cismontane woodland, coastal scrub, grassland, and vernal pools. Elevation: 49–3,510 feet. Blooming period: March–May	No	Suitable soils absent.
Intermediate monardella *Monardella hypoleuca ssp. intermedia*	USFWS: None CDFW: None CRPR: 1B.3	Usually in the understory in chaparral, cismontane woodland, and sometimes in lower montane coniferous forest. Elevation: 1,312–4,100 feet. Blooming period: April–September	No	Project location is outside of elevation range.
Hall's monardella *Monardella macrantha ssp. hallii*	USFWS: None CDFW: None CRPR: 1B.3	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, grassland. Elevation: 2,394–7,199 feet. Blooming period: June–October	No	Project location is outside of elevation range.
Little mousetail *Myosurus minimus ssp. apus*	USFWS: None CDFW: None CRPR: 3.1	Grassland and alkaline vernal pools. Elevation: 65–2,100 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Mud nama *Nama stenocarpa*	USFWS: None CDFW: None CRPR: 2B.2	Marshes and swamps, also riverbanks and lake margins. Elevation: 16–1,640 feet. Blooming period: January–July	No	Suitable habitat is absent
Spreading navarretia *Navarretia fossalis*	USFWS: FT CDFW: None CRPR: 1B.1	Chenopod scrub, assorted freshwater marshes and swamps, playas, and vernal pools. Elevation: 98–2,149 feet. Blooming period: April–June	No	Project location is outside of elevation range.
Prostrate vernal pool navarretia *Navarretia prostrata*	USFWS: None CDFW: None CRPR: 1B.2	Mesic coastal scrub, meadows and seeps, alkaline grassland, and vernal pools. Elevation: 49–3,968 feet. Blooming period: April–July	No	Suitable habitat is absent.
Coast woolly-heads *Nemacaulis denudate var. denudata*	USFWS: None CDFW: None CRPR: 1B.2	Coastal dunes. Elevation: 0–328 feet. Blooming period: April–September	No	Coastal dunes absent.
Chaparral nolina *Nolina cismontana*	USFWS: None CDFW: None CRPR: 1B.2	Sandstone and gabbro soils in chaparral, and coastal scrub. Elevation: 459–4,183 feet. Blooming period: May–July	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
California Orcutt grass *Ocruttia californica*	USFWS: FE CDFW: SE CRPR: 1B.1	Vernal pools. Elevation: 49–2,165 feet. Blooming period: April–August	No	Potentially suitable isolated road ruts present, however, no vegetation was observed within road ruts.
Allen's pentachaeta *Pentachaeta aurea ssp. allenii*	USFWS: None CDFW: None CRPR: 1B.1	Openings of coastal scrub and grassland. Elevation: 246–1,706 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Golden-rayed pentachaeta *Pentachaeta aurea ssp. aurea*	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and grassland. Elevation: 262–6,068 feet. Blooming period: March–July	No	Project location is outside of elevation range.
South coast branching phacelia *Phacelia ramosissima var. austrolitoralis*	USFWS: None CDFW: None CRPR: 3.2	Sandy and rocky soils in chaparral, coastal dunes, coastal scrub, coastal salt marshes and swamps. Elevation: 16–984 feet. Blooming period: March–August	Yes	Suitable habitat is present, however, not observed during field surveys.
Chaparral rein orchid *Piperia cooperi*	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, and grassland. Elevation: 49–5,200 feet. Blooming period: March–June	No	Suitable habitat is absent
White rabbit-tobacco *Pseudognaphalium leucocephalum*	USFWS: None CDFW: None CRPR: 2B.2	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland. Elevation: 0–6,888 feet. Blooming period: July–December	Yes	Suitable habitat is present, however, not observed during field surveys.
Nuttall's scrub oak *Quercus dumosa*	USFWS: None CDFW: None CRPR: 1B.1	Sandy or clay loam in closed-cone coniferous forest, chaparral, and coastal scrub. Elevation: 49–1,312 feet. Blooming period: February–August	No	Suitable vegetation is present however not observed during field survey.
Engelmann oak *Quercus engelmannii*	USFWS: None CDFW: None CRPR: 4.2	Cismontane woodland, chaparral, riparian woodland, and grassland. Elevation: 164–4,265 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Fish's milkwort *Rhinotropis cornuta var. fishiae*	USFWS: None CDFW: None CRPR: 4.3	Chaparral, cismontane woodland, and riparian woodland. Elevation: 328–3280 feet. Blooming period: May–August	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Coulter's matilija poppy *Romneya coulteri*	USFWS: None CDFW: None CRPR: 4.2	Chaparral and coastal scrub, often in burned areas. Elevation: 65–3,936 feet. Blooming period: March–July	No	Project location is outside of elevation range.
Caraway-leaved woodland-gilia *Saltugilia caruifolia*	USFWS: None CDFW: None CRPR: 4.3	Sandy openings in chaparral and lower montane coniferous forest. Elevation: 2,755–7,544 feet. Blooming period: May–August	No	Project location is outside of elevation range.
Southern mountains skullcap *Scutellaria bolanderi ssp. austromontana*	USFWS: None CDFW: None CRPR: 1B.2	Moist embankments of montane creeks, mesic chaparral, mesic Cismontane woodland, and mesic lower montane coniferous forest. Elevation: 1,394–6,562 feet. Blooming period: June–August	No	Project location is outside of elevation range.
Ashy spike-moss *Selaginella cinerascens*	USFWS: None CDFW: None CRPR: 4.3	Chaparral and coastal sage scrub. Elevation: 65–2,099 feet. Sporophyte period: Variable	Yes	Suitable habitat present, however, not observed during surveys and study area.
Chaparral ragwort *Senecio aphanactis*	USFWS: None CDFW: None CRPR: 2B.2	Chaparral, cismontane woodland, coastal scrub, and alkaline flats. Elevation: 49–2,624 feet. Blooming period: January–April	Yes	Suitable habitat present, however, not observed during surveys and study area.
Salt spring checkerbloom *Sidalcea neomexicana*	USFWS: None CDFW: None CRPR: 2B.2	Alkaline and mesic soils within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas. Elevation: 49–5,020 feet. Blooming period: March–June	No	Suitable soils absent.
Estuary seablite *Suaeda esteroa*	USFWS: None CDFW: None CRPR: 1B.2	Salt marsh, coastal; coastal salt marsh and wetland-riparian. Elevation: 0-15 feet. Blooming period: May-October	No	Suitable habitat is absent.
Woolly seablite *Suaeda taxifolia*	USFWS: None CDFW: None CRPR: 4.2	Coastal bluff scrub, coastal dunes, and the margins of coastal salt marshes and swamps. Elevation: 0–164 feet. Blooming period: January–December	Yes	Suitable habitat present, however, not observed during surveys and study area.
Parry's tetracoccus *Tetracoccus dioicus*	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and coastal sage scrub. Elevation: 541–3,280 feet. Blooming period: April–May	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
California screw moss *Tortula californica*	USFWS: None CDFW: None CRPR: 1B.2	Sandy soils, chenopod scrub, valley and foothill grasslands. Elevation: 30-5340 feet.	No	Suitable habitat is absent
Big-leaved crownbeard *Verbesina dissita*	USFWS: FT CDFW: ST CRPR: 1B.1	Maritime chaparral and coastal scrub. Elevation: 147–672 feet. Blooming period: April–July	No	Project location is outside of elevation range.

Sensitivity Status

United States Fish and Wildlife Service (USFWS): FC=Federal Candidate for Listing; FE=Federally Listed Endangered; FT=Federally Listed Threatened

California Department of Fish and Wildlife (CDFW): SE=State Listed Endangered

California Rare Plant Ranking (CPRP):

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDB, with more than 1,000 plants assigned to this category of rarity.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act; however, they are eligible for consideration under the California Endangered Species Act. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

3: Need more information

4: Limited Distribution (Watch List)

Threat Ranks:

The CRPR use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. Most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations in California

Special-Status Wildlife Species Evaluated for Potential to Occur within the Study Area

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Invertebrates					
Crotch bumble bee *Bombus crotchii*	USFWS: None CDFW: CE	Found between San Diego and Redding in a variety of habitats including open grasslands, shrublands, chaparral, desert margins including Joshua tree and creosote scrub, and semi-urban settings. It is near endemic to California, with only a few records from Nevada and Mexico (CDFW 2022). Williams et al. (2014) report plants in the genera *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia* as example food plants.	CDFW. 2022. News Room – Recent News Releases. *CDFW Seeks Public Comment Related To Crotch's Bumble Bee, Franklin's Bumble Bee, Suckley's Cuckoo Bumble Bee And Western Bumble Bee*. December 14, 2022. https://wildlife.ca.gov/News/cdfw-seeks-public-comment-related-to-crotchs-bumble-bee-franklins-bumble-bee-suckleys-cuckoo-bumble-bee-and-western-bumble-bee. Williams PH, Thorp RW, Richardson LL, Colla SR. 2014. Bumble Bees of North America: An Identification Guide: An Identification Guide. Princeton University Press.	Yes	Potentially suitable habitat is present along vegetated coastal bluffs.
San Diego fairy shrimp *Branchinecta sandiegonensis*	USFWS: FE CDFW: None	Vernal pool complexes primarily near the coast in Orange and San Diego Counties, but currently known from as far north as Long Beach and south to northwestern Baja California. Restricted to dilute vernal pools, having relatively low sodium concentrations (below 60 milli-moles per liter), low alkalinity (below 1000 milligrams per liter), and neutral pH (USFWS 2008).	USFWS. 2008. San Diego Fairy Shrimp (Branchinecta sandiegonensis) 5-Year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	Yes	Potentially suitable isolated road ruts are present.
Monarch (California overwintering population) *Danaus plexippus pop. 1*	USFWS: FC CDFW: None	Typically overwinter in groves of eucalyptus (Eucalyptus sp.), Monterey pine (Pinus radiata), or Monterey	IELP. 2012. The Legal Status of Monarch Butterflies in California.	No	Suitable habitat absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
		cypress (Hesperocyparis macrocarpa) along the California coast (IELP 2012).	International Environmental Law Project; Portland, OR.		
Riverside fairy shrimp *Streptocephalus woottoni*	USFWS: FE CDFW: None	Restricted to vernal pools and non-vegetated ephemeral pools deeper than 12 inches. Inland areas of Riverside, Orange, and San Diego counties. Coastal areas of San Diego County and northwestern Baja California (USFWS 2008).	USFWS. 2008. Riverside Fairy Shrimp (Streptocephalus woottoni) 5-year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	No	Present isolated road ruts are too shallow for this species.
Fish					
Tidewater goby *Eucyclogobius newberryi*	USFWS: FE CDFW: None	Shallow coastal lagoons and the uppermost brackish zone of larger estuaries. Rarely found in marine or freshwater environments. Typically associated with still water, less than 1 meter deep, with salinites of less than 12 parts per thousand (USFWS 2007).	USFWS. 2007. Tidewater Goby (Eucyclogobius newberryi) 5-Year Review: Summary and Evaluation. USFWS; Ventura, CA.	No	No lagoons or brackish estuaries present.
Arroyo chub *Gila orcuttii*	USFWS: None CDFW: SSC	Native to Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa margarita Rivers, as well as malibu and San Juan Creeks. Has been extirpated from much of the native range but introduced to streams along the coast and the mojave River system, where they have eliminated the mohave tui chub (UC Davis 2013). Southern coastal streams in habitats characterized by slow-moving water, mud or sand substrate, and depths greater than 40 cm. Have also been found in pool habitats with gravel, cobble and boulder substrates. Adapted to survive in low oxygen waters and wide temperature fluctuations (moyle et al 2015).	Moyle, P.B., R. M. Quiñones, J. V. Katz and J. Weaver. 2015. Fish Species of Special Concern in California. Sacramento: California Department of Fish and Wildlife. www.wildlife.ca.gov	No	No streams or rivers present.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Steelhead (southern California DPS) *Oncorhynchus mykiss irideus*	USFWS: FE CDFW: CE	Counties in range = San Luis Obispo, Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego. Spawning habitat = gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning = estuarine, marine waters (NMFS 2016).	National Marine Fisheries Service. 2016. 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Long Beach, California.	No	No streams or rivers present. Marine waters are present outside of expected Project disturbance.
Amphibians					
Arroyo toad *Anaxyrus californicus*	USFWS: FE CDFW: SSC	Breeding habitat = slow moving streams with shallow pools, nearby sandbars and adjacent stream terraces. Oft.en breed in shallow, sandy pools bordered by sand/gravel flood terraces. Inhabit upland habitats when not breeding, such as sycamore-cottonwood woodlands, oak woodlands, coastal sage scrub, chaparral and grassland (USFWS 2009).	USFWS. 2009. Arroyo Toad (Bufo californicus (=microscaphus)) 5-Year Review: Summary and Evaluation. USFWS; Ventura, CA.	No	No slow-moving streams or shallow pools present.
Western spadefoot *Spea hammondii*	USFWS: FPT CDFW: SSC	Endemic to California and northern Baja California ranging from Redding throughout the central valley and associated foothills, through the South Coast Ranges into southern California west of the Peninsular mountains. Breeding sites include vernal pools, temporary rain pools, cattle tanks, and occasionally pools of intermittent streams typically in turbid water with little to no cover that remain wet for at least 30 days to allow for transfomation of larvae (Nafis 2023). Prefers open areas with sandy or gravely soils, in a variety of habitats including grasslands, oak woodlands, coastal sage scrub, chaparral, sandy washes, floodplains, alluvial fans,	Nafis, Gary. 2023. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com/ Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable habitat is absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
		playas, and alkali flats. Pools with invasive species, such as crayfish (*Pacifasticus* spp.), or bullfrogs (*Lithobates catesbeianus*) often, but not always, exclude this species (Thomson et al. 2016).			
Coast Range newt *Taricha torosa*	USFWS: None CDFW: SSC	Ranges along the coast from Monterey to Ventura County and Los Angeles to San Diego County with some occurrences in south western Riverside County. The population north of Ventura generally occurs in mesic forests on hilly or mountainous terrain. Populations around and south of Ventura generally occur in drier oak, chaparral, and grassland habitats. Specifically, the southern population use permanent streams for breeding, and occasionally seasonal streams free of non-native fish (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Mesic forests and mountains are absent.
Reptiles					
Southwestern pond turtle *Actinemys pallida*	USFWS: FPT CDFW: SSC	Ranges throughout California except for Inyo and Mono Counties. Generally occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable habitat is absent and Project study area is highly disturbed due to railroad and pedestrian trails.
Southern California legless lizard *Anniella stebbinsi*	USFWS: None CDFW: SSC	Little is known about this species. Information is based on Anniella pulchra before it was split into five species. Current known range is cismontane southern California and the Mojave Desert portion of Kern County (CDFW 2019). Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodland, desert scrub, sandy washes, and	Papenfuss, T.J., and J.F. Parham. 2013. Four New Species of California Legless Lizards (Anniella). Breviora. 10.3099/mCZ10.1. AND California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database.	Yes	Potentially suitable habitat present but highly disturbed

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
		stream terraces (Nafis 2017). Originally known to occur throughout Southern California south of the Transverse Ranges into northern Baja California, Mexico (Papenfuss and Parham, 2013).	Rarefind 5. All Records of Oc		
California glossy snake *Arizona elegans occidentalis*	USFWS: None CDFW: SSC	Ranges in the cismontane portion of southern California, the southern portion of the central coast ranges, and in isolated pockets up to the Alameda and San Joaquin County border. Generally found in open desert, grasslands, shrublands, chaparral, and woodlands. Some evidence of open and sandy habitat preference exists, but specific habitat requirements for this species aren't known (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable vegetation communities are absent.
Coastal whiptail *Aspidoscelis tigris stejnegeri*	USFWS: None CDFW: SSC	Ranges in cismontane southern California. Generally found in a wide range of habitats including coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas. Specifically, this species prefers sand or gravel bottomed habitats with decent shrub cover and is not often found near development (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Area too disturbed for suitability.
San Diego banded gecko *Coleonyx variegatus abbotti*	USFWS: None CDFW: SSC	Ranges in central San Diego, western Riverside, and southwestern San Bernardino Counties. Generally found in rocky coastal sage and chaparral habitat between 500 feet and 2,950 feet in elevation. Specifically, this species prefers areas of granite outcrops and dry rocky riverbeds, and in particular large cap rocks. It is not often found under small rock flakes and completely avoids areas with high intensity artificial night lighting (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Project location outside of elevation range.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Red-diamond rattlesnake *Crotalus ruber*	USFWS: None CDFW: SSC	Ranges in San Diego and Orange Counties and western Riverside and south western San Bernardino Counties. Generally found in dense chaparral and rocky outcrops. Specifically inhabits coastal sage scrub, chamise and red shank chaparral, desert slope scrub and washes, grassy fields, orchards, cactus scrub, and rocky areas. Tends to avoid developed areas (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Area too disturbed for suitability.
Western pond turtle *Emys marmorata*	USFWS: None CDFW: SSC	Ranges throughout California except for Inyo and Mono Counties. Generally occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable freshwater habitat absent.
Blainville's horned lizard *Phrynosoma blainvillii*	USFWS: None CDFW: SSC	Ranges in the southern half of California outside of the desert and along the foothills of the Sierra Nevada Mountains to Butte County and along the central coast ranges up to Contra Costa County. Generally, occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (*Linepithema humi*) (Thomson et al. 2016)	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	Yes	Potentially suitable habitat present but highly disturbed

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Two-striped gartersnake *Thamnophis hammondii*	USFWS: None CDFW: SSC	Ranges in cismontane Southern California with some occurrences in Monterey and San Luis Obispo Counties and southern San Benito County. Generally found in or near permanent and intermittent freshwater streams, creeks, and pools, as well as stock ponds and other artificial aquatic habitats bordered by dense vegetation. Associated habitat include willow, oak woodlands, chaparral, brushland and coniferous forest from sea level to 8,000 feet elevation (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable aquatic habitat with dense vegetation absent.
Birds					
Tricolored blackbird *Agelaius tricolor*	USFWS: None CDFW: ST, SSC	Preferred nesting habitat includes cattails (Typha spp.), bulrushes (Typha spp.), Himalayan blackberry (Rubus armeniacus), and agricultural silage. Dense vegetation is preferred but heavily lodged cattails not burned in recent years may preclude settlement. Need access to open water. Strips of emergent vegetation along canals are avoided as nest sites unless they are about 10 or more meters wide but in some ponds, especially where associated with Himalayan blackberries and deep water, settlement may be in narrower fetches of cattails. (Hamilton 2004). Mostly a year-round resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds locally in northeastern California. In winter, becomes more widespread along central coast and San Francisco Bay area, and can be found in portions of the Colorado Desert (CDFW 2019).	Hamilton, W. J. 2004. Tricolored Blackbird (Agelaius tricolor). In The Riparian Bird Conservation Plan:a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. | CDFW. 2019. California Wildlife Habita	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Grasshopper sparrow *Ammodramus savannarum*	USFWS: None CDFW: SSC	Known to breed in grassland habitats throughout the northeastern and mid-Atlantic U.S., southeastern Canada, coastal and Central Valley of California, and a few other areas of Canada and northern mexico (Shuford and Gardali 2008). In the east and midwest tallgrass and mixed grass prairie prairie is prefered, whereas in the west and southwest the species typically utilizes shortgrass and semidesert grasslands. Additionally, individuals can sometimes be found in corn (*Zea mays*) and oat (*Avena sativa*) fields and avoid areas with high shurb cover (Shuford and Gardali 2008).	Ruth, J.m. 2015. Status Assessment and Conservation Plan for the Grasshopper Sparrow (Ammodramus savannarum). Version 1.0 U.S. Fish and Wildlife Service, Lakewood, Colorado. 109 pp.	No	Suitable vegetation communities are absent.
Golden eagle *Aquila chrysaetos*	UFWS: BGEPA CDFW: FP	Habitat includes rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Uncommon resident in hills and mountains throughout California, and an uncommon migrant and winter resident in the Central Valley and Mojave Desert (Zeiner et. al. 1988-1990).	Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and m. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.	No	Suitable mountainous terrain and rock outcrops are absent.
Long-eared owl *Asio otus*	USFWS: None CDFW: SSC	Species known to be widespread and a winter migrant of the Central Valley, the western Sierra Nevada foothills, and along the California coastline. Requires dense stands of vegetation including various grasses and brush, as well as ditches, and wetlands for resting and roosting (Zeiner et. al. 1988-1990). Species known to nest on dry ground concealed in vegetation (Zeiner et. al. 1988-1990).	Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.	No	Suitable vegetation communities and wetlands are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Burrowing owl *Athene cunicularia*	USFWS: None CDFW: SSC	Species known to be a yearlong resident of open, dry grasslands and varying desert habitats (CWHR 1999). Nesting habitat includes open areas with mammal burrows, including rolling hills, grasslands, fallow fields, sparsely vegetated desert scrub, vacant lots and human disturbed lands. Soils must be friable for burrows (Bates 2006).	CWHR. 1999. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, September 1999 / Bates, C. 2006. Burr	No	Suitable habitat is absent due to lack of friable burrows.
Swainson's hawk *Buteo swainsoni*	USFWS: None CDFW: ST	Nests in stands with few trees in riparian areas, juniper-sage flats, and oak savannah. Forages in adjacent grasslands, agricultural fields and pastures. Breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley (CWHR 2006).	CWHR. 2006. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, January 2006.	No	Riparian areas, juniper-sage flats, and oak savannah are absent.
San Diego cactus wren *Campylorhynchus brunneicapillus sandiegensis*	USFWS: None CDFW: SSC	Taxonomically intermediate between more widespread subspecies in southern U.S. and Baja California, Mexico. *C.b. sandiegensis* thought to only occur in coastal sage scrub community in southern Orange and San Diego Counties. Key habitat element is thickets of cholla or prickly-pear tall enough to support nests (Shuford 2008).	Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation in California. Studies of Western Birds 1. Western Field Orni	No	Suitable vegetation communities are absent.
Western snowy plover *Charadrius nivosus nivosus*	USFWS: FT CDFW: SSC	Coastal populations nest on sandy or gravelly dune-backed beaches, sand spits, and on estuarine salt pans and lagoons (USFWS 2005). Inland populations nest along barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater	USFWS. 2005. Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus). Federal Register Vol. 70 (188): 56969-57018 | Shuford, W.D.	Yes	Potentially suitable beach habitat is present within the Area #1 and Area #4 study areas. Beaches are frequently disturbed by humans and trains utilizing railroad.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
		ponds, and salt evaporation ponds (Shuford and Gardali 2008). Inland nesting occurs at Salton Sea, Mono Lake, and isolated sites on the shores of alkali lakes in northeastern California, the Central Valley, and southeastern deserts (CWHR 2008).	and Gardali, T., editors. 2008. California Bird Species of Special Concern | CWHR. 2008. California Wildlife Habitat Relationships (CHWR) System. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, February 2005 and August 2008.		
Northern harrier *Circus hudsoninus*	USFWS: None CDFW: SSC	Nest on the ground in patches of dense, tall vegetation in undisturbed areas. Breed and forage in variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats and desert sinks (Shuford 2008).	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.	No	Suitable vegetation communities are absent.
Yellow rail *Coturnicops noveboracensis*	USFWS: None CDFW: SSC	Nests in sedge marshes and meadows with moist soil or shallow standing water. Winters in wet meadows and tidal marshes. Much is unknown about the abundance and distribution of this species because it is extremely secretive and difficult to detect. Has been found nesting on the Modoc Plateau and in Plumas and Lassen Counties. Very rarely detected in	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
		migration and recorded in winter at a very few sites scattered along the coast, though seemingly regular at Tomales Bay in Marin County and Arrowhead Marsh in Alameda County (Shuford and Gardali 2008).	Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.		
White-tailed kite *Elanus leucurus*	USFWS: None CDFW: FP	Occurs in herbaceous and open stages of valley lowland habitats, usually near agricultural land. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands (CWHR 2005). Typically nest in the upper third of trees that may be 10–160 ft. (33-525 m.) tall. These can be open-country trees growing in isolation, or at the edge of or within a forest (Cornell 2017).	CWHR. 2005. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, July 2005. | Cornell University. 2017	No	Suitable vegetation communities are absent.
Southwestern willow flycatcher *Empidonax traillii extimus*	USFWS: FE CDFW: SE	Dense riparian forest and scrub habitats associated with rivers, swamps, wetlands, lakes and reservoirs (USFWS 2002).	USFWS. 2002. Final Recovery Plan Southwestern Willow Flycatcher (Empinodax traillii extimus). USFWS; Albuquerque, NM.	No	Suitable vegetation communities are absent.
Yellow-breasted chat *Icteria virens*	USFWS: None CDFW: SSC	Nest in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow border of streams, creeks, sloughs and rivers. Often nest in dense thicket plants such as blackberry and willow (Shuford 2008).	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western	No	Suitable vegetation communities are absent.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	USFWS: None CDFW: SE	Coastal salt marshes. Associated with dense pickleweed, particularly Salicornia pacifica, for nesting (Zambal and Hoffman 2010).	Zambal, R. and S. m. Hoffman. 2010. A Survey of the Belding's Savannah Sparrow (Passerculus sandwichensis beldingi) in California 2010. Clapper Rail Recovery Fun; Huntington Beach, CA.	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Short-tailed albatross *Phoebastra (= Diomedea) albatrus*	USFWS: FE CDFW: SSC	Spends most of the year foraging over the open ocean of the North Pacific. Most of the world population nests on Torishima and the Senkaku Islands, Japan, though there have been recent breeding attempts on the Bonin Islands and Kure and Midway Atolls (USFWS 2014).	USFWS. 2014. Short-tailed Albatross (Phoebastria albatrus) 5-Year Review. Anchorage Fish and Wildlife Field Office, Anchorage, Alaska.	No	Suitable vegetation communities are absent.
Coastal California gnatcatcher *Polioptila californica californica*	USFWS: FT CDFW: SSC	Scrub dominated plant communities, strongly associated with coastal scrub, sage scrub, and coastal succulent scrub communities. Distribution ranges from southern Ventura County down through Los Angeles, Orange, Riverside, San Bernardino and San Diego counties (USFWS 2010).	USFWS. 2010. Coastal California Gnatcatcher (Polioptila californica californica) 5-year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	No	Suitable vegetation communities are absent and none were observed during field survey.
Light-footed Ridgeway's rail *Rallus obsoletus levipes*	USFWS: FE CDFW: SE, FP	Coastal salt marshes, lagoons, and their maritime environs from Santa Barbara County south past San Diego into Baja California. Require shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high tide (USFWS 2019).	USFWS. 2019. San Diego Bay National Wildlife Refuge, Facts About Light-footed Ridgway's Rail https://www.fws.gov/refuge/san_diego_bay/wildlife_and_habitat/Light-footed_Ridgways_Rail.html	No	Suitable maritime environments absent.
Bank swallow *Riparia riparia*	USFWS: None CDFW: ST	Riparian, lacustrine, and coastal areas with vertical banks, bluffs or cliffs with fine-textured or sandy soils, into which it digs nesting holes. Also nests in earthen banks as well as sand and gravel pits (CWHR 1999).	CWHR. 1999. California Wildlife Habitat Relationships (CHWR) System. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, September 1999.	No	No suitable nesting areas within Project study area.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Yellow warbler *Setophaga petechia*	USFWS: None CDFW: SSC	Usually found in riparian deciduous habitats in summer: cottonwoods (*Populus* ssp.), willows (*Salix* ssp.), alders (*Alnus* ssp.), and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open coniferous forests (CWHR Program Staff 2005).	CWHR Program Staff. 2005. "Yellow Warbler," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2109&inline=1	No	Suitable vegetation communities absent.
California least tern *Sternula antillarum browni*	USFWS: FE CDFW: SE, FP	Nest and roost in colonies on open beaches, forage over near shore ocean waters and in shallow estuaries and lagoons (USFWS 2006).	USFWS. 2006. California Least Tern 5-Year Review. USFWS; Carlsbad, CA.	No	Suitable beach habitat is present at the southern end of the study area, however, area is highly disturbed due to beachgoers and trains utilizing railroad.
Least Bell's vireo *Vireo bellii pusillus*	USFWS: FE CDFW: SE	Obligate riparian breeder. Cottonwood, willow, oak woodlands, and mule fat scrub along watercourses (USFWS 1998).	USFWS. 1998. Draft recovery plan for least Bell's vireo. U.S. Fish and Wildlife Service, Portland, Oregon	No	Suitable vegetation communities absent.
Mammals					
Pallid bat *Antrozous pallidus*	USFWS: None CDFW: SSC	Ranges across all of California except for high elevation portions of the Sierra Nevada Mountains and Del Norte, western Siskiyou, Humboldt, and northern Mendocino Counties. Generally found in a wide variety of habitats but with some preference for drier areas. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	Yes	May forage over the Project area but no suitable roosting habitat present.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Dulzura pocket mouse *Chaetodipus californicus femoralis*	USFWS: None CDFW: SSC	Occurs in brushy areas but probably is attracted to grass-chaparral edge. Grazing of grassland by domestic stock eliminates cover necessary for predator avoidance. (CDFW 2019).	CDFW. 2019. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable vegetation communities are absent.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	USFWS: None CDFW: SSC	Ranges in San Diego, western and central Riverside, southwestern San Bernardino, and eastern Orange Counties. Generally found in sandy areas with herbaceous cover and rocks or coarse gravel in a wide mixture of vegetation communities. Specifically, this species prefers rocky and gravelly areas with a yucca overstory and desert scrub communities near or in pine-juniper woodland (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable vegetation communities and soils are absent.
Mexican long-tongued bat *Choeronycteris mxicana*	USFWS: None CDFW: SSC	Occurs in a wide variety of habitats, from arid thorn scrub to tropical deciduous forest and mixed oak-conifer forest. Preferred roosting sites include mines, caves, and rock fissures. Found primarily in moist desert canyons (Bolster 1998).	Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wild	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Stephen's kangaroo rat *Dipodomys stephensi*	USFWS: FE CDFW: SCE	Often found in transition areas between grassland and coastal sage scrub habitat where perennial vegetation is covering less than 50% of the ground, including disturbed areas. Deep, friable soil is needed for burrowing. Plants commonly associated with suitable habitat are chamise (*Adenostomma fasciculatum*), buckwheat (*Eriogonum* spp.), bromes (*Bromus* spp.) and filaree (*Erodium* (spp.) (Western Riverside County MSHCP 2003).	WRC MSHCP. 2003. Riverside County Integrated Project. Western Riverside County Final MSHCP. Volume II-B. Species Accounts. Mammals. Stephens' kangaroo rat (Dipodomys stephensi). M-197 - M-220.	No	Suitable combination of perennial vegetation and friable soils absent.
Western mastiff bat *Eumops perotis californicus*	USFWS: None CDFW: SSC	Ranges throughout all of Southern California, the central coast, and the Sierra Nevada Mountain Range. Generally occurs in open, arid, or semi-arid habitats. Specifically this species roosts in rock crevices and buildings. (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	No	No suitable roosting habitat.
Western red bat *Lasiurus blossevillii*	USFWS: None CDFW: SSC	Ranges in the western half of California except for Del Norte and Humboldt Counties. Generally occurs in most habitats except for the desert. Roosts in trees, sometimes shrubs, and typically at the margins of habitats (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	Yes	Potentially suitable tree and shrub habitat, however, area is highly disturbed by railway usage and adjacent beach.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
San Diego desert woodrat *Neotoma lepida intermedia*	USFWS: None CDFW: SSC	This species prefers Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats, but is also found in a variety of other habitats. Moderate to dense canopies are preferred. Particularly abundant in rock outcrops and rocky cliffs and slopes, especially those with Joshua trees. Elevational range from sea level to 8,500 feet (CWHR 2008).	CWHR. 2008. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR program staff February 2008.	No	Suitable vegetation communities absent.
Pocketed free-tailed bat *Nyctinomops femorosaccus*	USFWS: None CDFW: SSC	Associated with creosote scrub or chaparral, and large rock features such as boulder jumbles or rocky canyons (Bolster 1998). Colonial and roosts primarily in crevices of rugged cliffs, high rocky outcrops and slopes. It has been found in a variety of plant associations, including desert shrub and pine-oak forests. The species may also roost in buildings, caves, and under roof tiles (WBWG 2016).	WBWG (Western Bat Working Group). 2016. Western Bat Species Accounts. http://wbwg.org/western-bat-species/	No	Suitable vegetation communities are absent.
Big free-tailed bat *Nyctinomops macrotis*	USFWS: None CDFW: SSC	Found in rugged, rocky terrain up to 8,000 feet in elevation in New Mexico, southern Arizona, and Texas where it is probably a yearlong resident. Rare in California, and probably does not breed in the state. Many individuals wander widely in autumn, resulting in records far out of the normal range. Records of the species are from urban areas of San Diego County and vagrants found in fall and winter. A probable vagrant was collected in Alameda County but this record is suspect (CWHR Program Staff 2002).	CWHR Program Staff. 2002. "Big Free-tailed Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2355&inline=1	No	Suitable habitat is absent.
Pacific pocket mouse *Perognathus longimembris pacificus*	USFWS: FE CDFW: SSC	Historically occurred on fine, sandy soil within about 12 miles of the Pacific coast of southern California from Los Angeles County south to Mexico. Associates with open coastal scrub and grassland communities (Spencer 2005).	Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D.	No	Suitable habitat is absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
			Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division.		
American badger *Taxidea taxus*	USFWS: None CDFW: SSC	Ranges in all of California except the extreme northwest corner. Generally found in drier open areas of habitats with friable soils (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable soils absent.

Source: California Department of Fish and Wildlife (CDFW) 2018, 2019; California Wildlife Habitat Relationships (CWHR) 1999, 2008; Nafis 2019; National Oceanic and Atmospheric Administration (NOAA) 2019; Shuford and Gardali 2008; Thompson, R. et al 2016

Notes:

Special status ranking:

FE= Federally Endangered; FT= Federally Threatened; SE= State Endangered; ST= State Threatened; SSC= CDFW Species of Special Concern; SCE= State Candidate Endangered; SCT= State Candidate Threatened; FP= Fully Protected (CDFW); BGEPA= Bald and Golden Eagle Protection Act

Attachment B. USDA NRCS Soil Report

This page intentionally left blank.

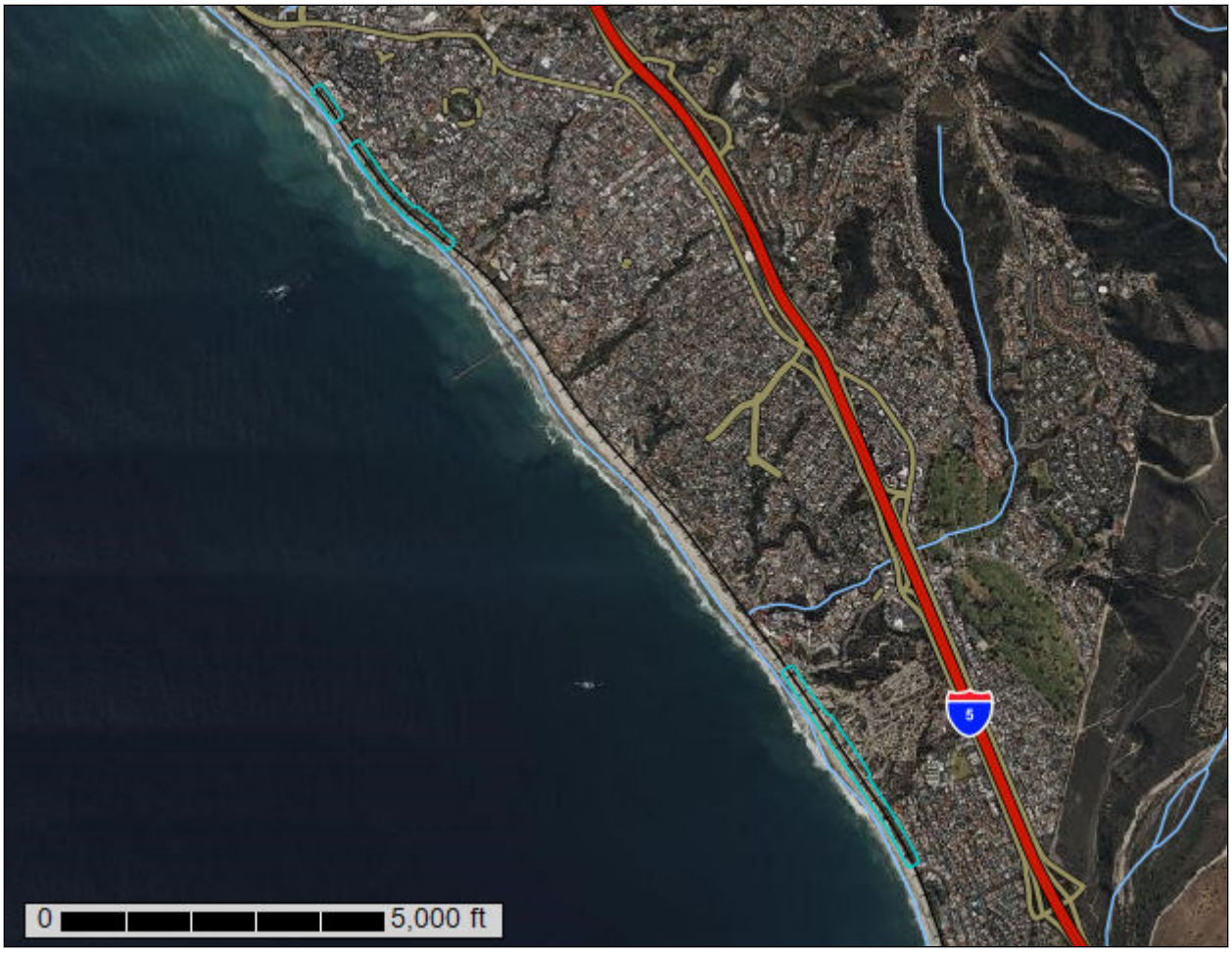
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Orange County and Part of Riverside County, California



May 14, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

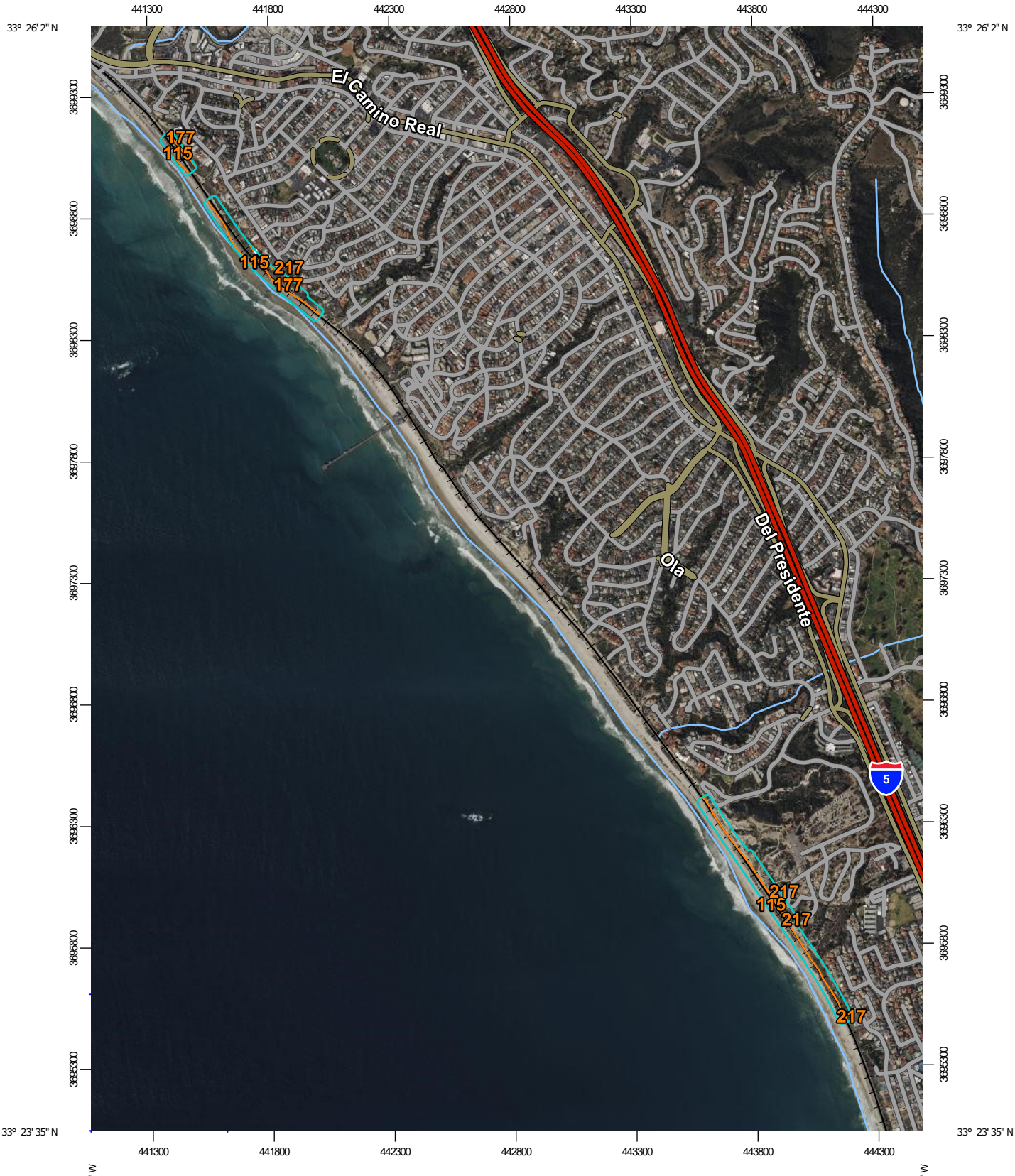
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:22,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 300 600 1200 1800

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County and Part of Riverside County, California
Survey Area Data: Version 17, Aug 30, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115	Beaches	17.6	55.6%
177	Myford sandy loam, 9 to 30 percent slopes, eroded	12.3	38.9%
217	Xeralfic arents, loamy, 2 to 9 percent slopes	0.2	0.5%
Totals for Area of Interest		**31.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Orange County and Part of Riverside County, California

115—Beaches

Map Unit Setting

National map unit symbol: hclq
Elevation: 0 to 10 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Beaches: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaches

Setting

Landform: Beaches

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 72 inches
Frequency of flooding: Frequent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Ecological site: R019XG902CA - Beaches
Hydric soil rating: Yes

177—Myford sandy loam, 9 to 30 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcnq
Elevation: 0 to 2,100 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Myford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myford

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone

Typical profile

A - 0 to 7 inches: sandy loam
Bt - 7 to 11 inches: sandy clay
Btk - 11 to 21 inches: sandy clay loam
B't - 21 to 64 inches: sandy clay loam
C - 64 to 79 inches: sandy loam

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 4 to 10 inches to abrupt textural change
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R019XD061CA - CLAYPAN
Hydric soil rating: No

Minor Components

Myford, sandy loam

Percent of map unit: 10 percent
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R019XD061CA - CLAYPAN
Hydric soil rating: No

Cieneba, sandy loam

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R019XD060CA - SHALLOW LOAMY
Hydric soil rating: No

Yorba, cobbly sandy loam

Percent of map unit: 2 percent
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R019XD061CA - CLAYPAN
Hydric soil rating: No

217—Xeralfic arents, loamy, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hcq0
Elevation: 0 to 2,500 feet
Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Xeralfic arents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xeralfic Arents

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Sandy marine deposits

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Ecological site: F019XG913CA - Loamy Hills <30"ppt
Hydric soil rating: No

Minor Components

Unnamed, undisturbed

Percent of map unit: 15 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) 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 (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or

B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–CA678-Orange County and Part of Riverside County, California					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
115: Beaches	Beaches	100	Beaches	Yes	4
177: Myford sandy loam, 9 to 30 percent slopes, eroded	Myford	85	Terraces	No	—
	Myford-Sandy loam	10	Terraces	No	—
	Cieneba-Sandy loam	3	Ridges	No	—
	Yorba-Cobbly sandy loam	2	Terraces	No	—
217: Xeralfic arents, loamy, 2 to 9 percent slopes	Xeralfic arents	85	Hills	No	—
	Unnamed-Undisturbed	15	—	No	—

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment C. General Site Photos

This page intentionally left blank.

Attachment C– Photographs

Photograph	Information
	Photograph #: 1 Photo Date: 3/25/2024 Location: 33.4299899, -117.6307980 Direction: 140 Notes: View of the Area #1 study area, riprap on slopes in background.
	Photograph #: 2 Photo Date: 3/25/2024 Location: 33.4293927, -117,6302882 Direction: 140 Notes: View of Area #1 study area, west of the railroad tracks. Riprap on slopes on the left.

Photograph	Information
	Photograph #: 3 Photo Date: 3/25/2024 Location: 33.4290212, -117.6294956 Direction: 315 Notes: View of Area #1 study area, big saltbush scrub (*Atriplex lentiformis* Shrub Alliance) on bluff slopes, east of railroad tracks and pedestrian trail.
	Photograph #: 4 Photo Date: 3/25/2024 Location: 33.427053, -117.628046 Notes: View of UVC-1 west of pedestrian beach trail path within the Area #2 study area. View towards east.

Photograph	Information
	Photograph #: 5 Photo Date: 3/25/2024 Location: 33.426951, -117.627965 Notes: View of Road Rut A and B with standing water along pedestrian beach trail path within the Area #2 study area. View towards south.
	Photograph #: 6 Photo Date: 3/25/2024 Location: 33.425299, -117.626639 Direction: 30 degrees Notes: View of landslide area at the Mariposa Pedestrian Bridge with retaining wall in place within the Area #2 study area.

Photograph	Information
	Photograph #: 7 Photo Date: 3/25/2024 Location: 33.425009, -117.626134 Notes: View of Road Rut C along railroad with water pooling from seeps in bluffs within the Area #2 study area. Culvert filled in with sediment causing water to pool.
	Photograph #: 8 Photo Date: 3/25/2024 Location: 33.424277, -117.625335 Direction: 40 degrees Notes: View of double three-foot concrete culverts which outlets to ocean within the Area #2 study area. View towards east.

Photograph	Information
	Photograph #: 9 Photo Date: 3/25/2024 Location: 33.424211, -117.625244 Direction: 40 degrees Notes: View of stairway from pedestrian bridge to beach within the Area #2 study area. View towards east.
	Photograph #: 10 Photo Date: 3/25/2024 Location: 33.4046556, -117.6059474 Direction: 315 Notes: View of California brittlebush (*Encelia California)* east of rail ROW along pedestrian trail within the Area #4 study area. View towards north.

Photograph	Information
	Photograph #: 11 Photo Date: 3/25/2024 Location: 33.4039563, -117.6054610 Direction: 340 Notes: Photo of Road Rut D within the Area #4 study area. Railroad tracks on left and coastal bluffs on right.
	Photograph #: 12 Photo Date: 3/25/2024 Location: 33.4025713, -117.6043916 Direction: 135 Notes: Photo of the Area #4 study area. California brittlebush scrub below unvegetated coastal bluffs on left and railroad tracks on right.

Photograph	Information
	Photograph #: 13 Photo Date: 3/25/2024 Location: 33.4003048, -117.6027707 Direction: 340 Notes: Photo of iceplant mats on vegetated slopes west of the railroad tracks within Area #4 study area.
	Photograph #: 14 Photo Date: 3/25/2024 Location: 33.3993611, -117.6017042 Direction: 135 Notes: Photo of giant reed marsh (*Arundo donax*) east of railroad tracks within the Area #4 study area.

Photograph	Information
	Photograph #: 15 Photo Date: 3/25/2024 Location: 33.3989008, -117.6016861 Direction: 340 Notes: Photo of big saltbush scrub on sand berm west of railroad tracks within the Area #4 study area.
	Photograph #: 16 Photo Date: 3/25/2024 Location: 33.3979590, -117.6009703 Direction 135 Notes: Photo of vegetation adjacent to railroad tracks within the Area #4 study area. Big saltbush scrub on coastal bluffs to the left, sand berm in the middle, and beach habitat on the right.

Attachment D. Cultural Resource Technical Memorandum

This page is intentionally blank.

CONFIDENTIALITY STATEMENT
This document is confidential under California Government Code § 6254.10 and the National Historic Preservation Act, Section 304, and other applicable federal, state, and local laws and regulations prohibiting public and unauthorized disclosure of records related to cultural resources.

Technical Memorandum

To: Nina Delu, HDR

From: Amber Parron, HDR

Date: 5/2/2024

Subject: **OCTA Critical Coastal Project, Area 4 (MP 206.00 – 206.67), San Clemente – Cultural Resource Desktop Review**

1. Introduction

HDR conducted a cultural resource desktop review in support of the proposed Orange County Transportation Authority (OCTA) Critical Coastal Project, Area 4 (Project) in Orange County, California. The project is located in the City of San Clemente and involves construction of an engineered riprap section next to the tracks as protection from beach erosion plus sand nourishment. The project area is located in railroad right-of-way between Mile Post (MP) 206.00 and MP 206.67 (**Figure 1**, **Figure 2**).

2. Archival Research

On March 20, 2024, HDR requested a review of the Sacred Lands File held by the Native American Heritage Commission (NAHC) in correspondence with the project area. The NAHC responded on April 5, 2024, stating that the results of the Sacred Lands File search were positive and recommending that the Juaneño Band of Mission Indians Acjachemen Nation – Belardes be contacted for information. The NAHC provided a contact list for fifteen Native American tribal representatives who may also have knowledge of cultural resources in the vicinity of the project area (**Appendix A**).

On March 21, 2024, HDR staff archaeologist Amber Parron carried out a record search at the South Central Coastal Information Center, housed at the California State University, Fullerton, to identify known cultural resources within 0.25 miles of the project area. The record search identified two historic districts, two pre-contact archaeological sites, and one historic-age railroad alignment within 0.25 miles of the project area (**Table 1**, **Figure 3**).

Table 1. Known Cultural Resources Within 0.25 Miles of the Project Area

Primary Number	Description	Eligibility
P-30-000101	Archaeological site CA-ORA-101. Shell midden atop coastal bluff.	Unevaluated
P-30-000103	Archaeological site CA-ORA-103. Shell midden atop coastal bluff.	Unevaluated
P-30-150035	Spanish Colonial Revival Thematic Historic District. The district comprises 207 individual properties of the Spanish Colonial Revival architectural style.	Locally Designated
P-30-150036	Ole Hanson/Spanish Village by the Sea Thematic Historic District. The district comprises 149 individual properties of the Spanish Colonial Revival architectural style.	Recommended Eligible for the NRHP
P-30-176663 / P-19-186804	**BNSF Railway (Formerly Atchison, Topeka and Santa Fe)**	**Recommended Not Eligible for the NRHP**

Bold font and shading indicate resources that intersect the project area. NRHP = National Register of Historic Places.

The alignment of the BNSF Railway (Formerly Atchison, Topeka, and Santa Fe; P-30-176663 in Orange County; P-19-186804 in Los Angeles County), as currently mapped and recorded, extends from near the City of Commerce in Los Angeles County to the border between Orange County and San Diego County. Most of the railway was originally constructed between 1885 and 1888 by the Riverside, Santa Ana, and Los Angeles Railway Company — a subsidiary of the Atchison, Topeka, and Santa Fe Railway (ATSF) — as part of the ATSF main line from Los Angeles to Orange County and San Diego. The resource has been evaluated multiple times and recommended not eligible for listing in the National Register of Historic Places (NRHP) because almost all of its historic components have been replaced over the years. This resource intersects the project area.

The Spanish Colonial Revival Thematic Historic District (P-30-150035) is locally designated, whereas the Ole Hanson/Spanish Village by the Sea Thematic Historic District (P-30-150036) has been recommended eligible for listing in the NRHP. Both are non-contiguous historic districts whose boundaries encompass most of the City of San Clemente, with many properties contributing to both districts. Although the boundaries of both districts encompass the project area, there are no contributing properties inside or immediately adjacent to the project area. The property at 255-261 Avenida Lobeiro, which is included in both districts, is the only contributing property within the 0.25-mile record search buffer. The property is located atop the coastal bluff, approximately 75 feet above the level of the project area and 350 feet north of it, and would not be directly or indirectly impacted by proposed work.

Archaeological site P-30-00101 (CA-ORA-101) was recorded in 1954 by the University of California Archaeological Survey and consists of shell midden approximately 18 inches deep eroding from the top of the coastal bluff. The resource has not been evaluated for listing in the NRHP. As it is located atop the coastal bluff, approximately 75 feet above the level of the project

area and 700 feet north of it, the resource would not be directly or indirectly impacted by proposed work.

Archaeological site P-30-00103 (CA-ORA-103) was recorded in 1954 by the University of California Archaeological Survey and consists of shell midden observed eroding from the top of the coastal bluff in an area measuring 2-3 yards in radius. The site record notes that most of the site had been destroyed by construction at the time of recordation, and a residential property now occupies its recorded location. As it is located atop the coastal bluff, approximately 75 feet above the level of the project area and 250 feet north of it, any intact portions of the resource that may potentially remain would not be directly or indirectly impacted by proposed work.

3. Recommendations

Based on the results of the desktop review, the Project would not result in a significant impact to cultural resources.

HDR recommends the contractor specifications require the stoppage of all ground-disturbing activities within a 50-foot radius in the event of an unanticipated discovery of prehistoric or historic-period artifacts or features during construction until a professional archaeologist, in consultation with OCTA, can make an assessment of the resource's significance.

If human remains are inadvertently discovered during construction, all ground-disturbing activities in the vicinity of the discovery must cease immediately and a 50-foot-wide buffer will be established around the location of the discovery to secure it from further disturbance. California State law (Health and Safety Code Section 7050.5; Public Resources Code Sections 5097.94, 5097.98, and 5097.99) will be followed. These regulations specify that work will stop immediately in any areas where human remains or suspected human remains are encountered. The Riverside County Coroner's office must be contacted immediately. The coroner has two working days to examine the remains after being notified by OCTA. If the remains are determined to be Native American, the coroner has 24 hours to notify the NAHC, who will designate a most likely descendant. The NAHC will immediately notify the most likely descendant, who will have 48 hours to make recommendations to the landowner or representative for the respectful treatment or disposition of the remains and grave goods. If the most likely descendant does not make recommendations within 48 hours, the area of the property must be secured from further disturbance. If no recommendation is given, OCTA or its authorized representative will re-inter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance. At all times, human remains should be treated with proper dignity and respect.

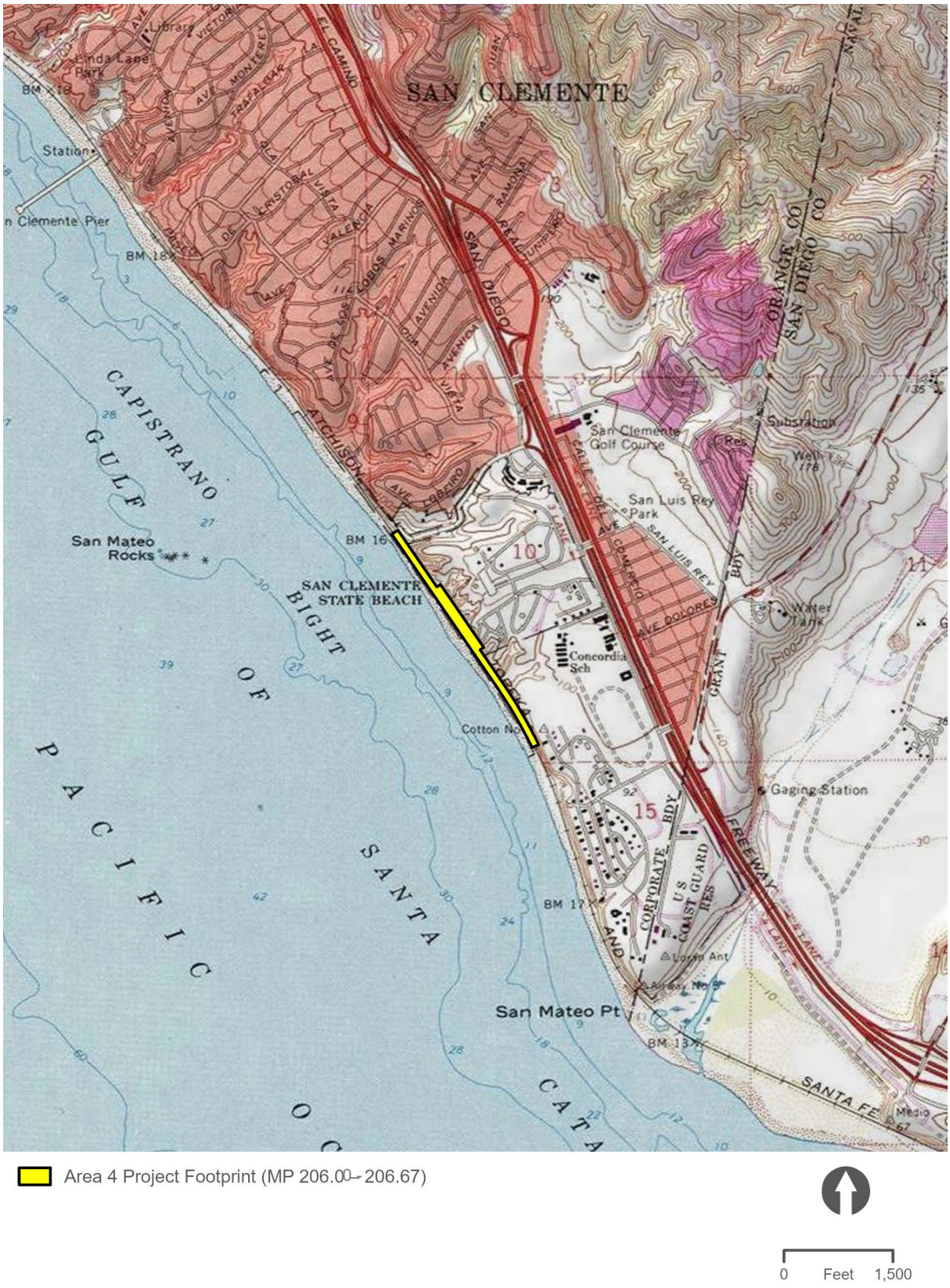


Figure 1. Project Vicinity, Area 4 (MP 206.00 – 206.67)

Figure 2. Project Footprint, Area 4 (MP 206.00 – 206.67)

Figure 3. Known Cultural Resources Within 0.25-Mile Buffer of Area 4 (MP 206.00 – 206.67)

Appendix A. Sacred Lands File Search Results

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

April 5, 2024

Amber Parron
HDR Inc.

Via Email to: Amber.Parron@hdrinc.com

Re: OCTA Critical Coast, Area 4, San Clemente, CA Project, Orange County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the Juaneno Band of Mission Indians Acjachemen Nation - Belardes on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Orange County
4/5/2024

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Juaneno Band of Mission Indians	N	Sonia Johnston, Chairperson	P.O. Box 25628 Santa Ana, CA, 92799			sonia.johnston@sbcglobal.net	Juaneno	Orange,Riverside,San Diego	
Juaneno Band of Mission Indians Acjachemen Nation - Belardes	N	Joyce Perry, Cultural Resource Director	4955 Paseo Segovia Irvine, CA, 92603	(949) 293-8522		kaamalam@gmail.com	Juaneno	Los Angeles,Orange,Riverside,San Bernardino,San Diego	3/17/2023
Juaneno Band of Mission Indians Acjachemen Nation 84A	N	Heidi Lucero, Chairperson, THPO	31411-A La Matanza Street San Juan Capistrano, CA, 92675	(562) 879-2884		jbmian.chairwoman@gmail.com	Juaneno	Los Angeles,Orange,Riverside,San Bernardino,San Diego	3/28/2023
La Jolla Band of Luiseno Indians	F	Norma Contreras, Chairperson	22000 Highway 76 Pauma Valley, CA, 92061	(760) 742-3771			Luiseno	Orange,Riverside,San Diego	
Pala Band of Mission Indians	F	Shasta Gaughen, Tribal Historic Preservation Officer	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3515		sgaughen@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	11/27/2023
Pala Band of Mission Indians	F	Alexis Wallick, Assistant THPO	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3537		awallick@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	11/27/2023
Pala Band of Mission Indians	F	Christopher Nejo, Legal Analyst/Researcher	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3564		cnejo@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	11/27/2023
Pauma Band of Luiseno Indians	F	Temet Aguilar, Chairperson	P.O. Box 369 Pauma Valley, CA, 92061	(760) 742-1289	(760) 742-3422	bennaecalac@aol.com	Luiseno	Orange,Riverside,San Diego	
Pechanga Band of Indians	F	Tuba Ebru Ozdil, Pechanga Cultural Analyst	P.O. Box 2183 Temecula, CA, 92593	(951) 770-6313	(951) 695-1778	eozdil@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Pechanga Band of Indians	F	Steve Bodmer, General Counsel for Pechanga Band of Indians	P.O. Box 1477 Temecula, CA, 92593	(951) 770-6171	(951) 695-1778	sbodmer@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Rincon Band of Luiseno Indians	F	Cheryl Madrigal, Cultural Resources Manager/Tribal Historic Preservation Officer	One Government Center Lane Valley Center, CA, 92082	(760) 648-3000		cmadrigal@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Joseph Linton, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 803-3548		jlinton@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Laurie Gonzalez, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 484-4835		lgonzalez@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Denise Turner Walsh, Attorney General	One Government Center Lane Valley Center, CA, 92082	(760) 689-5727		dwalsh@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	7/7/2023
San Luis Rey Band of Mission Indians	N	Carmen Mojado, Secretary of Goverment Affairs		(760) 724-8505	(760) 724-2172	cjmojado@slrmissionindians.org	Luiseno	Orange,Riverside,San Diego	10/24/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed OCTA Critical Coast, Area 4, San Clemente, CA Project, Orange County.

Record: PROJ-2024-001876
Report Type: List of Tribes
Counties: Orange
NAHC Group: All

Attachment E. Coastal Rail Resiliency Study Initial Assessment Technical Memorandum

This page is intentionally blank.

Orange County Transportation Authority

Coastal Rail Resiliency Study

Initial Assessment Technical Memorandum

Cities of Dana Point and San Clemente, CA

Prepared By:

HDR

Prepared for:

OCTA

January 2024

Table of Contents

List of Figures

Executive Summary

The Orange County Transportation Authority (OCTA) embarked on the Coastal Rail Resiliency Study (CRRS) in fall of 2023 with the goal of developing alternative concepts for maintaining railroad operations within the existing railroad corridor for the next 30 years. Concurrently, multiple inland bluff failures and coastal erosion events created state of emergencies in which operators such as Metrolink, Amtrak and BNSF had to cease operations. Acknowledging that these shutdowns in operations are causing financial burdens on taxpayers, OCTA is expediting an Initial Assessment of this coastal railroad corridor from Mile Post 200.0 to MP 207.4, which will be an appendix to the overall CRRS document.

The Goals and Objectives of the Initial Assessment are to conduct an existing conditions assessment of the railroad corridor by identifying areas that are susceptible to risk from bluff failures and coastal erosion within the next two years, resulting in a shutdown of railroad operations. This will build upon previous studies that OCTA, the County, and the Cities of San Clemente and Dana Point have conducted over the last several years. Finally, it will identify potential solutions and strategies along with next steps that OCTA and other stakeholders could take to keep the tracks operational. The potential solutions and strategies are documented under the Recommendations and are categorized in three areas by degree of concern: Potential Reinforcement Areas, Potential Monitoring Areas, and Potential Emergent Areas. All three of these categories will require further engineering and environmental studies to determine preferred remediation solution with a defined scope, schedule and budget that would be integrated into an Implementation Plan.

Providing potential solutions is only a portion of the overall plan needed to address the needs along this coastal railroad corridor. The next steps address Governance challenges by revealing the need for better definition of roles and responsibilities of key stakeholders. The lead agency must develop an Implementation Plan that will be informed by a clear strategy on how to navigate the Regulatory Permitting process. Future emergencies are unavoidable but the response can be enhanced by the development of procedures which incorporate lessons learned from past emergencies. Given the nature of the bluff failures and coastal erosion, emergency response time can be expedited by stockpiling of Materials typically used in an emergency situation. Lastly, timely engagement of stakeholders must be considered so that each of their constituents are informed.

Introduction/Background

The coastal Rail Corridor in southern Orange County is owned by OCTA and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink) and Amtrak Pacific Surfliner for passenger service and by the Burlington Northern-Santa Fe Railroad (BNSF) for freight service. This segment of railroad is part of the greater 351-mile Los-Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Corridor). The Department of Defense (DOD) has designated this key railroad line as a part of the Strategic Rail Corridor Network (STRACNET). Over the past three years, coastal Rail Corridor operations have been adversely affected by the processes of coastal bluff erosion, beach loss, revetment loss, and bluff failures. Recent bluff failures at MP 204.2 Mariposa Pedestrian Bridge, MP 204.6 Casa Romantica, and reactivation of an ancient landslide at MP 206.7 Cyprus Shore (Figure 1) have resulted in significant interruptions to railroad operations. The coastal Rail Corridor is subject to future similar threats, which can further impact railroad operations. OCTA, along with its rail operators, are seeking solutions to further reinforce this critical Rail Corridor.

Figure 1 MP 206.8 Track Stabilization Project (Cyprus Shore)

To reinforce the coastal Rail Corridor, OCTA is leading a CRRS to develop short to medium-term solutions for the seven-mile segment of coastal Rail Corridor between Mile Post (MP) 200.0 to MP 207.4 (see Figure 2 below). The CRRS will develop alternative concepts to protect the railroad in its current corridor for the next 30 years. The alternative concepts will be implementable in the short term (up to 10 years) and the medium term (11 to 30 years). The CRRS will coordinate with key stakeholders and interest groups in the region to take into consideration their needs and also participate in regional solutions. A long-term study that will examine future coastal railroad corridor solutions beyond the 30-year horizon. Planning for the long-term study is under discussion and the lead agency has not yet been determined for that effort.

As an initial assessment to address immediate needs (next 2 years), the project team has conducted field reconnaissance to identify and assess areas along the OCTA coastal

railroad corridor (MP 200.0–207.4). The assessment resulted in identification of areas warranting immediate monitoring and/or requiring corrective action and mitigation. The objective of this assessment is to identify and prioritize areas of immediate action to avoid and minimize potential emergencies that impact railroad operations. This segment of the railroad in South Orange County has experienced extended service disruptions over the last several years that have severely impacted the reliability of passenger rail service and thus, the riders who depend on the service. The measures identified within this Initial Assessment are intended to be actionable by OCTA and its railroad operator and maintainer, Metrolink.

The potential reinforcement areas identified will require additional design advancement, environmental approach, and permitting strategy to implement. The areas cover direct actions that can be implemented by OCTA or Metrolink to protect its infrastructure and avoid impacts to operations. Additionally, there are other solutions and efforts being led by other stakeholders to address regional erosion issues and OCTA will coordinate with the respective parties. While this Initial Assessment is limited to immediate actions to be performed by the railroad, the short- and medium-term solutions being explored will not be limited to that narrowed scope and will consider other regional solutions as well.

Goals and Objectives

The goals and objectives of the Initial Assessment summarized in this memorandum is to (1) review the existing conditions of the coastal rail corridor, (2) research historical events and actions that have taken place to protect the railroad and coastline, (3) conduct field reconnaissance to note emergent areas, and (4) make recommendations for monitoring areas and potential reinforcement along the coastal Rail Corridor. This technical memorandum provides a roadmap of projects and implementation strategies that are immediately actionable by the railroad.

Methodology

The project team conducted a review of coastal processes, readily available literature, and a geologic/geotechnical reconnaissance of the site to develop recommendations for monitoring and identification of potential reinforcement areas.

The monitoring areas are identified as locations with observed signs of potential near-term concern. The areas should be monitored for additional movements and any signs of emerging distress using topographic surveys, site observations, and monitoring equipment. The tracked data should be utilized to develop a baseline condition and to compare against possible thresholds for future action.

Furthermore, the project team has identified potential reinforcement areas that are recommended to reinforce critical rail infrastructure and avoid an emergency that impacts rail operations. These potential reinforcement areas may need to be studied further through alternatives analysis to select a recommended path forward and develop environmental and permitting strategies to be ready for construction.

The areas were identified based on the project team’s research and field reconnaissance; however, the risk of additional wave erosion impacts, bluff instability impacts and local erosion in other areas still exists with changing climate conditions and landscape. The

potential reinforcement solutions presented in this memorandum, along with additional site-specific alternatives, can be implemented elsewhere throughout the corridor.

Previous Efforts by OCTA

This Initial Assessment builds on previous OCTA efforts in its pledge to study climate change impacts and implement sustainability measures. In January 2021, OCTA released its "OCTA Rail Defense Against Climate Change Plan," which focused on the approximately 25-mile section of railway from Jeffery Road in Irvine to the Orange/San Diego County border and evaluated Metrolink Stations in Orange County south of Irvine, CA. The purpose of the plan was to characterize and understand future climate-related risk to the rail system and passengers to identify strategies to help mitigate those risks and to preserve the continuity of the rail service into the future.

Areas of previous bluff and coastal erosion were also reviewed, as has occurred most recently at MP 204.2 Mariposa Pedestrian Bridge bluff failure, MP 204.6 at Casa Romantica, and the reactivated ancient landslide at MP 206.8 at Cyprus Shore. Metrolink maintenance crews continue to observe, inspect, and place riprap slope protection for shoreline erosion areas as they develop. This Initial Assessment considers previously impacted areas and suggests other complementary solutions and strategies to maintain railroad operations.

Overview of Baseline Conditions

The project team collected data to document the existing conditions through field reconnaissance with Metrolink maintenance staff, geotechnical desktop studies pertinent to the coastal corridor, and mining through Metrolink's storage office, which contained records for maintenance through the coastal corridor. The project team compiled the existing conditions informed by the data collection and organized per expertise:

- Coastal and geotechnical identifying possible causes for erosion and degradation; and
- Impacts on Metrolink assets: track, drainage, signals.

Data Collection

Site Visits

Two site visits were conducted to observe existing conditions and identify vulnerabilities to coastal erosion, potential bluff failures, and impacts to the coastal rail corridor. The first covered MP 203.7 to Calafia State Beach at MP 206.0 on November 28, 2023; the second covered the remaining reach from MP 206.0 to MP 207.4 on January 12, 2024. Key observations related to coastal erosion, bluff stability and local erosion, and related flooding/overtopping vulnerability are summarized as follows:

- Metrolink personnel indicated there were no coastal erosion issues north of Metrolink Station (MP 203.7) except at Capistrano Beach Park where there is a rail crossing. The County of Orange has been managing shoreline protection along this reach. The Rail Corridor is not threatened at this location.
- Metrolink personnel identified an area of recent shoreline erosion and subsequent riprap installation near MP 203.85.

  - The riprap slope, historically stacked from railcars along this reach, has face profiles exceeding ratios of 1:1 (horiz:vert) (see Figure 8 and Figure 12, below).

- Metrolink personnel cited another erosional hotspot location at Mariposa Point near MP 204.2 and spanning the length of an elevated pile-supported pedestrian walk/ bridge paralleling the shoreline. After the site visit, this area experienced a bluff failure with runout onto the track at MP 204.2 on January 24, 2024, which halted rail operations. This area is known to have lost significant beach deposits and riprap shore protection in recent years (see Figure 9, below). Recent riprap was placed between Mariposa Point and the marine safety building. Additionally, failures and groundwater seepage are a chronic occurrence within the adjacent bluff.
- No additional areas vulnerable to coastal erosion and flooding were identified from the San Clemente Pier southward to San Clemente State Beach (MP 206.5).
- From just south of the Califia State Beach parking lot, near MP 206 to approximately MP 206.6, the rail corridor has little or no riprap shore protection. The shoreline fronting the rail corridor indicates advancing erosion, with vertical scarps in the native beach material exceeding 10 feet near the rail line (see Figure 10).
- Metrolink personnel indicated continued chronic maintenance issues following storm events within the limits of the San Clemente State Beach Campground, MP 206.0 to MP 206.5, with sediments generated by bluff erosion and the mouths of canyons.
- In the vicinity of MP 207, Metrolink personnel indicated emergency riprap repairs have been required.
- Riprap was observed to also include much smaller stone and the upper portions of the slope are very steep (steeper than 1:1) (see Figure 11).

Desktop Studies

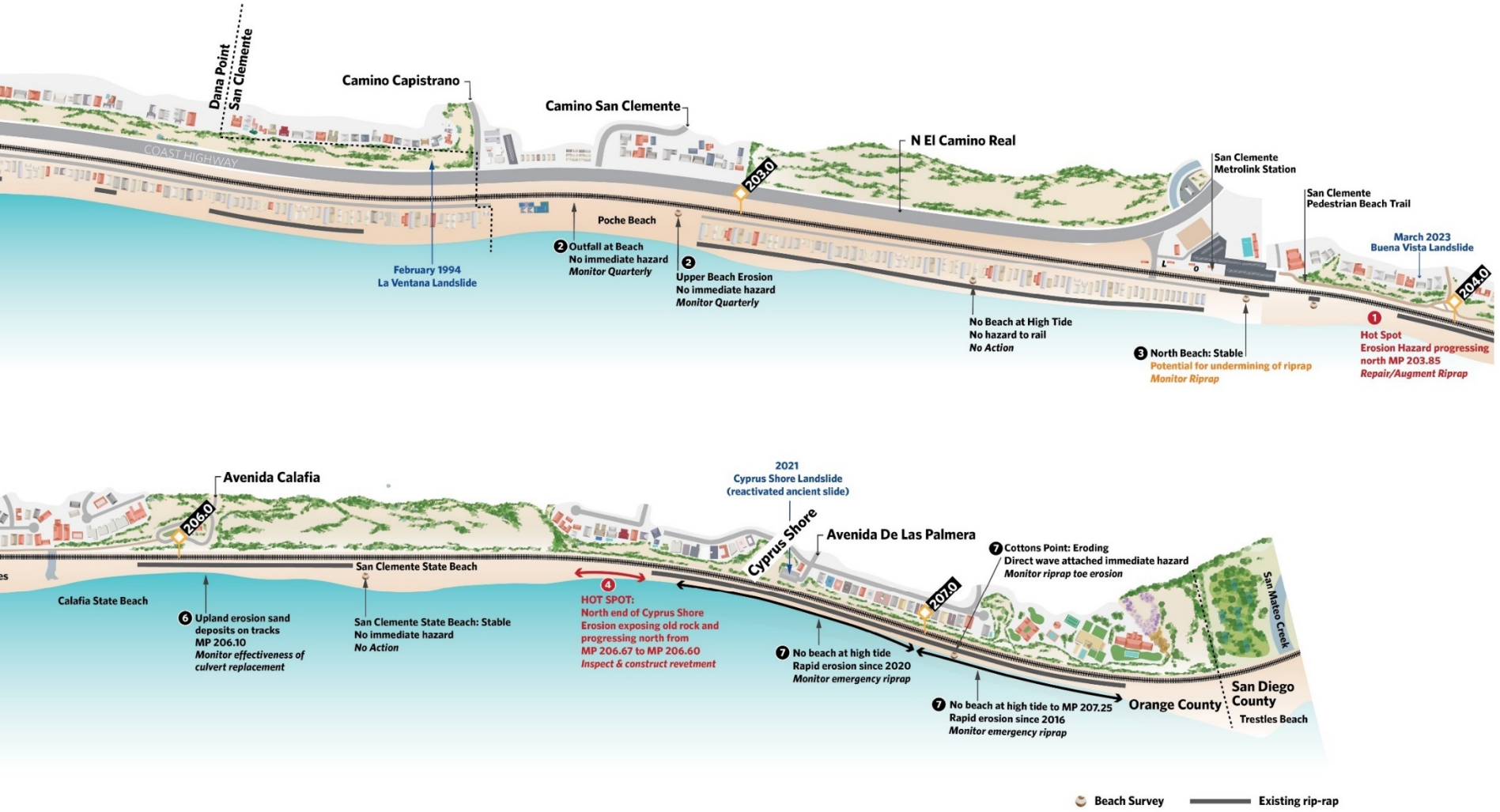
The project team performed a search of available literature including published geologic maps, state hazard maps, and historical aerial photographs. The documents were reviewed to identify areas of historical bluff instability and establish levels of potential risk to future impacts along the coastal Rail Corridor.

While no new beach profile data were collected for this effort, the City of San Clemente recently initiated a fall and spring beach profile survey program to cover years 2022 through 2025. The program measures changes in shoreline topography and bathymetry at 12 sites from Doheny Beach to San Mateo Point. Figure 2 shows the locations of the beach profile sites in relation to the OCTA Coastal Railroad ROW (MP 200.2–MP 207.4). The purpose of the shoreline monitoring program is to facilitate and plan shoreline projects and to document the impact of natural events such as El Niño and sea level rise (SLR). The program augments historic data sets acquired by the U.S. Army Corps of Engineers (USACE) in the 1980s and a prior City of San Clemente monitoring program covering 2001–2007.

Figure 3 shows the mean high water (MHW) level beach width, which represents the width of the beach from the backshore edge of sand seaward to the MHW elevation. The MHW beach width is generally considered to represent the *dry beach width*. The shaded gray area illustrates the envelope of historical measured beach widths based on available data from 1983–2009. The dark blue line shows the beach width measured in fall 2022, when beach

survey monitoring was reinitiated. Between MP 202 to 203, the beach monitoring results show the fall 2022 beach width to be at or below historic minimums, and up to 50 feet narrower than the historical range; however, dry beach width remains in this area and the rail is set back from the shore. Between MP 203 to 204, most of the beach remains at or near historic minimum width, with no dry beach through much of this area. A more dramatic reduction in dry beach width is demonstrated in the vicinity of Cyprus Shore (MP 207.05) where, in fall 2022, there was no dry beach measured. Survey measurements prior to 2009 (range shown in gray) near Cyprus Shore indicate a beach not narrower than 100 feet. These measurements are consistent with the onset of coastal erosion and related flooding and damage within the Rail Corridor that warranted emergency remedial shore protection and stabilization construction at that location.

Figure 4 includes the fall 2023 beach width and illustrates relatively little change compared to the fall 2022 shoreline position.


Dana Point
San Clemente
Camino Capistrano
Camino San Clemente
N El Camino Real
COAST HIGHWAY
2030
San Clemente
Metrolink Station
San Clemente
Pedestrian Beach Trail
March 2023
Buena Vista Landslide
2040
Poche Beach
2 Outfall at Beach
No immediate hazard
Monitor Quarterly
February 1994
La Ventana Landslide
2 Upper Beach Erosion
No immediate hazard
Monitor Quarterly
No Beach at High Tide
No hazard to rail
No Action
3 North Beach: Stable
Potential for undermining of riprap
Monitor Riprap
1 Hot Spot
Erosion Hazard progressing
north MP 203.85
Repair/Augment Riprap
Avenida Calafia
2060
2021
Cyprus Shore Landslide
(reactivated ancient slide)
Cyprus Shore
Avenida De Las Palmera
7 Cottons Point: Eroding
Direct wave attached immediate hazard
Monitor riprap toe erosion
San Clemente State Beach
Calafia State Beach
6 Upland erosion sand
deposits on tracks
MP 206.10
Monitor effectiveness of
culvert replacement
San Clemente State Beach: Stable
No immediate hazard
No Action
4
HOT SPOT:
North end of Cyprus Shore
Erosion exposing old rock and
progressing north from
MP 206.67 to MP 206.60
Inspect & construct revetment
2070
San Mateo Creek
7 No beach at high tide
Rapid erosion since 2020
Monitor emergency riprap
7 No beach at high tide to MP 207.25
Rapid erosion since 2016
Monitor emergency riprap
Orange County
San Diego
County
Trestles Beach
Beach Survey
Existing rip-rap

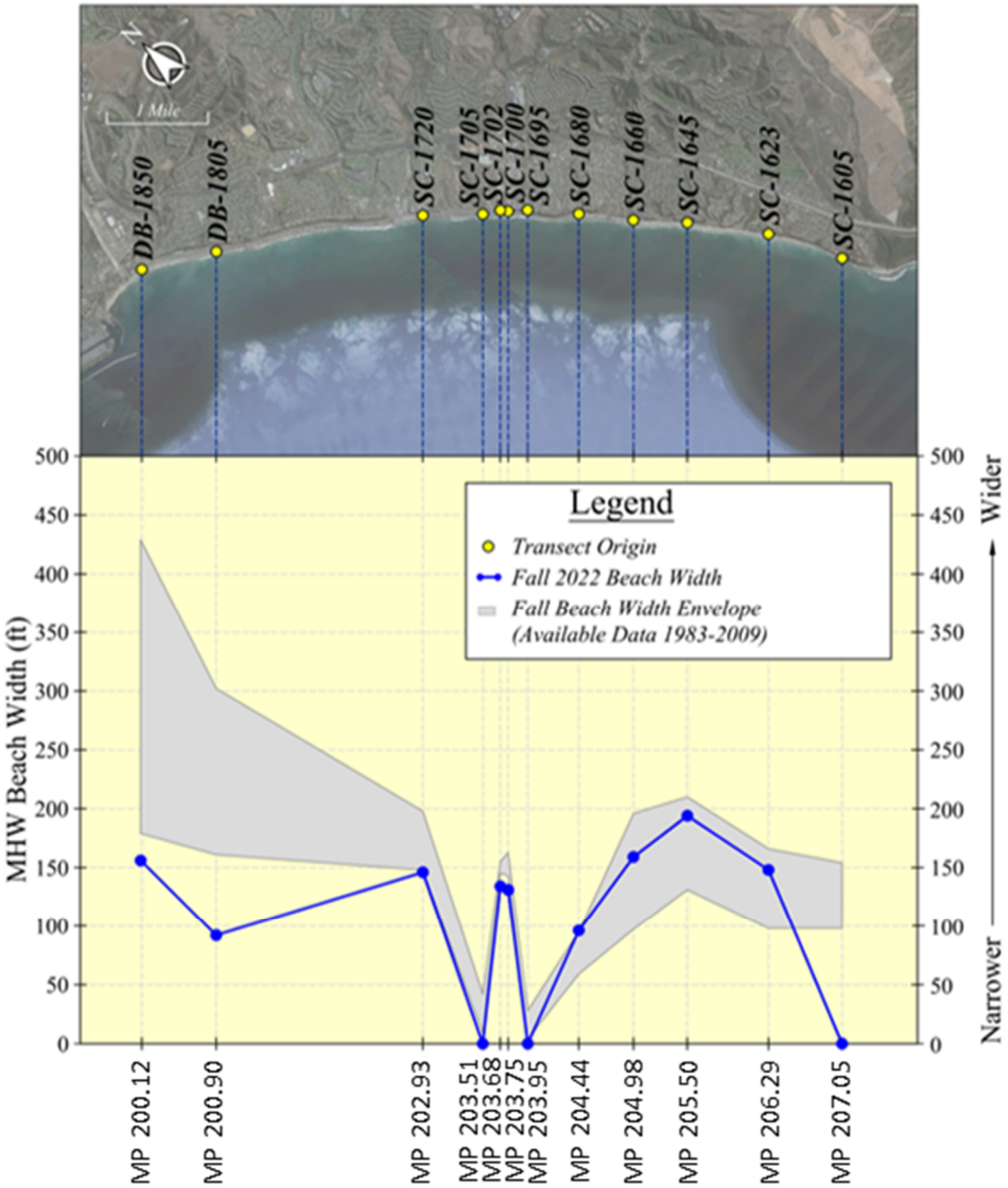


Figure 3 Fall 2022 Beach Widths Relative to Historic Shoreline Position per Survey Comparisons Conducted by Coastal Frontiers

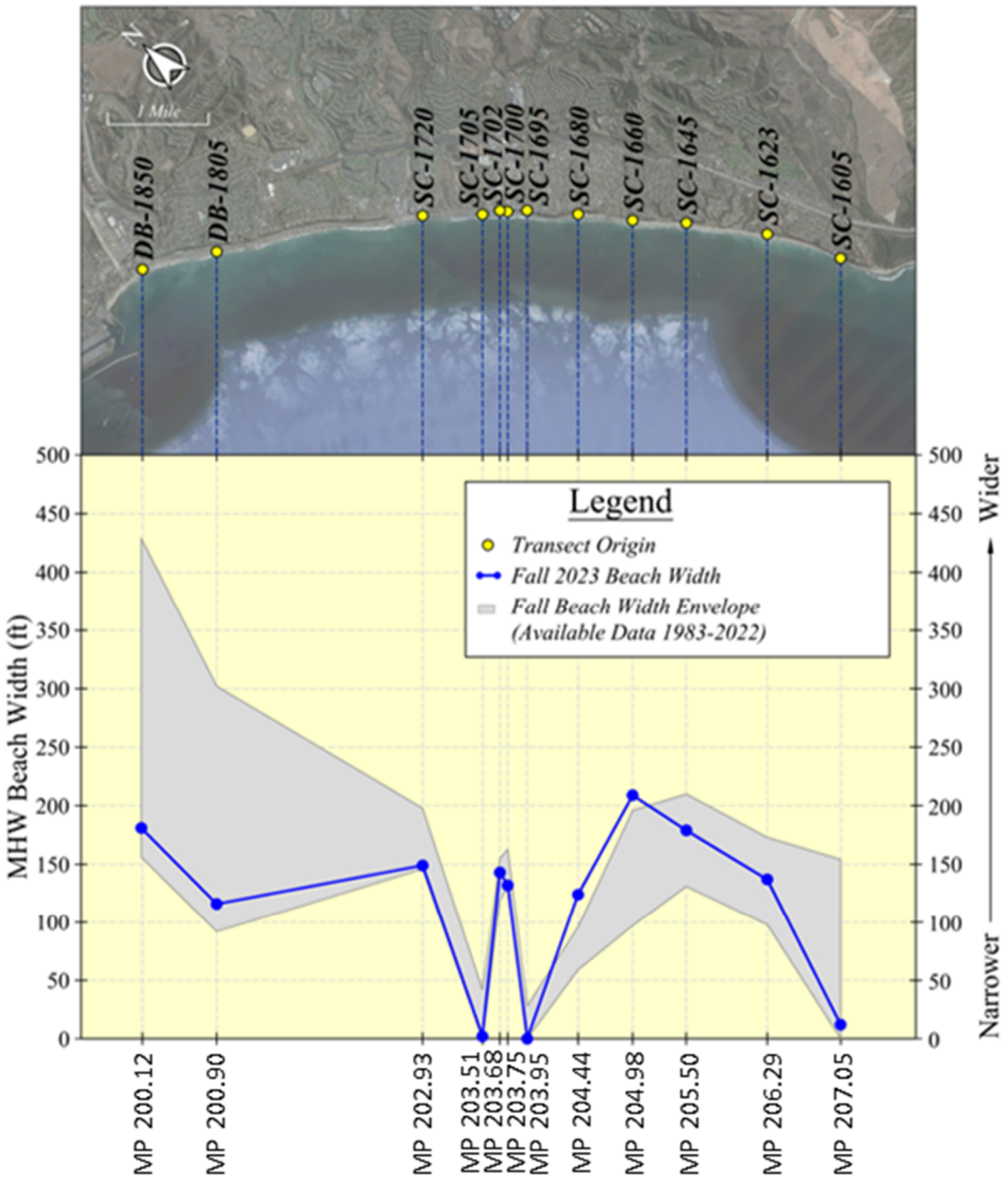


Figure 4 Fall 2023 Beach Widths Relative to Historic Shoreline Position per Survey Comparisons Conducted by Coastal Frontiers

Mining through Metrolink's Storage

As part of the project team's effort to document past maintenance activity along the ROW between MP 200.0 and 207.4 on the Orange Subdivision, representatives made a visit to SCRRA's Melbourne warehouse on December 12, 2023, to search for relevant track maintenance records, project as-builts, and various historical documents stored within the vault. As part of this research, six documents were found relevant to the project area:

- Preliminary Geotechnical Investigation for proposed site of Metrolink North Beach commuter rail station in San Clemente, dated March 4, 1994. The report details soil

conditions within the project area and notes the site being an active floodplain at the time as well as an instance of flooding within the area. Page 3 of 25 states, “Prior for the general development of the area, the site was considered an active floodplain. The winter storms of 1993 caused the Segunda Deshecha Cañada drainage channel to flood.”

- Railroad Cross-Sections at Dana Point, dated January 16, 1998. This survey report generated in response to a request by the Capistrano Bay District regarding ROW encroachment from a non-reinforced concrete block garden wall. The report describes existing conditions of the wall relative to the OCTA ROW, as well as impacts (i.e., interference) to any future ROW maintenance and future construction.
- Plan set for Metrolink North Beach commuter rail station in San Clemente (at 1850 Avenida Estacion), dated May 27, 1994. Of note are the grading plans (sheet PC-0004) and cross-sections (PC-0007) showing changes within ROW and immediate vicinity.
- City of Dana Point Landslide Remediation and Slope Reconstruction Construction Documents, dated May 5, 1994. This plan set details a proposed tieback system to stabilize the slope along the Coast Highway. The project is not railroad-related, as the slope in question is located on the other side of the Coast Highway away from the tracks, but the grading plan (sheet C-2) does show proposed impacts within OCTA ROW (i.e., removal of retaining wall).
- Preliminary Plans for Multi-Use Beach Trail within City of San Clemente, dated unknown. Project-related impacts/modifications (pedestrian access, overpasses) within the railroad ROW are marked up throughout the set, with the last sheet in the set (C-14) detailing the proposed trail in relation to the existing tracks.
- FEMA/OES Disaster 1585 for 2/16/05–2/23/05 Winter Storms. A collection of project worksheets, images, and correspondences related to repairs made at various locations throughout the SCRRA network following storm damage within the as-specified time frame (incident period). Each site worksheet details the type(s) of damage done by the storms.

Additionally, SCRRA has noted the potential presence of historical track outages and emergency responses documented within its internal database system. HDR was not provided access and this information has not yet been provided to HDR.

Existing Conditions

Coastal

Shoreline monitoring since 2022 indicates that most shorelines in the study area are retreating (eroding), with historical minimum beach widths at the northern extent of the study area (MP 200 to 204.3) and the southern extent (MP 206.6 to 207.2 - Cyprus Shores). Ongoing actions by the City of San Clemente to monitor the beach profile and rate of change will continue. Recent action (December 2023) by the USACE to nourish the beach with 250,000 cubic yards of sand will supplement the lack of supply to the beach system but is unlikely to affect the overall trajectory of beach erosion in the near term.

Vulnerabilities related to shoreline erosion and related wave overtopping have been identified to present near-term imminent risk (0 to 2 years) to rail operations and/or infrastructure. For vulnerabilities related to reduced shore protection resulting from damage to existing sloping riprap, the only viable short-term strategy is to repair the damaged structure. Repair options include addition of riprap in areas where it has been dislodged and displaced downslope and seaward. Minor improvements that would not represent new development may include use of larger armor stone, with repair operations supported by placement operations from the seaward side of the riprap slope when sufficient dry beach is available to support construction operations during low tide conditions. Rock placement from beach side of the slope generally results in higher-quality construction via improved nesting of adjacent stone and tighter placement density, resulting in greater stability and durability.

Recent coastal erosion has also been observed along the reach between MP 206 and MP 206.6 where little to no riprap exists. This may present an opportunity to construct sections of engineered revetment, which provide significantly greater shore protection performance in the longer term. Compared to the rocks placed in riprap slope protection, the rocks placed in a properly engineered revetment will remain in place, thereby providing more protection from wave-induced beach erosion and associated wave overtopping. The key advantages of an engineered revetment versus a riprap slope are listed below:

- Founding the toe of revetment in a keyway excavation, preferably established in shallow bedrock to minimize erosional undermining.
- Placement of geotextile filter fabric within the temporary back-cut behind the revetment to reduce loss of finer embankment material by piping.
- Employment of specialized revetment stone design to promote added hydraulic stability, including revetment-perpendicular long-axis placement and careful nesting and armor stone size placement.

Construction constraints include beach accessibility, sufficient beach width, availability of equipment, and time-sensitive construction hours during periods of low tides. Based on site observations, discussions with Metrolink personnel, and analysis of beach profile survey data, potential reinforcement areas for the coastal rail corridor shoreline protection include:

- Ongoing revetment damage and deterioration at MP 203.8.
- Ongoing revetment damage and deterioration along Mariposa Point between MP 204.1 and MP 204.5.
- Unprotected Rail Corridor from MP 206 to MP 206.6.
- Ongoing revetment damage and deterioration in localized areas between MP 206.6 and MP 207.4.

Geotechnical

A majority of the coastal bluff along the coastal rail corridor has experienced failures in some manner as part of natural and/or anthropogenic processes of landward retreat. Such typically involve a failure of bluff-top terrace deposits, weathered bedrock within the bluff face, and surface vegetation. Causes can often be attributed to construction of unpermitted bluff-top retaining structures by private property owners acting as dams to subsurface waters and increased hydrostatic pressures. Where bluffs are set back a greater distance from the

coastal rail corridor, these failures commonly result in runout of deposits that do not reach the corridor. In locations where the bluff lies in closer proximity to the corridor, these failures can encroach into/over the tracks requiring removal of debris and sometimes installation of pile-lagging walls parallel to the tracks. While these failures are often spectacular from a general public and media perspective, they tend to pose only a low threat to the integrity of the corridor, requiring short-lived maintenance efforts to restore track service.

Rare along the bluff is the occurrence of larger deep-seated landslides involving bedrock with basal ruptures projecting beneath the tracks. Such tend to involve reactivation of older pre-existing ancient landslides in response to a loss of beach support, conditions of natural or anthropogenic groundwater, anthropogenic modification of driving forces in areas landward of the corridor, or combinations thereof.

Track
The existing track alignment consists of a single track line within the project limits. The operational speeds vary from 40 miles per hour (mph) to 90 mph for passenger trains and 40 mph to 50 mph for freight trains. There are two passenger stations within the project limits at San Clemente North Beach and San Clemente Pier.

The track corridor has various cross sections throughout the project limits. The typical cross sections are summarized below:

- MP 200.00–MP 201.20: Pacific Coast Highway to the east of the track alignment and Beach Road and Doheny State Beach and Capistrano State Park to the west of the track.
- MP 201.20–MP 202.65: Pacific Coast Highway to the east of the track alignment and residential homes to the west of the track.
- MP 202.65–MP 202.95: Pacific Coast Highway to the east of the track alignment and Poche Beach to the west of the track.
- MP 202.95–MP 203.60: Pacific Coast Highway to the east of the track alignment and residential homes to the west of the track.
- MP 203.60–MP 207.70: Bluffs to the east of the track and various widths of beach to the west of the track.

Drainage
Surface drainage issues persist within various segments of the coastal rail corridor. The primary issues tend to occur in close proximity to the toe of bluffs. Local graded track-side drainage ditches have been installed as part of maintenance efforts to control surface waters locally, but many have been eroded and/or become infilled with sediment over time, causing ponding. Locations of poor drainage are highlighted below.

Signals
Signal equipment in the area requires more maintenance than other areas outside of the coastal corridor due to the corrosive forces from the marine atmosphere. Additional coatings and selected materials are used for the signal equipment throughout the project limits; however, the frequent maintenance needs remain necessary.

Summary of Emergent Areas

The project team reviewed recent and historical aerial photography, beach profile surveys, and publicly available studies to characterize long-term and recent trends. As evidenced by extensive armoring along nearly the entire study area, shoreline erosion has been a historical concern and has recently reemerged as a major concern in several locations. An extensive historical investigation was not performed for this study as the project team's efforts focused on immediate (up to 2 years) issues throughout the study area. Aerial maps of the coastal rail corridor are provided in the appendix of this report for reference to areas summarized below. Below is a color-coded summary of potential emergent impacts to the rail corridor associated with bluff stability. Areas highlighted in green are considered representative of a low potential impact. Those of moderate impact are highlighted in yellow. Areas considered a higher potential emergent impact to the rail corridor are highlighted in red.

Table 1. Summary of Emergent Areas, MP 200–201

MP 200.0–201.0	Bluff setback relatively distant from the Rail Corridor; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to wide beaches and park infrastructure between the Rail Corridor and shoreline.

Table 2. Summary of Emergent Areas, MP 201–202

MP 201.0–201.7	Bluff set-back relatively distant from the Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to park infrastructure and private properties between the Rail Corridor and shoreline.
MP 201.7–201.9	Bluff set-back relatively distant from Rail Corridor; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential for bedrock landslide runout into Rail Corridor is low in near term and potentially moderate in long term. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 201.9–202.1	Bluff set back relatively distant from Rail Corridor ; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.

Table 3. Summary of Emergent Areas, MP 202–203

MP 202.1–202.3	Bluff set-back relatively distant from Rail Corridor; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential for bedrock landslide runout onto Rail Corridor considered low in the near term and elevated in in the long term. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 202.3–202.5	Bluff set back relatively distant from Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 202.5–202.65	Location of large past bedrock landslide with runout over/beyond Rail Corridor; bluff stabilized by wall repair; potential future impact considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 202.65–202.8	Bluff condition absent due to mouth of canyon crossing; Rail Corridor subject to potential liquefaction, lateral spreading, and tsunami hazards; threat assessment to Rail Corridor requires geotechnical exploration. Coastal erosion potential impact is moderate. Drainage crossing armor should be monitored and some repair needed following major storms.
MP 202.8–202.98	Location of past bluff instability; bluff stabilized by wall repair; potential impact to Rail Corridor considered low. Coastal erosion potential impact is moderate, as dry beach remains.
MP 202.98–203.01	Location of 2:1 (horiz:vert) bluff layback and surface drain installation; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.

Table 4. Summary of Emergent Areas, MP 203–204

MP 203.01–203.11	Bluff set-back relatively distant from Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 203.11–203.5	Location of 2:1 (horiz:vert) bluff layback and surface drain installation; potential impact to Rail Corridor considered low. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 203.5–203.71	Bluff condition absent due to canyon crossing; area subject to potential liquefaction, lateral spreading, and tsunami hazards; threat assessment to Rail Corridor requires geotechnical exploration. Coastal erosion potential impact is low, due to private properties between the Rail Corridor and shoreline.
MP 203.71–204.1	Bluff set-back relatively distant from Rail Corridor; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential for terrace/bedrock landslide runout into Rail Corridor considered low in near-term, more elevated in long term.
MP 203.71-203.80	Coastal erosion potential impact is moderate from 203.71 to 203.80.
MP 203.80–203.90	Coastal erosion potential impact is high near MP 203.80 to 203.90 due to beach narrowing and ongoing erosion progressing north from the existing riprap.

Table 5. Summary of Emergent Areas, MP 204–205

MP 204.1–204.3	Rail Corridor located on/or adjacent to bluff; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; shoreline eroded; heavy riprap protection in place; heavy seepage in bluff face; track bed underlain by older slide debris that is saturated and subject to potential liquefaction and lateral spreading; high potential for terrace/bedrock landslide, liquefaction, and/or wave erosion impacts to Rail Corridor. Coastal erosion potential impact is high due to direct wave attack, displaced stones, ongoing maintenance requirements, and steep riprap slopes.
MP 204.2	January 24, 2024, bluff failure occurred on adjacent property with runout onto tracks, impacting Mariposa Pedestrian Bridge and halting rail service; slide movement sheared sections of pedestrian bridge deck from its bents due to lateral pressure on the structure; slide debris shifted Enviro-blocks at former slope toe onto the Rail Corridor; slide mass graded to 2:1 (h:v) and covered with Visqueen; threat of future bluff failures and Rail Corridor closures remains high. Coastal erosion potential impact is high due to direct wave attack, displaced stones, ongoing maintenance requirements, and steep riprap slopes.
MP 204.3–204.37	Bluff set-back relatively distant from Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential for terrace/bedrock landslides and runout onto Rail Corridor considered low in the near-term, more elevatedlong term.
MP 204.3–204.37	Coastal erosion potential impact is high due to direct wave attack, displaced stones, ongoing maintenance requirements, and steep riprap slopes.
MP 204.37–204.42	Location of past terrace/bedrock landslide (Pumphouse Landslide); unrepaired slide mass remains in relatively close proximity to Rail Corridor; potential reactivation of slide and runout onto Rail Corridor considered moderate; potential damage to sewer pumpstation due to continued landslide creep, and possible runout onto Rail Corridor requiring maintenance considered low to moderate in the near-term. Coastal erosion potential impact is moderate due to narrow beach and condition of existing riprap exposed to wave action and beach. Monitoring is warranted.
MP 204.42–204.46	Bluff condition absent; potential impact to Rail Corridor considered low.
MP 204.46–204.55	Existing building mitigates bluff stability concerns; potential impact to Rail Corridor considered low.
MP 204.55–204.58	Bluff set back relatively distant from Rail Corridor; low bluff height; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to tracks considered low; potential impacts to railroad signal house and railroad switching system at Corto Lane Ped Crossing near the toe bluff considered moderate. Coastal erosion potential impact is low to moderate in this vicinity due to beach width and existing infrastructure.
MP 204.58–204.65	Location of past terrace/bedrock landslide (Casa Romantica Landslide); slide mass stabilization in progress; timber/pile wall installed at toe; potential impact to Rail Corridor considered low.
MP 204.65–204.75	Low bluff profile; Rail Corridor subject to potential liquefaction, lateral spreading, and tsunami hazards; threat assessment to Rail Corridor requires geotechnical exploration.
MP 204.75–204.91	Bluff set back relatively distant from Rail Corridor; moderate bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low.

Table 6. Summary of Emergent Areas, MP 205–206

MP 204.91–205.11	Bluff height relatively moderate; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impact to Rail Corridor considered low.
MP 205.11–205.25	Bluff height relatively high; location of past terrace/bedrock landslides (SCL Mayor Landslide); slide debris remains; potential impacts to Rail Corridor due to slide reactivation considered moderate.
MP 205.25–205.38	Bluff condition absent; potential impact to Rail Corridor considered low.
MP 205.38–205.5	Bluff set back relatively distant from Rail Corridor; steep bluff profile; potential impact to Rail Corridor considered low.
MP 205.5–205.58	Bluff set back relatively distant from Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential impacts to Rail Corridor considered low.
MP 205.58–205.7	Bluff set back relatively distant from Rail Corridor; steep/high bluff profile; periodic bluff failures involving terrace and weathered bedrock deposits notable historically; potential terrace/bedrock landslide runout onto Rail Corridor considered moderate.
MP 205.7–205.82	Bluff condition absent; potential impacts to Rail Corridor considered low.
MP 205.82–205.95	Bluff set back relatively distant from; steep/high bluff; bedrock relatively stable; potential impact to Rail Corridor considered low. Coastal erosion potential impact is moderate due to narrow beach and existing exposed riprap.
MP 205.95–206.03	Bluff set back sufficient distance from Rail Corridor; potential impact to Rail Corridor considered low. Coastal erosion potential impact is moderate due to narrow beach and existing exposed riprap.

Table 7. Summary of Emergent Areas, MP 206–207

MP 206.03–206.3	Bluff set back relatively distant from Rail Corridor; steep/high bluff profile; bedrock relatively stable, area subject to canyon outwash flooding and erosion; potential impact to Rail Corridor considered low to moderate.
MP 206.3–206.55	Bluff set back relatively distant from Rail Corridor; steep/high bluff profile; bluffs susceptible to potential bedrock landslides; potential for landslide runout into Rail Corridor considered moderate.
MP 206.55–206.64	Location of recent landslide with runout onto Rail Corridor; landslide remains unmitigated; potential slide reactivation and runout into Rail Corridor considered moderate to high. Coastal erosion potential impact is high due to narrow beach, recent erosion and exposure of the fill slope supporting the track between MP 206.6 and 206.65.
MP 206.64–206.72	Bluff set back relatively distant from Rail Corridor; bluff height moderate; bluff susceptible to bedrock landslides; potential bluff impacts to Rail Corridor considered moderate to high. Coastal erosion potential impact is high due to narrow beach, recent erosion and exposure of the fill slope supporting the track in the vicinity of MP 206.6 to 206.65.
MP 206.72–207.34	Bluff set back relatively distant from Rail Corridor; area of ancient Calle Ariana Landslide (repaired) extending beneath Rail Corridor; moderate bluff height; bluff susceptible to bedrock landslides; future potential impact to Rail Corridor considered low to moderate. Coastal erosion potential impact is moderate to high due to lack of a dry beach and riprap placed to stabilize the shoreline. Ongoing monitoring and reinforcement of the existing riprap is expected near Cypress Shore.

Recommendations

Potential Strategies and Solutions

Strategy 1. **Proactive Monitoring of the Shoreline.** The project team recommends OCTA and SCRRA implement a monitoring program that combines topographic survey and site observations at various locations and frequencies. These data will allow OCTA and SCRRA to establish baseline conditions that will support other strategies. This strategy can be implemented in a matter of months. We also suggest up to three low-cost water level sensors be installed at appropriate locations (bridge crossings, pier, and Dana Point) for a real-time alert of high-water conditions and potential wave damage. These real-time high-water conditions in concert with real-time offshore wave buoy data could help establish coastal metrics for threshold and support rationale for reinforcement actions.

Strategy 2. **Establish Thresholds for Reinforcement.** Long-term, short-term, and seasonal shoreline position (MHW contour) relative to the Rail Corridor centerline of track should be assessed, and thresholds set for acting against imminent emergent conditions. Thresholds may vary spatially based on the geometry and elevation of the Rail Corridor and comparison longer term trends. Establishing thresholds will allow OCTA and SCRRA to plan responses for the coming storm(s) or storm season and provide a rationale to regulatory agencies to support action and emergency after-the-fact permitting. This strategy can be implemented within six months of implementing Strategy 1.

Strategy 3. **Prepare for Maintenance.**

3A. OCTA and SCRRA should stockpile sufficient tonnage of rock to reinforce existing riprap when stones are displaced and to add rock to emerging erosion areas as identified by monitoring. At minimum, not less than 5,500 tons of 2–6-ton rock should be stockpiled at the ready for responding to erosion of existing riprap and emergent hot spots.

3B. OCTA to coordinate with SCRRA and its maintenance contractor to develop a 2 to 5-year scope, estimated cost, and schedule to respond to short-term recurring slope movements and coastal erosion. This plan could include but is not limited to stockpiling riprap in various sizes, acquiring or leasing areas accessible by rail equipment to stage and load the stockpiled riprap, and ensuring that adequate equipment such as rail side dumps and large excavators are readily available.

Solution A. **Engineered Revetment.** The project team recommends OCTA pursue design and implementation of engineered revetment sections in potential reinforcement areas that currently have limited or no riprap shore protection. These structures will provide greater durability and survivability, plus are more effective at dissipating wave energy to minimize wave overtopping and associated track inundation. Constructing an engineered revetment will entail

access on the dry beach, which requires advanced planning to work at low tide.

Solution B. **Riprap Reinforcement.** Continued placement (stacking) of riprap to repair and reinforce existing riprap from the trackway will continue to be needed as stones are displaced and undermined by storms. This method is a stopgap measure and is not expected to resist all storms or withstand significant erosion of the beach beyond the toe of the riprap slope.

Monitoring Areas

A coastal shoreline monitoring program (see Figure 5) is recommended to quantify changes in both the condition of the shore protection and the overall shoreline position relative to the rail ROW. The recommended monitoring program includes on-the-ground site observations and drone-based topographic and aerial photogrammetric surveys conducted at low tide.

Site Observations

Potential reinforcement areas should be visually observed by a qualified coastal engineer after storm events and on a monthly basis during winter. The purpose is to observe the existing condition of the existing shoreline and existing protection for signs of further deterioration or damage.

Drone-based Photogrammetry and Topographic Survey

Each potential reinforcement area should be monitored monthly and after significant coastal storm events to assess the vulnerability of the railway to damage from coastal erosion. The monitoring should include acquisition of topographic and photographic data (orthometric and oblique aerial imagery) documenting the condition of the region between the railroad and the Mean Higher High Water (MHHW) contour (i.e., the dry beach and rock shore protection). The recommended program could be conducted using a small Unmanned Aircraft System (sUAS) operated by personnel with Federal Aircraft Administration (FAA) Remote Pilot Certification (Small UAS, Part 107) and a Real-Time Kinematic Global Navigation Satellite System (RTK GNSS). Structure-from-Motion (SfM) techniques can then be used to develop an ortho-rectified composite image (orthomosaic) of the survey area and a detailed Digital Elevation Model (DEM) from the sUAS and RTK GNSS data with a resolution of approximately 0.1 foot or better. This technique has recently been used to monitor rock shore protection in Southern California and to rapidly identify localized areas of revetment deterioration, including rock displacement. Both the DEM and aerial imagery can be used to assess changes in the beach configuration and rock shore protection to identify potential areas of concern. Long-term changes also can be assessed using historical topographic data obtained in the vicinity, and physical reconnaissance by professional geologists and engineers where available.

Proactive monitoring would allow OCTA to set a baseline condition and evaluate the progression of erosion, movement of tracks in areas of underlying instability, establish thresholds for immediate maintenance, and justify actions to regulatory bodies when emergent issues arise. Drone-based monitoring allows efficient capture of large areas, including those areas that do not require intensive monitoring efforts at this time.

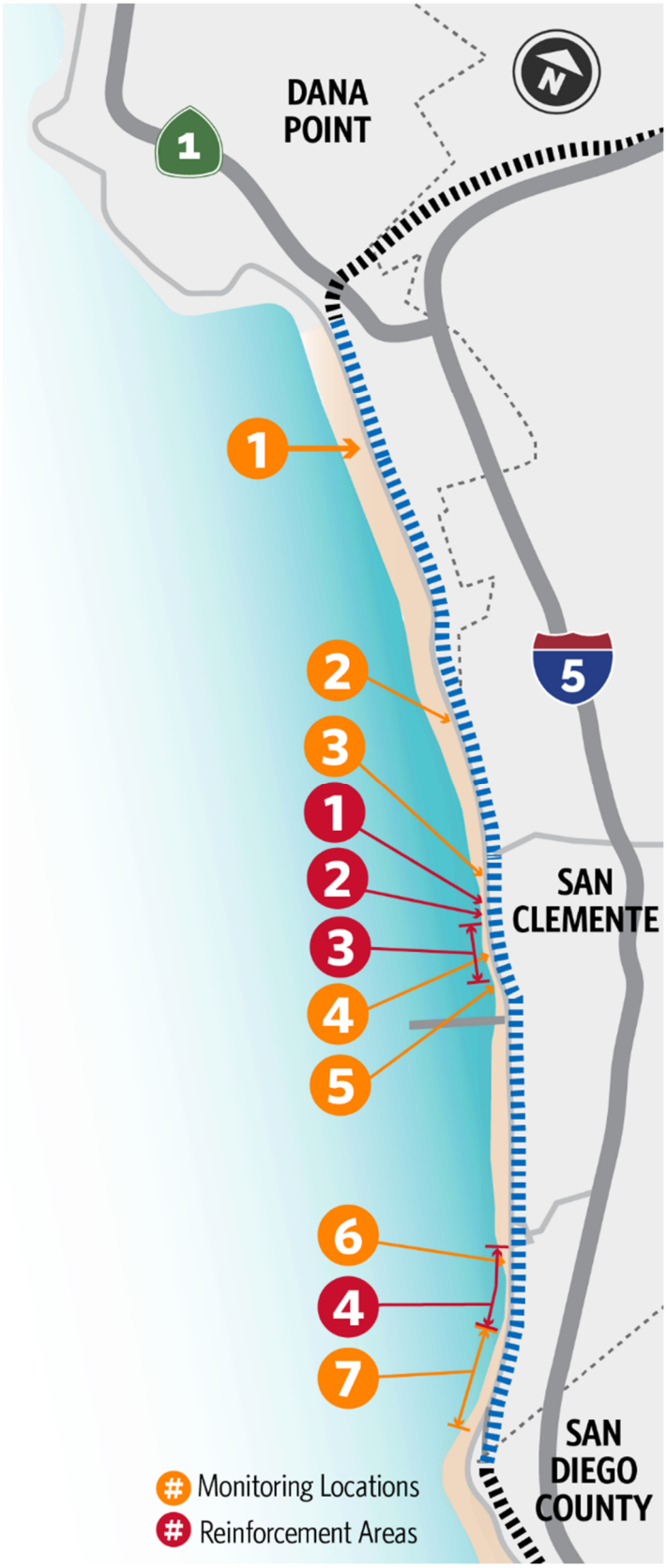


Figure 5. Summary of Monitoring Locations and Reinforcement Areas

Site 1: Doheny South, MP 200.9

The adjacent shoreline infrastructure at Doheny State Beach (see Figure 6) to the west and Capistrano Beach Park to the east have experienced erosion, and erosion control measures have been implemented. The project team recommends shoreline monitoring in this area where beach has not yet eroded to the point of imminent threat to the rail but may do so in the future. Semi-annual monitoring concurrent with spring/fall beach monitoring is recommended.

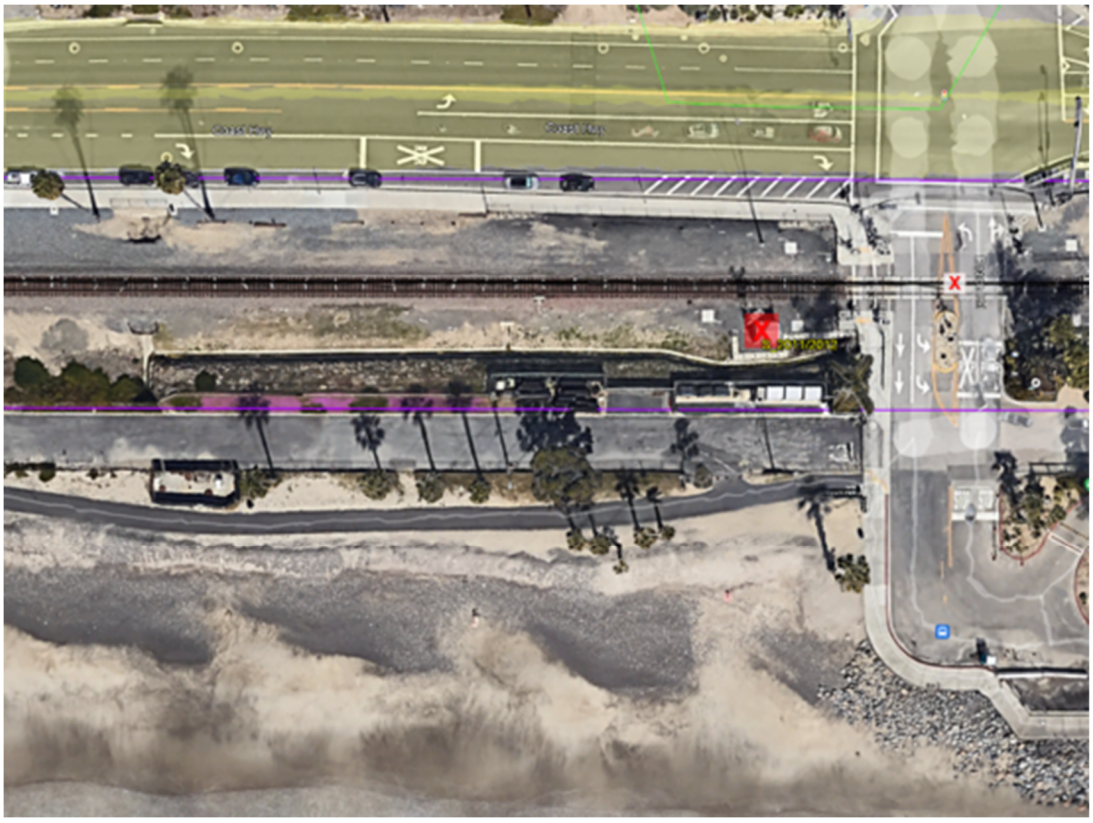


Figure 6. Monitoring Site 1: South Doheny Beach Erosion near Parking Lot

Site 2: Poche Beach, MP 202.75

Outfalls and drainages allow waves to propagate inland, and in combination with ongoing beach erosion may erode the rail ROW in future. Quarterly monitoring is recommended. See Figure 7.

Figure 7. Monitoring Site 2: MP 202.70, Poche Beach Outfall and Pedestrian Underpass

Site 3: North Beach, MP 203.65

There is ongoing coastal erosion at the base of the riprap slope causing stone to be undermined and dislodged downslope. This reach should be monitored as part of the coastal shoreline monitoring program. See Figure 8.

Figure 8. Monitoring Site 3: MP 203.65, North Beach

Site 4: Mariposa Pedestrian Bridge, MP 204.1–204.3

The project team recommends installation of a series of slope inclinometers along an approximately 1,000-linear foot rail corridor section, between the rail corridor and existing pedestrian bridge. Casings should be installed approximately 100 feet on-center and

penetrate saturated surficial sediments (fill, colluvium, slide debris), and extend into competent bedrock at depth. Baseline readings (monitoring) should be performed during the week following installation. Future rounds of monitoring should be conducted twice within the next month and once a month thereafter for a year. Subsequent readings should be performed twice annually. Monitoring should also take place following significant events that could potentially manifest in track movement, including, but not limited, to future earthquakes, bluff failures, significant storms, or significant beach erosion.

There is ongoing coastal (beach) erosion along the base of riprap slopes causing stone to be undermined and dislodged seaward. This reach should be monitored as part of the coastal shoreline monitoring program. See Figure 9.

Figure 9. Monitoring Sites 4 and 5: MP 204.1–204.3, Mariposa Pedestrian Bridge – January 21, 2024.

Site 5: Linda Lane, MP 204.5

There is ongoing coastal erosion at the base of the riprap slope causing stone to be undermined and dislodged seaward. This reach should be monitored as part of the coastal shoreline monitoring program.

Site 6: Avenida Calafia, MP 206.1

The face of the sea cliff is entrenched by several small to large size re-entrant canyons generating periodic sediment discharge into low-lying terrain along the landward Rail Corridor margin. Impacts have included flooding, blocking of drainage structures, and deposition of sediment within the Rail Corridor during larger storm events. See Figure 10. Frequent post-storm maintenance efforts have been required to preserve train service, including removal of sediment and ponded water, restoration of surface flow, and installation of concrete blocks at the mouth of canyons in attempt to restrain sediment transport.

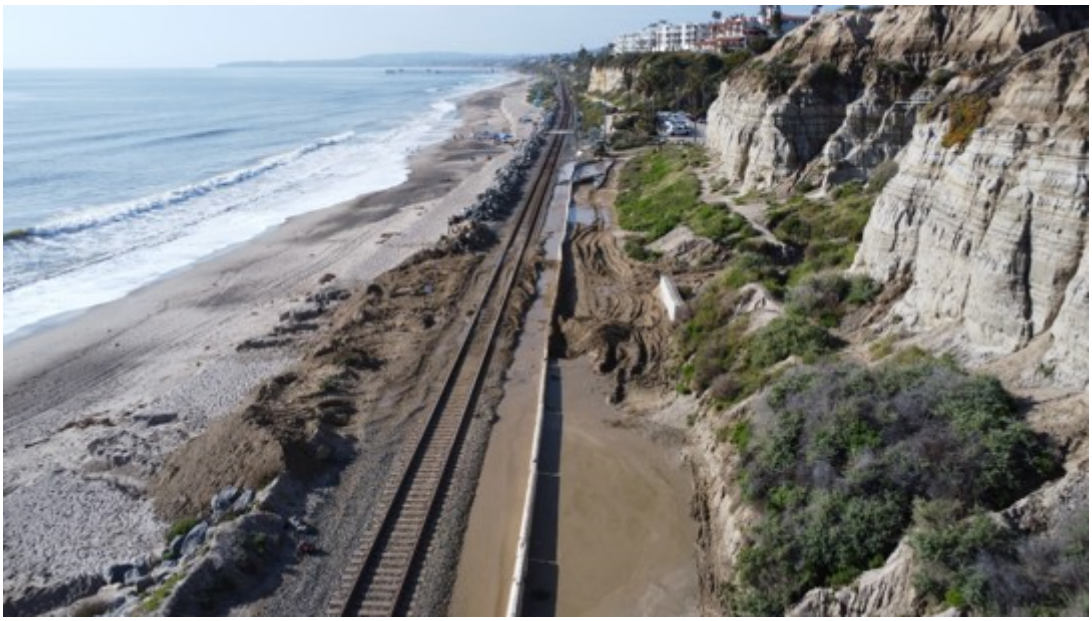


Figure 10. Monitoring Site #6: MP 206.1, Calafia State Beach

Possible solutions to mitigate the above conditions may include the following:

- Construction of sediment catchment ditches or walls at toe of bluff;
- Construction of drainage channels at toe of bluff to improve surface drainage and act as sediment catchment ditches;
- Improve, enlarge, and/or install additional under-track drainage outlets connecting to the beach;
- Improve surface drainage by grading the northeastern track zone to accommodate the distribution of runoff to new and/or existing outlets;
- Stabilize erosion-prone areas of bluff and canyons with jute-matting or similar methods to minimize erosion of bare ground;
- Introduce native plants on slopes underlain by colluvium/slope wash and older alluvium); and
- Improve sediment barriers at canyon discharge points.
- Construction of drainage channels at toe of bluff to improve surface drainage and act as sediment catchment ditches.
- Improve, enlarge, and/or install additional under-track drainage outlets connecting to the beach.
- Improve surface drainage by grading the northeastern track zone to accommodate the distribution of runoff to new and/or existing outlets,
- Stabilize erosion prone areas of bluff and canyons with jute-matting or similar methods to minimize erosion of bare ground.

Site 7: Cyprus Shore to County Line, MP 206.7–207.25

This reach (see Figure 11) should be monitored as part of the coastal shoreline monitoring program to ensure that the riprap section is stable and withstanding wave and weather conditions.

Figure 11. Monitoring Site 7: MP 206.7–207.25, Cyprus Shore to County Line

Table 8. Summary of Monitoring Areas

Site	Location (MP)	Description	Monitoring (Frequency)
1	200.80–201.00	Doheny South: Eroding Beach	Riprap condition and beach erosion (Semi-annually, Post-storm)
2	202.70	Poche Beach South Shore Pedestrian Underpass and outfall at beach	Beach erosion and scour protection around structures (Quarterly)
3	203.65–203.70	North Beach: Potential for undermining of riprap	Riprap condition and beach erosion (Semi-annually, Post-storm)
4	204.10–204.30	Mariposa Pedestrian Bridge	Install inclinometers to monitor potential track-bed movement (Monthly, post-storm, post-landslide, and post-earthquake)
5	204.50	Linda Lane: Stable beach but narrow	Riprap condition and beach erosion (Semi-annually, Post-storm)
6	206.10	Calafia State Beach: upland erosion sand deposits on tracks	Effectiveness of culvert replacement (Post-storm, King Tides)
7	207.60–207.25	Cyprus Shore to County Line	Monitor effectiveness of emergency riprap (Semi-annually, Post-storm)

Potential Reinforcement Areas

Four areas were identified by the project team through its initial assessment for potential reinforcement to further solidify the stability of the railroad corridor. The potential reinforcement areas are initial concepts that will require additional analysis and investigation in terms of alternative analysis, site access, constructability, and permitting. Each site has potential limitations that need to be examined further.

Site 1: MP 203.85

Place new rock and/or rework existing rock that has fallen out of section to restore the structure slope and crest elevation, thereby providing beach erosion protection and reduction in wave overtopping. Where possible, place new, larger rock and/or rework existing rock in a way that reduces the slope, thereby improving the stability of the rocks. See Figure 12 and Figure 13.

Figure 12. Potential Reinforcement Area 1: MP 203.85 to MP 203.90

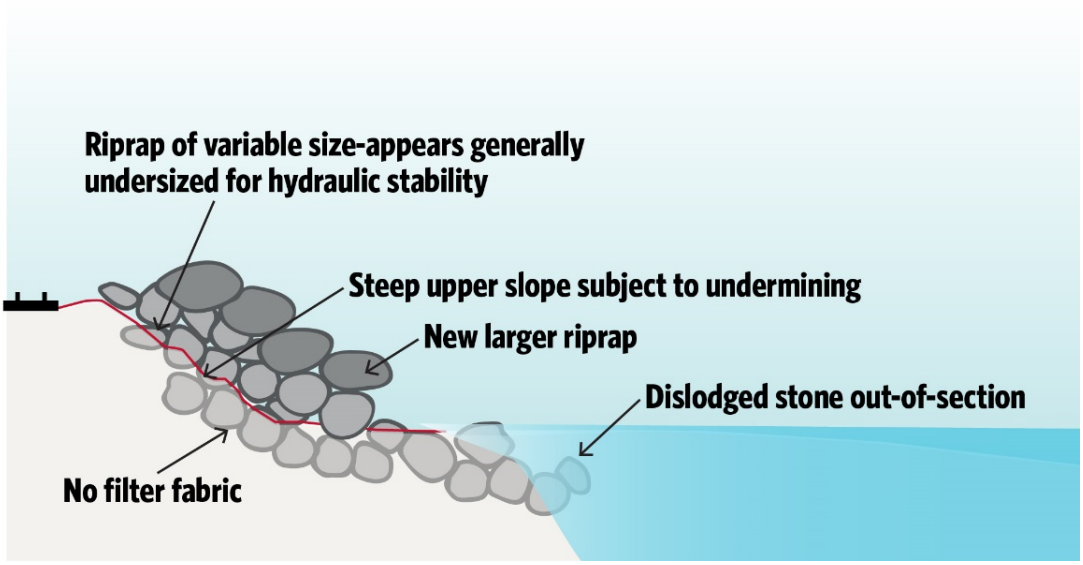


Figure 13. Potential Temporary Reinforcement Solution for Sites 1 and 2 where existing riprap exists

Site 2: MP 204.1

Place new rock and/or rework existing rock that has fallen out of section to restore the structure slope and crest elevation, thereby providing beach erosion protection and reduction in wave overtopping. Where possible, place new, larger rock and/or rework existing rock in a way that reduces the slope, thereby improving the stability of the rocks. See Figure 13.

Figure 14. Potential Reinforcement Site 2: MP 204.00 to MP 204.40

Site 3: San Clemente City Beaches

Remove and reconstruct pedestrian bridge incorporating a retaining wall structure with suitable subsurface and surface drainage control. The wall should be designed to protect the Rail Corridor from encroachment of failure debris in the Rail Corridor. Investigate the source(s) of chronic water issuing from the bluff face, which could relate to broken irrigation or other water lines in the nearby bluff-top development. See Figure 15 and Figure 16.

Figure 15. Potential Reinforcement Site 3: MP 204.00 to 204.50, steep bluffs, potential to impact tracks, poor track-side drainage with potential for liquefaction – January 21, 2024

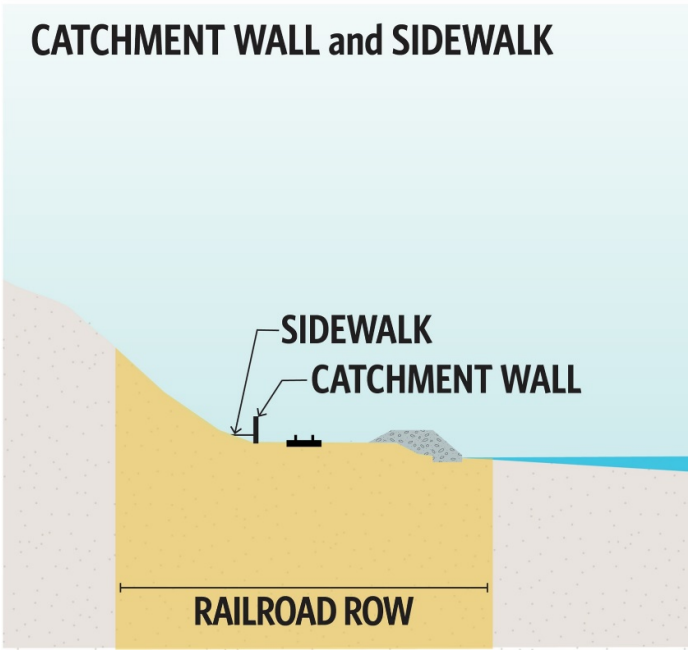


Figure 16. Potential Solution for Reinforcement Site 3

Site 4: North End Cyprus Shore

Installation of an engineered revetment with filter fabric to minimize piping (movement of fine-grained sediment through voids in the rocks) and a layered-stone placement design with keyway founded in bedrock or to a toe elevation of +2 ft or lower is recommended. Dual purpose of revetment is to arrest continued landward retreat of soils into Rail Corridor. See Figure 17 and Figure 18.

Figure 17. Potential Reinforcement Site 4: MP 206.00 to 206.67, North End of Cyprus Shore Project.

Loss of riprap exposes unstable deposits of beach sand, slide debris, and/or fill deposits beneath ROW, subject to rapid retreat as erosion and toppling during future storms.

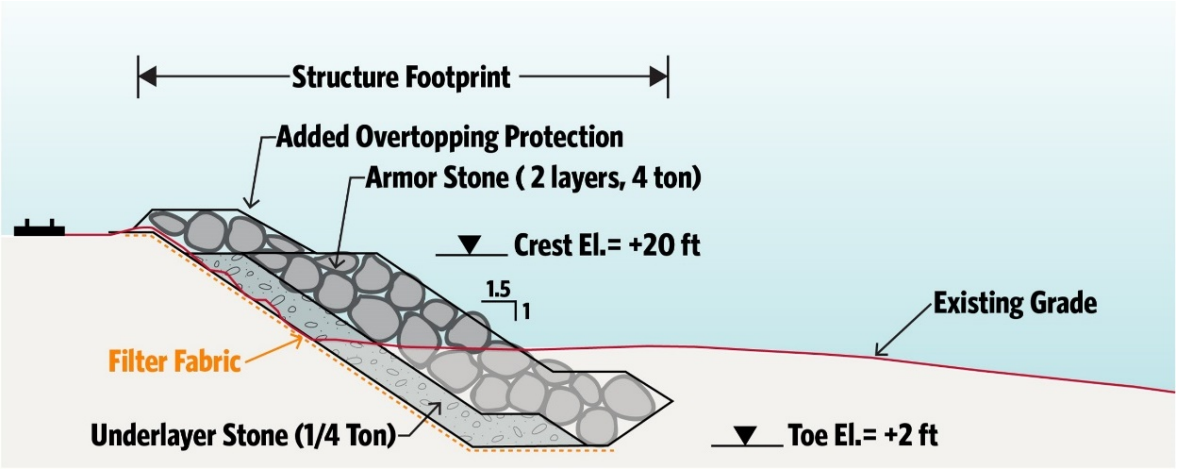


Figure 18. Potential Solution for Reinforcement Site 4 with Engineered Revetment Section

Table 9. Summary of Potential Reinforcement Areas

Site	Location (MP)	Description	Potential Solution(s)	Potential Limitation(s)
1	203.80–203.90	Erosion Hazard deteriorating	Repair/Augment Riprap	Access, constructability, permitting
2	204.0–204.40	Erosion: No beach at high tide and direct wave attack	Stockpile rock for maintenance	Access, constructability, permitting
3	204.00–204.50	Geologic: Major seepage from bluff face and poor surface drainage lead to track-bed saturation and potential for liquefaction and lateral spreading of track-bed	Build subdrain cutoff for groundwater, catchment structure for slope debris surface drainage control	Access, constructability, utility conflicts
4	206.00–206.67	North end of Cyprus Shore: Erosion exposing old riprap	Inspect and construct revetment as needed	Access, constructability, permitting

Other Key Considerations

Governance (Roles and Responsibilities)

As a part of the next steps for the Coastal Rail Resiliency Study, OCTA will develop a Governance Plan to provide a vision for roles, responsibilities, and an implementation plan for capital projects. OCTA is the owner of the ROW and Metrolink is the operator and maintainer of the ROW. However, both agencies have professional services and construction contracts that enable them to deliver capital projects. Roles and the implementation plan will consider the roles and responsibilities of OCTA and other key stakeholders in the region.

Environmental Clearance Strategy

As defined by State Legislature, California Environmental Quality Act (CEQA) Statutory Exemptions (SE) exist to cover specific types of projects with special qualifications. These exemptions are delineated in Public Resource Code (PRC) Section 21080 et seq.

California Code of Regulations, Title 14, Section 15269(b) allows for emergency repairs to publicly owned service facilities “necessary to maintain service essential to the public health, safety or welfare.” This includes emergency repairs that “require a reasonable amount of planning to address an anticipated emergency.” Further, Section 15269(c) allows for an SE for:

> Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term, but this exclusion does not apply:
>
> (i) If the anticipated period of time to conduct an environmental review of such a long-term project would create a risk to public health, safety or welfare, or

(ii) If activities (such as fire or catastrophic risk mitigation or modifications to improve facility integrity) are proposed for existing facilities in response to an emergency at a similar existing facility.

Given the amount of recent storm damage including shoreline erosion, land subsidence, gradual earth movements, and landslides, there is a high probability that further damage will occur within this corridor that jeopardizes the continued use of the existing railroad infrastructure.

To streamline the environmental process for the recommended maintenance activities proposed for potential reinforcement areas, it is recommended that a single, corridor-wide SE be utilized. This SE should identify the extent of the project corridor, Dana Point (MP 200.0) to San Clemente (MP 207.4), and list all potential improvements, including, but not limited to, placing riprap from the railroad ROW, constructing engineered revetment with riprap, and building catchment walls. The SE should specifically use language to include emergency actions that may be required within the corridor (see further discussion below). Alternately, an SE can be filed for individual potential reinforcement areas projects identified in this study.

If a federal nexus is established through a federal permit (such as a USACE permit) or federal funds are applied either entirely or in part by the federal government to any of the work in this corridor, the National Environmental Policy Act (NEPA) may apply. The NEPA Class of Action (Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement) would be coordinated with and determined by the federal lead agency.

Regulatory Permitting Strategy

Potential reinforcement areas may also need to comply with other applicable federal, state, and local laws. All potential reinforcement areas identified above are located within the Coastal Zone Boundary. As such, all potential reinforcement areas require some level of coordination with the California Coastal Commission (CCC). Depending on the location and extent of potential improvements, USACE, Regional Water Quality Control Board (RWQCB), United States Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW) regulatory requirements, among others, may need to be addressed, as discussed below.

Coastal Development Permitting

All work proposed on tidelands, submerged lands, and other public trust lands must be coordinated with and potentially receive a permit from the CCC. In addition, activities authorized, funded, or carried out by the federal government that affect coastal zone resources must be reviewed by the CCC for consistency with the federally approved California Coastal Management Program, including the California Coastal Act (CCA) (PRC 30330, and 30400).

Coastal Development Permits (CDPs) are the regulatory mechanism by which proposed projects in the coastal zone comply with the policies of Chapter 3 of the CCA. Specifically, California Code of Regulations, Title 14 – Natural Resources, Section 13252 details repair and maintenance activities pertinent to this transportation corridor that require a CDP and including repair and/or maintenance of surface or subsurface structures. CDPs are required for any repair or maintenance to facilities or structures or work located in an environmentally

sensitive habitat area, any sand area, within 50 feet of the edge of a coastal bluff or environmentally sensitive habitat area, or within 20 feet of coastal waters or streams that include the placement or removal of materials (including riprap, sand, etc.) or when the presence of mechanized equipment or construction materials is needed.

The executive director of the CCC has the discretion to exempt ongoing routine repair and maintenance activities of local governments, state agencies, and public utilities (such as railroads) involving shoreline works protecting transportation roadways per Cal. Code Regs. tit. 14 §13252 3(c)(e). Therefore, it is recommended as a first step that OCTA request an exemption from the Executive Director of the Commission for any maintenance work and/or work in all potential reinforcement areas.

If an exemption is not granted, a secondary option is to apply for a singular Ongoing Maintenance Activities Permit for the corridor, as allowable under Cal. Code Regs. tit. 14 § 13252 3(d). The CCC may issue a permit for maintenance activities for a term in excess of the two-year term provided by these regulations. Issuance of this permit may also require preparation of an associated CDP to address potential effects maintenance activities may have on natural/coastal resources. Therefore, it is recommended that OCTA prepare, process, and obtain Ongoing Maintenance Activities Permit for maximum time allowable, since this step is crucial to streamlining proactive prevention of damage to railroad infrastructure moving forward.

To move forward with discussions for this type of a Maintenance Activities Permit, it is recommended that OCTA request a pre-application meeting with Coastal Staff to discuss the preparation of a Maintenance Improvement Plan for the Reinforcement Areas that includes:

- Type of maintenance/improvement required (materials, quantities, etc.).
- Environmental footprint, including construction access, temporary, and permanent impact areas.
- Post-maintenance/improvement requirements (materials, quantities), where warranted.
- Drone footage and/or LiDAR for the corridor as proof of existing conditions for permitting purposes.
- Discussion of preparation of a CDP in support of this work.

It is also recommended that field surveys (Biological Resources, Aquatic Resources Delineation, and Cultural Resources) be completed for the corridor with the subsequent reports used for the support of the permitting process and mitigation.

There is an alternate option for CDP available for federal activities, development projects, permits and licenses, and/or support to state and local governments. The CCC has a Federal Consistency Unit that implements the Coastal Zone Management Act (CZMA) of 1972. All federal activities affecting the coastal zone must undergo a review for consistency with the CZMA process called a Consistency Determination for federal agencies activities and development projects or a Consistency Certification for federal permits and licenses, and/or federal funding to state and local agencies. This process is intended to allow for coordination among federal agencies, plus allowing the public an opportunity to participate in the process.

Clean Water Act Permitting

Depending upon the location(s) and extent of each proposed improvement and/or maintenance activity and their impacts to aquatic resources, Clean Water Act permitting may be required with the USACE and RWQCB or State Water Resources Control Boards (Water Boards). Permits for Section 404 of the Clean Water Act are addressed through USACE and may be covered under nationwide permits, such as Nationwide Permit 13 (NWP 13), which covers bank stabilization less than 500 feet in length solely for erosion protection, Regional Permits, which cover projects considered to have insignificant environmental impacts, or Individual Permits for projects with severe impacts with no practical alternative. Individual Permits may require environmental assessment under NEPA. Implementation of Section 401 of the Clean Water Act Water Quality Certification and Waste Discharge is delegated to the State Water Boards.

Porter-Cologne Water Quality Control Act

Depending upon the location(s) and extent of each proposed improvement and/or maintenance activity and their impacts to aquatic resources, the Porter-Cologne Water Quality Control Act may need to be addressed. The Porter Cologne Water Quality Control Act is the clean water act of California that expanded the enforcement authority of the Water Boards in California.

Lake and Streambed Alteration Agreement

If any portion of proposed improvement and/or maintenance activity is determined to substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, per the CDFW Fish and Game Code Section 1602 a Streambed Alteration Agreement (SAA) may be needed.

Endangered Species

Depending upon the location(s) and extent of each proposed improvement and/or maintenance activity and their proximity to biological resources, state and or federally listed species may be affected. Depending on the species and the presence of a federal nexus, consultation with USFWS and/or National Oceanic and Atmospheric Administration may be necessary in addition to CDFW to comply with the California Endangered Species Act (CESA).

Other Coordination

The California State Lands Commission (SLC) has jurisdiction of the landward boundary of “sovereign lands,” defined as the area between the ordinary high-water mark for tidal waterways and the ordinary low-water mark for navigable non-tidal waterways. The area between the ordinary low-water mark and the ordinary high-water mark at navigable non-tidal waterways are subject to the Public Trust Easement. As such, the location of improvements should be overlain with the Mean High Tide Line (MHTL) and early coordination should occur with the SLC to decide whether a lease is required to complete the activity.

Procedures for Emergency Response

Emergency Response Protocol
It is recommended that a coordination protocol be put into place between OCTA and Metrolink to streamline emergency responses, as follows:

1) Metrolink Maintenance identifies immediate emergency maintenance need within the corridor.
2) OCTA, Metrolink, and Professional Services Support meet to discuss scope of maintenance required and suggests the following level staff are included:
    a. OCTA: Executive Leadership, Project Manager(s), Environmental Program Manager.
    b. Metrolink: Executive Leadership Project Manager(s), Metrolink Maintenance.
    c. Professional Services Support: Engineering Lead(s), Geotechnical Lead(s), Environmental Leads
3) Metrolink emails OCTA and HDR the following information about the emergency response:
        a. Type of maintenance activity (e.g., riprap placement).
        b. Project limits.
        c. Quantity of material import.
        d. Type of construction equipment required.
        e. Construction access requirements (rail, beach, etc.).
        f. Proposed construction timeframe and whether the improvement is temporary or permanent.
        g. Provide as-builts and plans as soon as available.
4) The team determines if environmental clearance or permitting is required and notifies agencies (if needed). Critical factors to consider include but are not limited to whether maintenance locations are outside the railroad ROW and/or locations in the railroad ROW that have the potential to impact sensitive natural/coastal resources.

Emergency Environmental Clearance
If any of the key maintenance locations turns into an emergency, the SE for the corridor (recommended above in Environmental Clearance Strategy Section) should be leveraged for environmental clearance without the need for a new SE for each emergency location. Until a corridor-wide SE is in place, each location would require a new SE be filed for individual potential reinforcement areas projects identified in this study.

Emergency Regulatory Permitting
The CCC defines emergency work as "… generally a period of 24 to 72 hours after the emergency occurrence …." If the Ongoing Maintenance Activities Permit, discussed above, is not yet in place at the time of the emergency, early coordination with the CCC and any other location-appropriate agencies should occur as soon as possible after the incident (and preferably prior to the repair) to assess the need for the following emergency permitting:

- CCC Emergency CDP, followed by a formal CDP application, potentially with mitigation included.
- USACE Regional General Permit (RGP) #63 and coordination with RWQCB:
    - RGP #63 provides for a rapid respond for protection activities in emergency situations, defined specifically by USACE when there is a “clear, sudden, unexpected, and imminent threat to life or property demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services (i.e., a situation that could potentially result in an unacceptable hazard to life or a significant loss of property if corrective action requiring a permit is not undertaken immediately).
- Section 401/Section 404/Porter Cologne Act/CDFW 1602/FESA/CESA.
- Coordination with SLC for MHTL and potential lease needed for emergency location(s).

Stockpiles of Materials Needed in Emergency

Stockpiles of armor stone (2– to 6-ton tons in size) should be established so that materials can be readily delivered to reinforcement and repair areas as needed. For existing riprap with direct wave attack (not including Cyprus Shore), stockpiled materials should be approximately 2 tons per foot length. Therefore, about 5,500 tons of stone should be prepared at the ready. This stone could be used for engineered revetment or riprap placement.

For emergent areas at developing reinforcement areas at the north end of Cyprus Shore, additional new armor stone will be needed and the amount will depend upon the design and length selected by OCTA for reinforcement. These areas may require about 10 tons per foot length.

Engagement of Stakeholders

There are a number of stakeholders that will be engaged throughout the life of the study to obtain input and feedback. OCTA is actively collaborating and soliciting input from stakeholders and interest groups to help inform and shape the short- and medium-term design concepts. OCTA will host listening sessions with the following groups:

- Project Development Team (PDT).
- Stakeholder Working Group (SWG).
- Freight and Goods Movement.
- Coastal and Marine Habitat Community-Based Organizations.
- Emergency Responders.
- Major Employers, Key Destinations, and Other Business Interests.
- Residential Groups.
- Elected Officials Roundtable.
- General Public.

A listening session was held to present the draft monitoring and potential reinforcement areas to solicit feedback from key stakeholders and interest groups to understand how the solutions can coincide with and contribute to ongoing efforts to develop a resilient coastline.

Next Steps

The monitoring sites and the potential reinforcement areas identified within this technical memorandum should be studied further and advanced through the design, environmental, and permitting processes. Each project needs to be evaluated further and have a more detailed design developed, as well as have an environmental and permitting strategy developed so projects can be advanced to construction in a timely manner. The areas were identified based on the project team's research and field reconnaissance; however, the risk of additional coastal wave impacts, bluff instability impacts, and local erosion in other areas still exists with changing climate conditions and landscape.

The potential reinforcement areas will also need to be coordinated with key stakeholders such as the City of San Clemente, City of Dana Point, CCC, State Parks, SLC, Metrolink, BNSF, Amtrak, and others. This coordination will take place through outreach efforts to gather input and inform key stakeholders of improvements to the railroad corridor.

It is recommended that OCTA develop a Project Delivery Plan that expands on each of these recommended areas by developing an Alternatives Analysis and select a Preferred Alternative to advance to Project Acceptance and Environmental Document (PA/ED). Key stakeholders and permitting agencies should be engaged during this process. With concurrence, the projects should be advanced to Final Design and Construction. The Project Delivery Plan should also consider the potential for bundling projects together for greater efficiency.